

**FARMER COLLECTIVES DRIVEN AGRIBUSINESS MODEL IN  
MAIZE VALUE CHAIN- A CASE STUDY OF SWAKRUSHI  
FARMER PRODUCER COMPANY LIMITED**

by

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(2016-31-030)**

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**COLEGE OF CO-OPERATION BANKING AND MANAGEMENT**

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**KERALA, INDIA.**

**2018**

## ***DECLARATION***

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## DECLARATION

I, hereby declare that this project report entitled “**FARMER COLLECTIVES DRIVEN AGRIBUSINESS MODEL IN MAIZE VALUE CHAIN- A CASE STUDY OF SWAKRUSHI FARMER PRODUCER COMPANY LIMITED.**” is a bonafide record of research work done by me during the course of project work and that it has not previously formed the basis for the award to me for any degree/diploma, associateship, fellowship or other similar title of any other University or society.

Vellanikkara



**V Usha Sree**

(2016-31-030)

***CERTIFICATE***

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## CERTIFICATE

Certified that this project report entitled “**FARMER COLLECTIVES DRIVEN AGRIBUSINESS MODEL IN MAIZE VALUE CHAIN- A CASE STUDY OF SWAKRUSHI FARMER PRODUCER COMPANY LIMITED.**” is a record of project work done independently by Ms. V. Usha Sree under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship or other similar title to them.

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## ***ACKNOWLEDGEMENT***

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*For any errors or inadequacies that may remain in this work, of course the responsibility is entirely my own.*

**V USHA SREE**

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## ***LIST OF ABBREVIATIONS***

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## ABBREVIATIONS

FPCL: Farmer Producer Company limited

Swakrushi FPU: Swakrushi feed processing unit

NABARD: National bank for agriculture and rural development.

NKFL: NABKISAN Finance Limited

VCA: Value chain analysis

FIAS: Foreign Investment Advisory Service

FPO: Farmer Producer Organization

IFAD: International Fund for Agricultural Development

M4 P: Making markets work for the poor

IFFCO: Indian Farmers Fertiliser Cooperative

PJTSAU: Professor Jayshankar Telangana State Agricultural University

RARS: Regional Agricultural Research Station

KVK: Krishi Vigyan Kendra

MSP: Minimum Support Prices

NIRD: National Institute for Rural Development

SWOC: Strength, Weakness, Opportunity and Challenges



*Chapter I*  
***DESIGN OF THE STUDY***

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# CHAPTER I

## DESIGN OF THE STUDY

### 1.1 INTRODUCTION:

The term ‘Value Chain’ was proposed by Harvard University Professor Michael Porter during 1985. “The idea of the value chain is based on the process view of organizations, the idea of seeing a manufacturing (or service) organization as a system, made up of subsystems each with inputs, transformation processes and outputs. Inputs, transformation processes, and outputs involve the acquisition and consumption of resources – money, labour, materials, equipment, buildings, land, administration and management. How value chain activities are carried out determines costs and affects profits.”— Institute for Manufacturing (IfM), University of Cambridge

Agriculture is the backbone of the Indian economy. The economic growth of the country is directly linked to the growth in agriculture. Maize is the third most important cereal, after rice and wheat, for human food. It directly contributes almost 10 per cent to the Indian food basket and 5 per cent to the world dietary energy supply. It is the most versatile crop and is grown in more than 166 countries across the globe, including tropical, subtropical and temperate regions, from sea level to 3000 m above sea level. Maize is grown throughout the year in India. It is predominantly a kharif crop with 85 per cent of the area under cultivation in the season. It accounts for 9 per cent of total food grain production in the country.

**Tab1.1 Global position of India in the harvested area of Maize (2015-2016)**

Rank	Country	Area (In ha)
1	China, mainland	38952521
2	United States of America	35106050
3	Brazil	14958862
<b>4</b>	<b>India</b>	<b>10200000</b>
5	Mexico	7598086
6	Nigeria	6544248
7	Argentina	5346593
8	Ukraine	4252200
9	United Republic of Tanzania	4036996
10	Indonesia	3792839

Source: Food and Agriculture Organization (FAO). (0141406)

**Tab 1.2 Global position of India in the production of Maize (2015-2016)**

Rank	Country	Production in hectogram/ha)
1	United States of America	384777890
2	China, mainland	231673946
3	Brazil	64143414
4	Argentina	39792854
5	Mexico	28250783
6	Ukraine	28074610
<b>7</b>	<b>India</b>	<b>26260000</b>
8	Indonesia	20369551
9	Russia	15309813
10	Canada	12349400

Source: Food and Agriculture Organization (FAO). (0141406)

**Tab 1.3 Global position of India in the Productivity of Maize (2015-2016)**

Rank	Country	Productivity in hectogram/ha)
1	Jordan	404127
2	United Arab Emirates	261786
3	Saint Vincent and the Grenadines	247429
4	Israel	229983
5	Kuwait	167860
6	Qatar	125011
7	Tajikistan	123634
8	Uzbekistan	119570
9	Oman	119543
10	New Zealand	116893
<b>100</b>	<b>India</b>	<b>25745</b>

Source: Food and Agriculture Organization (FAO). (0141406)

Globally India ranks 4<sup>th</sup> position in the harvested area of maize and ranks 7<sup>th</sup> position in the production of maize but is seen nowhere in the top10 list in the productivity of maize,

Traditionally, maize is a Kharif-season crop, but more than 60 per cent of its production in Andhra Pradesh and Bihar comes from Rabi (winter) crop. Maize production is dominated by Telangana and Karnataka, producing 22 per cent of India's maize in 2016-17(Source: Indiaagristat.com). Nine states viz. Karnataka, Telangana, Tamil Nadu, Rajasthan, Maharashtra, Bihar, Uttar Pradesh , Madhya Pradesh and Gujarat account for 80 per cent of India's maize production and 80 per cent of area under cultivation. Area under hybrid seeds in 2014-15 is

estimated to be 60 per cent of the total area under maize cultivation. Telangana ranks fifth place in cultivated area of maize, fourth place in Maize production and highest productivity in 2016-2017(Source: Indiaagristat.com).

**Tab 1.4 Top 5 states producing maize in India:**

State	Area In '000 ha	Production In '000 tonnes	Productivity In Kg/ha
Karnataka	1370	3314	2419
Madhya Pradesh	1284	3340	2602
Maharashtra	1147	3452.96	3009
Rajasthan	981.68	1379.29	1501
Telangana	802	2663	3321

Source: Indiaagristat.com (2017-2018)

Maize has great potentialities in contributing to total food production in India. It is cultivated in about 8.02 million ha (Source: Indiaagristat.com) with a total production of 26.63 lakh tonnes in Telangana especially in the districts of Karimnagar, Warangal, Nizamabad, Adilabad, Medak and Ranga Reddy. The crop is grown mainly for grain purposes; in urban areas it is raised round the year for green cobs and green fodder.

Breeders have developed several high-yielding hybrids of maize in recent years. These have made a major contribution to increase food production. Several of these hybrids are attractive to seed industry, because of higher profit margin as well as the farmers have to buy the hybrid seed each year.

Use of hybrid maize has resulted in the development of new enterprises like production, processing, sale and distribution.

The liberalization and privatization of Indian Agriculture saw the State withdrawing from many productive and economic functions, a space that was readily claimed by the private agribusiness sector. The small farmer found himself at the receiving end – his livelihood threatened in an environment of instability, competition and fragmentation of farm holdings. He faced many issues including lack of access to credit and the market, and technology adoption. But rather than

a lone farmer struggling with multiple circumstances beyond his control, could he not become part of a collective for mutual support and collective action? Certainly! This is how the promising concept of Farmer Producer Organization (FPO) was born. The FPO's major operations will include supply of seed, fertilizer and machinery, market linkages, training and networking and financial and technical advice.

The traditional way of food production is being replaced by practices more akin to manufacturing processes, with greater co-ordination across farmers, processors, retailers and other stakeholders in the value chain.

## **1.2 Statement of Problem:**

Apart from meeting their consumption needs, farmers expect reasonable returns on their time and money invested. Also their desire is to increase the share in the consumer rupee. Further, it is only when the commodity is processed and branded that value addition occurs. As the farmer exist from the scene after transacting in the primary market, he has no part in the surpluses that emerge post production. Only when agriculture as enterprise in the long term generates surpluses or the farmer perceives derives benefit would he make efforts to put back some of the surplus generated into the agricultural enterprise, creating further capital formation in agriculture.

The failure of government to activate regulatory bodies and strengthen public institutes has left farmers in the lurch. The middlemen are exploiting the farmers by speculating on price and weight. Farmers also face problems of seasonal price fluctuation and lack of basic marketing infrastructure.

Here lies the importance of producer companies where majority of members are the producers and development of which has many beneficial feedback effects on agriculture. The most direct one is, of course, the stimulus it provides for increased agricultural production through market expansion. In fact very often, the establishment of processing facilities is itself an essential first step towards stimulating both consumer demand for the processed product and an adequate supply of the raw material. The provision of transport, power and other infra-structural facilities required for agro industries also benefits agricultural production. The development of these industries provides a more favourable atmosphere for technical progress and the acceptance of

new ideas in farming itself. Producer companies are often blamed as they have not reached the ultimate farmers.

Hence this study aims at attempting to make an in-depth analysis of Value Chain of Maize in Swakrushi Farmer Producer Company Limited, Warangal District, Telangana.

### **1.3 Objectives:**

1. To map and analyze different processes and actors involved in the value chain of Maize.
2. To study the constraints faced by the actors involved in the value chain of Maize.
3. To prescribe strategies for sustainable business model.

### **1.4 Methodology**

#### **1.4.1 Sources of data:**

The study was conducted based on both primary data and secondary data.

#### **1.4.2 Period of study:**

The study was carried out from September to November 2018.

#### **1.4.3 Sampling Design**

##### **1.4.3.1 Sample selection:**

For the study 30 member farmers, 30 non-member farmers, 2 commission agents, 2 processors, 2 retailers and 30 consumers were selected.

##### **1.4.3.2 Sample size and Method of sampling:**

The sampling frame consists of maize growers who are members of Swakrushi FPCL, non-member farmers, commission agents, processors, retailers, consumers. The sample size is 96.

**Tab 1.5 Sample size, sampling method and data collection tools**

Actors of Value Chain	Sampling Size	Data Collection Tools	Sampling Method
Input Suppliers	2	Questionnaire	Snowball sampling and key informants
Member farmers	30	Interview Schedule, Focus group interview	Simple Random Sampling
Non-member farmers	30	Interview Schedule, Focus group interview	Simple Random sampling with replacement
Commission agents	1	Questionnaire	Snowball sampling and key informants
Processors	2	Questionnaire	Snowball sampling and key informants
Retailers	2	Questionnaire	Snowball sampling and key informants
Consumers	30	Interview Schedule, Focus group interview	Simple Random sampling with replacement

#### **1.4.4 Observations made**

**1.4.4.1** To map and analyze different processes and actors involved in the value chain of Maize.

a) Value chain actors namely input suppliers, producers, commission agents, processors, retailers, consumers.

b) Key processes in the value chain

**1.4.4.2** To study the constraints faced by the actors involved in the value chain of Maize.

##### **1.4.4.2.1 Profile of members:**

1.4.4.2.1.1 Gender

1.4.4.2.1.2 Age

1.4.4.2.1.3 Education

1.4.4.2.1.4 Land holdings size

1.4.4.2.1.5 Membership status

1.4.4.2.1.6 Problems faced during cultivation

1.4.4.2.1.7 Problems faced during marketing of maize.

1.4.4.2.1.8 Marketing Channel

#### **1.4.4.2.2 Profile of non-members:**

1.4.4.2.2.1 Gender

1.4.4.2.2.2 Age

1.4.4.2.2.3 Education

1.4.4.2.2.4 Land holdings size

1.4.4.2.2.5 Membership status

1.4.4.2.2.6 Marketing Channel

### **1.5 Data Collection Method**

The primary data was collected from the selected farmers by survey method using separate structured interview schedules for member farmers and non-member farmers. The secondary data was collected from Swakrushi FPCL's published documents, journals, magazines, internet, etc.

### **1.6 Statistical tools for the study:**

- To analyze the primary data and achieving the stated objectives, analytical tools like Value chain Mapping tool, Percentage analysis, Cross tabulations, Index and Composite Index method, SWOC analysis, Acharya approach for marketing efficiency, Price spread, Garrett ranking, were used.



## Index method

- The satisfaction level of member farmers and other actors measures how Swakrushu FPCL could meet or exceed the consumers and farmers expectation. For this purpose, different variables were selected and data collected on a 5 point Likert summated scale. A satisfaction index was constructed by giving weightages to 5 points from 5 to 1 (highly satisfied to highly dissatisfied). For the purpose of interpretation, index score was rated as follows:

Tab 1.6 Satisfaction Index category

Score	Category
Less than 30	Highly Satisfied (Hs)
30-50	Disagree (DA)
50-70	Moderately Dis Agree
70-90	Agree (A)
90 and above	Highly Agree (HA)

- In the next step the total score of each variable was computed by using the following formula:

$$\frac{(f_1 \times 5) + (f_2 \times 4) + (f_3 \times 3) + (f_4 \times 2) + (f_5 \times 1) \times 100}{N \times 5}$$

- Where  $f_1, f_2, \dots$  - number of respondents in each category of responses and
- $N$  = Total number of respondents.
- After calculating the individual index the next step is to find out the composite index (CI) of the attributes. It is calculated by using the formula

$$CI = \frac{\text{Total score obtained for the attribute}}{(\text{Maximum score} \times \text{Number of Respondents} \times \text{Number of Statements})}$$

## Garrett Ranking Technique

- Garrett's ranking technique was used to rank the preference indicated by the respondents on different factors. As per this method, respondents have been asked to assign the rank for all factors and the outcomes of such ranking have been converted into a score value with the help of the following formula:

- Percent position =  $\{100(R_{ij} - 0.5)\} / N_j$
- Where  $R_{ij}$  = Rank given for the  $i$ th variable by the  $j$ th respondent
- $N_j$  = Number of variable ranked by the  $j$ th respondents
- With the help of Garrett's table, the percent position is estimated is converted into scores. Then for each factor the scores of each individual are added and then total value of scores and mean value of scores are calculated. The factors having highest mean value is considered to be the most important factor.

### **Marketing margin**

This refers to the net profit to the different market intermediaries of a particular produce after deducting costs incurred by them for handling the commodity.

Marketing margin = selling price-cost price

Net marketing margin = Marketing margin–marketing cost

### **Marketing efficiency index**

The ratio of the net price received by the production-seller to the total marketing cost and total net margins of intermediaries as suggested by Acharya and Agarwal (1998).

$ME = FP / (MC+ MM)$

Where,

ME: Marketing efficiency

FP: Net price received by the producer-seller

MC: Total marketing cost

MM: Net marketing margin

## **1.7Operational definitions:**

### **Member farmers (MF):**

Farmers cultivating maize and are the members of Swakrushi Farmer Producer Company limited.

**Non-member farmers (NMF):**

Farmers cultivating Maize crop but are not the members of Swakrushi Farmer Producer Company limited.

**Input suppliers:**

Persons who provide institutional input support or agro-input support are considered as Input suppliers. Inputs include seeds, fertilizers, pesticides, herbicides, credit and technical and advisory support for maize cultivation

**Commission agents:**

Agents who procure produce from the farmers and sell off for further processing and consumption. They act as intermediates between farmers and processors. They also provide credit to farmers in the form of inputs and cash.

**Processors:**

Processors here refer to the entity (Swakrushi feed processing unit) who procures maize grains and process it into cattle feed.

**Dealers:**

Dealers here refer to the actors who retail maize feed to the cattle and poultry growers and are appointed by Swakrushi FPCL.

**Consumers:**

Consumers here refer to the Cattle and poultry growers who purchase the feed from dealers.

**1.8 Scope of the study**

The study focused mainly on the value chain of Maize and the business model of Swakrushi FPCL. The study had allowed knowing about the problems faced by the actors involved in the verticals of the value chain of maize. The results of the study are valuable inputs to improve the efficiency of the value chain and improve the business model of Swakrushi FPCL.

## **1.8 Limitation of the study**

Limited data as the company has commenced business only a two years ago and the collective farming was started only in the last season (Rabi 2017)

## **1.9 Chapterization**

Chapter 1: Design of the Study.

Chapter 2: Review of literature.

Chapter 3: Profile of Swakrushi Farmer Producer Company Limited.

Chapter 4: Analysis, Findings and Discussion.

Chapter 5: Summary of Findings, Suggestions and Conclusion.

*Chapter II*  
***REVIEW OF LITERATURE***

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## CHAPTER II

### REVIEW OF LITERATURE

In this part of the study, an attempt is made to cover relevant literature related to the objective set forth for the study. Though very few studies are available on this aspect, selected few are presented here. In an effort to establish content and background information, the literature review consist of a mixture of research and polemics (i.e. bringing to light alternative opinions and principles).

#### **2.1 Map and analyze different processes and actors involved in the value chain of Maize.**

Pant and Hada (2004) conducted study to investigate the marketing channels for maize seed and to estimate the marketing cost, margin of middlemen and producers' share in consumer's rupee in various marketing channels. Nine marketing channels existed for maize trade. Farmer-Commission agent cum wholesaler-Other mandis of Rajasthan was found to be most important channel through which 49.50 per cent of the total marketed surplus moved. The quantities moved through various market functionaries were 28.80 per cent through village trader, 61.05 per cent through commission agent, cum wholesaler, and 23.65 per cent through retailers. The percentage share of producer in consumer rupee was maximum in channel 1 (Farmer-Consumer) and channel 7 (Farmer-Flour mill-Retailer-Consumer). Village traders retained the highest margin which ranged from Rs 35.60 to 147.00 per quintal followed by retailers whose margin ranged from Rs 10.00 to Rs 70.62 per quintal whereas commission agent cum wholesaler retained minimum margin of Rs 26.70 to 63.75 per quintal.

Mane et al. (2006) conducted study on the value addition in maize processing industry in Belgaum district of Karnataka. They investigated the value addition, capacity utilization and break-even analysis of the starch units. Belgaum was selected as it emerged the highest in area and production of maize. It was observed that the value added as a result of processing of maize was Rs 3,177.49 and Rs 5,724.15 accounted for 68.92% and 123.90% per tonne of maize processed, in small and large unit respectively. They found that quantity processed per day and capacity utilization was higher in large unit. The cost benefit ratio worked out to 1.0056 and 1.0064 in small and large units respectively. The level of production at which it could attain the break-even was 2,311 Metric tonnes in small unit and 44,078 Metric tonnes in large unit.

Raphael Kaplinsky and Mike Morris (2003) in their research attempt to cover the broad terrain of researching value chain, and hence spans the contextually relevant the conceptually abstract, the methodologically particular and the policy relevant. The book researching value chain analysis is to try and comprehensively cover as many aspects of value chain analysis as possible so as to allow researcher to dip in and utilize what is relevant and where it is appropriate. Their study shows, how value chain analysis could be used both to chart the growing disjuncture between global economic activity and global income distribution to be private causal explanation for their outcome. The study also focuses on how does the value in the form of economic rent distributed along the chain.

Gandhi et al. (2009) conducted a study on integrated value chain approach and gave a conceptual frame work of value chain, which can help in integrating and realigning the chain. The value added strategy is accomplished through vertical integration and quality based pricing structure to link all the channel partners. The study found that in the production value chain, sowing (28.6%) and irrigation (21.9%) were the major costs due to high seed and diesel cost respectively.

Alam (2011) carried out study on dissemination of maize seeds and the seed value chains in Samastipur district of Bihar to analyze the mapping of maize seed (hybrids and OPVs) value chains and interactions. He found that there is need to ensure good and stable producer prices, easy access to affordable credit facilities, quality farm inputs and improved extension services. Lastly, a mechanism should be put in place for recognizing and rewarding of local outstanding performing players of the value chain.

Ranjit Kumar, Khurshid Alam, Vijesh V. Krishna and K. Srinivas (2011) the Market Map is made up of following three inter-linked components: (1) Value chain actors (farmers, seed companies, dealers, distributors, etc.) (2) Enabling environment (infrastructure and policies, institutions and processes that shape the market environment), and (3) Service providers (business or extension services that support the value chains' operations). The major actors in the maize seed value chains are seed companies, input suppliers (including manufacturers, wholesalers and retailers); producers; and institutional setup of state and central governments.

Morla Raja Krishna Murthy, Sugur Ajay Kumar (2015), in the value chain analysis of maize, the total cost of cultivation was high recording Rs. 32041.23 per hectare. The high cost of cultivation found was on account of costly Human labour, Bullock labour, Machine labour, Seed, Farm yard manure, Fertilizers and Pesticides. Among all operational costs, human labour recorded the maximum share of 25.75% followed by fertilizers 22.67% of the cost of cultivation. The operational cost items contributed about 84.41 per cent and fixed costs 15.59 per cent to the total cost. The increase in cost of production is mainly due to increase in prices of labour and inputs used, the government should come out with clear policies that stabilizes the prices of the inputs and encourage the use of machinery so that the farmers can cut down the expenses on labour to cultivate maize on profitable basis. Hybrid maize is fertilizer intensive crop as farmer has to spend 22% the cost of cultivation on fertilizer only.

Mary Evalyn Rose G. Romero, (2017), In the value chain of green corn, the largest value added was created at the level of green corn farmers. Processors/retailers ranked second in terms of value creation while trader - wholesalers contributed the lowest share to value creation. In the value chain of corn grains for food, the largest value added was created at the level of the retailers. Farmer practitioners ranked second in terms of value creation whereas village corn millers contributed the lowest share to value creation. In the value chain of corn grains as raw material in processing cornick, the largest value added was created by cornick processors. Retailers ranked second in terms of value creation. Corn grain traders ranked third in terms of value creation. Corn farmers contributed the lowest share to value creation.

Nelson Mango et.al, 2018. Maize value chain analysis: A case of smallholder maize production and marketing in selected areas of Malawi and Mozambique This article did set out to comparatively analyze the maize value chain's performance in Malawi and Mozambique. Findings show that smallholder farmers from Malawi and Mozambique face different, albeit similar levels of competitiveness in the production of maize in the legume-cereal farming systems. Competitiveness indicators for maize show that Mozambique has some competitive advantage in the production of maize when compared to Malawi. The key factor that determines such a low competitive edge is the very low productivity of maize. Estimated smallholder productivity levels in both Mozambique and Malawi are quite low by regional and international



standards. Mozambique has the competitive advantage in maize production because of the relatively lower input cost, perhaps due to its proximity to the coast, which invariably reduces the input costs relative to the land-locked Malawi.

## **2.2 Constraints faced by the actors involved in the value chain verticals.**

Sabur and Aktar (1997) studied marketing and economic use of pesticides in Bangladesh and noted that the gross margin and net margin of dealers was higher than that of retailers. This was because of dealers lower marketing cost and imperfection of market at dealer level. Entry into dealers market was not easy compared to retail market, because dealers need larger amount of capital and reputation.

Dao Due Huan, Vu Trong Binh, Dao The Anh and J.F. Le Coq (2002), research article aims to raised specific issues for further development of the maize commodity chain. After an overview of the maize sector situation in Vietnam based on available secondary data, this article presents the structure and functioning of the commodity chain in North Vietnam based on original data collected by interviews of actors involved in this commodity chain. Based on this analysis, the main difficulties and opportunities for the development of this commodity chain in relation with animal husbandry development are raised and strategies for maize sector in Vietnam discussed.

Anonymous (2003) focuses on the critical question of 'who makes the super profits in the value chain ' have been raised. Maize meal is a staple food and high volumes are traded monthly. The calculations in this study show that normal but fairly stable profits are present in the maize meal supply chain.

Dwivedi and Joshi (2007) pointed out that the strong bond and faith established among community members, direct access to community, unexploited and underexploited market and the positive and proactive support from government are the positive elements for the growth of producer companies in Madhya Pradesh. Small landholdings, illiteracy, low awareness on the importance of new seeds and other inputs, low purchasing capacity, poor loan repaying habits, poor connection among the villages are the challenges faced by them.

Agarwal (2010) reported that more than 52 % farmers faced problems related to marketing of produce. They can produce the crop but cannot sell. They have to go through commission agents

to market their produce, who charge high commission rates and many other hidden charges such as telephone and postage. Fluctuations in the prices and very low prices during the peak harvest period were the main problems experienced by farmers in marketing of their produce.

Dhaka and Poonia, (2010) have shown that farmers' capacity building activities resulted in enhancing the farm incomes and improving performance of coriander value chain in the Bundi district of Rajasthan.

Singh et al. (2010) have assessed value addition by a turmeric processing unit run by Farms Produce Promotion Society (FAPRO) in the Hoshiarpur district of Punjab, which handled nearly 72 per cent of the turmeric powder. The major constraints confronted by the growers were : severe infestation of weeds, seed unavailability, scarcity of FYM and labour, lack of market information and highly volatile prices.

Raj Kumar and S.S. Chahala, (2010) major revelation of the study is that none of the selected farmers sold his produce to the government agencies in the regulated markets. This happened due to the reason that food procurement agencies are not buying maize in the regulated markets which depressed the maize prices in the regulated markets as compared to the MSP for maize. This calls for an effective price policy for maize, which will go a long way to make the maize crop remunerative enough to compete with its competing crops. There is also need to evolve high yielding varieties of maize which will help to raise returns per unit of land area by enhancing the productivity.

Morla Raja Krishna Murthy, Sugur Ajay Kumar (2015), in the value chain analysis of maize, the major constraints and challenges faced by the farmers in the study area are observed as farm inputs, weed management, labour availability and cost, Pest management, fertilizer cost and seed quality are the major constraints in cultivation of the maize. Weed management occupies first place followed by labour availability and cost. Being a non-traditional maize growing area the maize production rate was very much higher and there is a huge demand for labour especially in kharif season, one of the reasons for hike in labour cost. Improved marketing would improve producer prices or increase volume of marketed farm produce, resulting in higher cash in-flow. This action would have the tendency of relaxing the household capital constraint.

Mary Evalyn Rose G. Romero (2017), in the input subsystem, seed producers and fertilizer manufacturers were hampered by high cost of production. In production, corn farmers are constrained by: (1) the laborious nature of natural farming methods, (2) the high cost of farm labor, (3) lesser yield relative to conventional farms, (4) the rigorous documentation requirements for certification and accreditation. In marketing, farmer - practitioners were constrained by: (1) the lack of developed distribution and marketing outlets for organic/chemical free green corn and corn grains, and (2) the absence of price premiums. Traders were stimulated by the presence of few or absence of competitors and growing consumer awareness about different value added products. Processors/ millers were constrained by the increasing cost for repairs and maintenance, and the rising cost of fuel and electricity.

Jack Daly Danny Hamrick Gary Gereffi Andrew Guinn, (2018), as per the analysis, the maize value chain can be divided into five categories: inputs; production; aggregation; processing; and marketing and distribution. The key impediments to maize production amongst smallholder farmers in Sub-Saharan Africa include production, that is, only a few farmers use fertilizer or purchase improved seeds. There is high uncertainty about rainfall and lack of credit further constrains the market. Storage is limited by liquidity constraints, capacity, and high storage losses. The sales of maize are highly fragmented among a small number of farmers. Farmers are predominantly selling small amounts of maize in the village to traders. Farmers also lack information about prices in nearby markets and do not have cost-effective means of transporting maize individually. However, low levels of trust between farmers limit collective sales or transportation.

### **2.3 Strategies for sustainable business model for the farmers led organizations.**

Irani Committee Report on the Companies Act (2004) has observed that the administration and management of producer companies are not in tune with the general framework for companies with liabilities limited by shares/guarantees. In addition, the shareholding of a producer company imposed restrictions on its transferability, thereby preventing the shareholders from exercising their exit options through a market-determined structure. According to the Committee, it was

also not feasible to make this structure amenable to a competitive market for corporate control. Therefore, they recommended the adoption of a separate act to deal with the regulation of such producer companies.

Murray (2006) stated that of the three stages of evolution, in the first stage, producer companies would provide technical services and inputs to farmers or pooling produce for collective marketing. In the second stage, corporate come together with farmers to share prosperity in the farming community through commercial farmer corporate or retailer partnerships. In the final stage, producer companies having their own processing infrastructure and developing their own identity, brands and supply chain may emerge.

Sharma (2008) opined that as the producer company falls under the jurisdiction of a central government act, the possibility of interference from the state government or from the Registrar of Co-operatives does not exist. Freedom to appropriate surplus to promote new initiatives, alliances, subsidiaries, and joint ventures are to be enjoyed by them. This may be helpful in facilitating better forward linkages.

According to Sivakumar (2011), challenges before any agribusiness institution is to integrate small farmers into the market and benefit them in an efficient, equitable, sustainable, and transparent manner. Cooperatives in Kerala have been successful in benefiting small farmers only in a limited manner. The role of Producer Companies is becoming increasingly significant now. Their inclination towards sustainable agricultural practices is obviously more as they are owned and controlled by the farmers.

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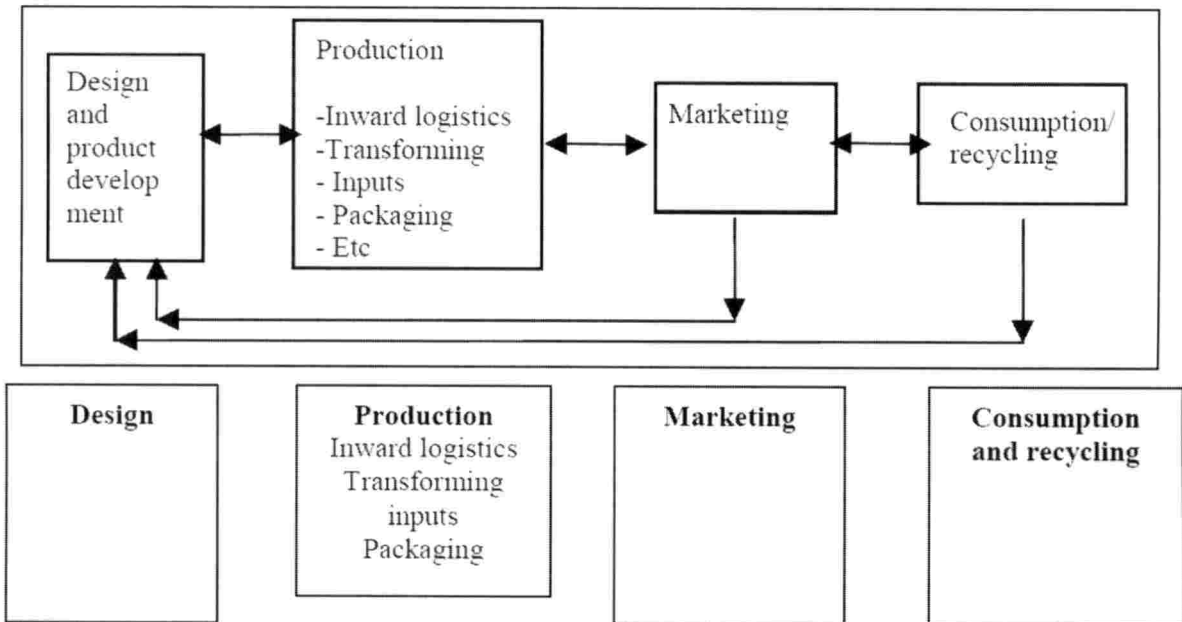
Nelson Mango, Lawrence Mapemba, Hardwick Tchale, Clifton Makate, Nothando Dunjana and Mark Lundy. 2018 Maize value chain analysis: A case of smallholder maize production and marketing in selected areas of Malawi and Mozambique.

## 2.4 VALUECHAIN THEORETICAL FRAMEWORK

### 2.4.1 Theoretical framework of value chain

The value chain describes the full range of activities, which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and to final disposal after use (Kaplinsky 1999: Kaplinsky and Morris 2001). Considered in its general form, it takes the shape as described in Figure 1. As can be seen from this, production *per se* is only one of a number of value added *links*. Moreover, there are ranges of activities within each link of the chain.

Fig 2.1 Four links in simple value chain



Source Raphael Kaplinsky and Mike Morris, 2000

Although often depicted as a vertical chain, intra-chain linkages are most often of a two-way nature – for example, specialized design agencies not only influence the nature of the production process and marketing, but also are in turn influenced by the constraints in the downstream links in the chain.

The broad approach to value chain looks at the complex range of activities implemented by various actors (primary producers, processors and traders, service providers) to bring a raw

material to the retail of the final product. The broad value chain starts from the production system of the raw materials and will move along the linkages with other enterprises engaged in trading, assembling, processing etc.

Value chain actors are those individuals or institutions that conduct transactions in a particular product as it moves through the value chain. These may include input suppliers, farmers, traders, processors, wholesalers, retailers, and final consumers. In many cases, there is more than one type of source actor, as well as multiple channels that supply more than one final market.

### **2.4.2 Concepts of Value Chain:**

There is a considerable overlap between the concept of a value chain and similar concepts used in other contexts. One important source of confusion - particularly in earlier years before the value chains outlined, became increasingly widespread in the research and policy domain - was one of nomenclature and arose from the work of Michael E Porter in the mid-1980s. There are three different approaches

1. Filiere approach
2. Porters approach
3. Global approach

#### **2.4.2.1 Filiere approach**

The concept, which is similar in some respects to the value chain, is the filiere (whose literal meaning in French is a "thread"). It is used to describe the flow of physical inputs and services in the production of a final product (a good or a service). In terms of its concern with quantitative technical relationships, it is essentially not different from the Porter and Womack and Jones' value stream. The analysis mainly served as a tool to study the ways in which the agricultural production systems (especially rubber, cotton, coffee and cocoa) were organized in the context of developing countries. The early filiere analysis emphasized local economic multiplier effects of input-output relations between firms. It focuses on efficiency gains resulting from scale economies, transaction and transport costs, etc.

#### **2.4.2.2 Porters approach**

Porter distinguished important elements of modern value chain analysis. Different stages of supply (inbound logistics, operations, outbound logistics, marketing and sales, and after sales service), the transformation of inputs into outputs (production, logistics, quality and continuous



improvement processes), and the support services the firm marshals to accomplish the task (strategic planning, human resource management, technology development and procurement).

All the value chain functions need not be performed within a single link in the chain, but may be provided by other links (for example, by outsourcing). Porter refers to these essentially intra-link activities as the value chain. Porter complements this discussion of intra-link functions with the concept of the multilinked value chain itself, which he refers to as the value system. The value system basically extends his idea of the value chain to inter-link linkages. In essence, therefore, the elements in Porter's analysis are subsumed by modern value chain analysis.

#### **2.4.2.3 Global approach**

A third concept, which has been used to describe the value chain, is that of global commodity chains, introduced into the literature by Gereffi during the mid- 1990s. Gereffi's contribution has enabled important advances to be made in the analytical and normative usage of the value chain concept. Particularly, because of its focus on the power relations, which are embedded in value chain analysis. By explicitly focusing on the coordination of globally dispersed, but linked, production systems, Gereffi has shown that many chains are characterized by a dominant party (or sometimes parties) who determine the overall character of the chain, and as lead firm(s) becomes responsible for upgrading activities within individual links and coordinating interaction between the links. This is a role of 'governance', and here a distinction is made between two types of governances: those cases where the coordination is undertaken by buyers ('buyer-driven commodity chains') and those in which producers play the key role ('producer driven commodity chains').

#### **2.4.3 Why value chain analysis is important?**

- With the growing division of labour and the global dispersion of the production of components, systemic competitiveness has become increasingly important.
- Efficiency in production is only a necessary condition for successfully penetrating markets.
- Entry into markets which allows for sustained income growth, makes the best of market opportunities, which ultimately requires an understanding of dynamic factors within the whole value chain.

#### **2.4.4 Different types of value chains**

Building on the concept of governance, Gereffi has made the very useful distinction between two types of value chains.

#### **2.4.4.1 Buyer driven chains:**

It describes those chains where a buyer at the apex of the chain plays the critical governing role. Buyer driven chains are characteristic of labour intensive industries (and therefore highly relevant to developing countries) such as agro-processing, footwear, clothing, furniture and toys.

#### **2.4.4.2 Producer driven chains:**

The second describes a world where key producers in the chain, generally commanding vital technologies, play the role of coordinating the various links -producer-driven chains. Here producers take responsibility for assisting the efficiency of both their suppliers and their customers. In more recent work, Gereffi has pointed out that producer driven chains are more likely to be characterized by Foreign Direct Investment (FDI) than are buyer-driven chains (Gereffi, 1999). He also argues that each of these different types of value chain is associated with different types of production systems.

More contentious is the suggestion that producer driven chains are a reflection of the old "import substituting industrialization order", whereas buyer-driven chains are more attuned to the outward-oriented and networked production systems of the 21<sup>st</sup> century. In most value chains there are multiple points of governance, (in all three areas of legislative, judicial and executive governance). At any one point in time, a number of different parties may be setting rules (which may differ in nature), auditing performance and assisting producers to achieve the required standards. These parties may be from within the chains themselves or in the local community or in business associations. There may thus be overlaps between vertical and horizontal form governance. The intangibles are to be found in all links - for example, the control of logistics in the production phase, the conceptual phase in advertising. But certain links in the value chain are particularly rich in intangible activities, such as design and branding, and the coordination of the chain itself. The shift from producer- to buyer-driven chains is therefore illusory and arises because at this point in the competitive cycle, branding and marketing are becoming increasingly important in many chains. However, close examinations of chains will however show a pervasive shift to a wider arena of intangibles and it is because of this that a chain can simultaneously appear to be both buyer- and producer-driven. Similarly particular product families (for example, toys or clothing) may simultaneously have buyer-driven and producer-driven chains, depending on which intangibles the lead parties dominate.

## **2.4.5 VALUE CHAIN ANALYSIS AND THE DETERMINANTS OF INCOME DISTRIBUTION**

Value chain analysis can help to explain this growing disjuncture between the global -spread of activities and incomes, particularly in a dynamic perspective.

- First, by mapping the range of activities in the chain it provides the capacity to decompose total value chain earnings into the rewards which are achieved by different stakeholders in the chain. The value of this mapping exercise should not be underestimated, because no other form of analysis provides this synoptic overview of earnings (both international and intra-national) in globally linked activities.
- Secondly, a value chain perspective analyses the way in which particular firms, regions and countries are linked to the global economy. This mode of insertion will determine to a large extent the distributional outcomes of global production systems and the capacity which individual producers have to upgrade their operations and thus to launch themselves onto a path of sustainable income growth.

The distributional outcome in the value chains is to be seen in the incomes arising to capital (for its entrepreneurship, risk-taking and ownership of technology), labour (for its effort), and to the owners of natural resources (for their command over inputs which arise as gifts of nature) in each of the links in the value chain.

### **2.4.5.1 Determinants of income distribution in value chain**

The key to understanding distributional outcomes is to be found in a focus on the incomes, which are sustained in different parts of the chain, rather than on profits.

- One may be computed by the ratio of "output" to employment. But, in this case, it needs to focus on the value added (that is output value minus input costs) rather than the gross value of sales/exports in each link of the value chain. The reasons for this are obvious - for example, a buyer near the apex of the value chain may account for only a small portion of total chain value added, but will have a very large share of the value of turnover.
- However, although the "average" incomes sustained in any particular link in the chain may help in mapping the location distribution of returns (for example, those between horticultural growers in India and those in a rich countries retail sector), it does little to tell us about the distributional outcomes within any particular link of the chain or any particular location. These incomes therefore need to be decomposed, and here which decomposition is involved

reflects the focus of enquiry. For example, it may be what economists call a functional decomposition (between labour and capital), or perhaps a gender division, a mapping of age-related earnings, ethnic earnings, or the division between skilled and unskilled workers.

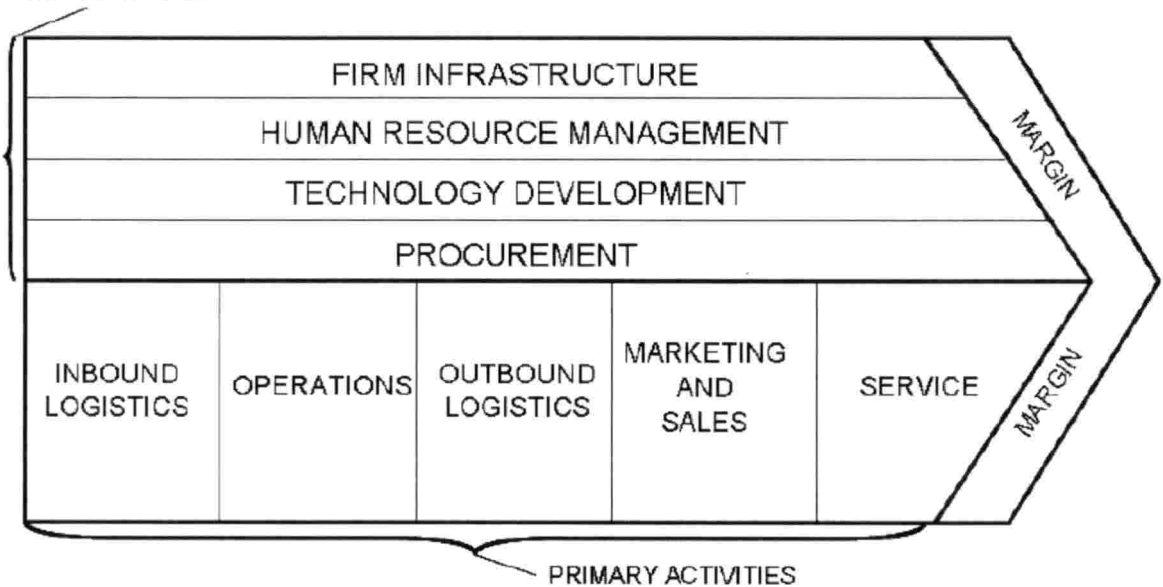
#### **2.4.6 GENERIC VALUE CHAINS STRUCTURE – Conceptual framework**

Value chain analysis is a strategic tool for assessing the value addition to a product right from its raw material stage to end use level. Raw materials supply, production, marketing and consumption stages are different activities, scattered into different geographical locations. At times, these activities may be found in different countries also. Certain stages in the value chain add more value to the final product. Generally, the income generated by production, processing and marketing activities in the value chain vertical depends on the amount of value added by these activities. Value delivery in the value chain is an integrated process. Success or efficiency of an activity in the value chain depends on the efficiency of its upstream and downstream activities. Value chain analysis can be used to assess the income and employment distribution at different stages and regions. Each activity in a value chain is a hub for creating income and employment. Policy makers at Government level may consider regional development programs based on value chain analysis.

According to Michael Porter, value chain analysis as a strategic system consists primary and supportive activities. This holistic approach, gives a better insight for analyzing the cost and benefit received at different stages and also core competency of the chain.

Fig 2.2 Porter's generic value chain diagram

SUPPORT ACTIVITIES



Source: Michael Porter, 2007

### 2.4.6.1 Value chain activities

Value chain analysis is a means of segregating various activities of a business and identifies them with respect to their contribution towards value generation by identifying the cost i.e., inputs consumed by that activity and the output generated out of that activity. Traditionally, value chain consists of two kinds of activities classified as primary and secondary activities. The primary value chain analysis is a tool for identifying potential comparative advantages. The value chain provides the firm with a comprehensive framework for systematically searching for ways to provide superior value to the customers. Every firm is a collection of activities that are performed to design, produce and market, deliver and support its products. The value chain can be desegregated into nine primary and support activities. Such a division can help a firm to understand existing and potential sources of advantage as also low value or redundant activities or processes. The nine activities consist of five primary activities and four-support activities'.

#### 2.4.6.1.1. The Primary Activities:

They represent the sequence of bringing materials into business, operating on them, sending them out, marketing them and servicing them. The primary activities comprise of the following:

- Inbound logistics (Sourcing and purchase)
- Operations (Manufacturing and allied activities)

45

- Outbound logistics (Distribution and logistics for product delivery)
- Marketing and sales (Communicating and persuading customers)
- Services (After sales service)

#### **2.4.6.1.2. The Support Activities:**

The secondary activities comprise of the following:

- Firm infrastructure (Covering the overhead of general management, planning, finance, accounting, legal and government affairs borne by all primary and support activities).
- Human resource management (Provides and manages human resources across the organization)
- Technology development (Develops means to make the existing operations more efficient and also contributes to newer means to deliver customer value).
- Procurement (Involves procuring resources other than raw material and utilities to carry out primary and secondary activities).

The term '**Margin**' implies that organizations realize a profit margin that depends on their ability to manage the linkages between all activities in the value chain. In other words, the organization is able to deliver a product / service for which the customer is willing to pay more than the sum of the costs of all the activities in the value chain.

#### **2.4.6.2 Three key elements of value chain**

Value chain analysis rests upon three key elements. These elements determine the income distribution across the different activities in the chain. The three key elements are,

1. Entry barrier and dynamic rent
2. Value chain governance
3. Systemic efficiency

##### **2.4.6.2.1 Dynamic rent:**

Generating dynamic rent in value chain through entry barriers is nothing but producers manipulating the rent through core competency and uniqueness as the common strategy. Both endogenous and exogenous factors are responsible for establishing entry barriers and rent.

##### **2.4.6.2.2 Value chain governance**

Supervising and regulating the various activities in the value chain for effective coordination is also more important. Framing rules and guidelines, ensuring that there is a perfect coordination among various activities is necessary for smooth flow of products and also proper distribution of income among the activities. There are different types of governance - judiciary, executive and

legislative governance. These supervisory functions decide who has to play which role so that there will be coordination all along the chain. In case of maize processing, value chain governance involves deciding the activities at different stages of the chain. Important value chain activities in the maize value chain are growing, procurement, shipment to factories through intermediaries, production or processing of maize by using dry or wet milling operation, shipment of main and by products of maize to tertiary processing through marketing intermediaries and marketing services. These sequential and logical steps with necessary governance minimize the wasteful activities in the maize value chain is the judiciary governance i.e., policy makers need to decide and encourage each activity. Since agro-based food industries are resources based industry, it would be more advantageous, if the production or processing units gets located near the resources.

Processing of maize is an important activity in the maize value chain. It contributes more value to the chain, and consequently more income is received by the factors of production at this stage. The judiciary governance in the maize value chain directs the location for establishing different activities of the chain. In turn, it insists on the rural industrialization to minimize the gap between industrially developed and backward regions. Maize industry creates opportunity for several other ancillary units in the region. Therefore, executive governance acts as an exogenous influencer on maize value chain. As explained by the Porter in his Porter Diamond, a manufacturing unit creates opportunity for several other units, such as raw materials, physical resources, knowledge resources, capital resources and infrastructure. According to Porter, competitive advantage of a region to produce a product more advantageously depends on factors condition, firm strategy, structure and rivalry, demand conditions, related and supporting industries etc.

#### **2.4.6.2.3 Systemic efficiency**

The emerging value chains find their basis in the systems concept of value delivery. The corporate no longer look upon the activities performed by them as the only activities that lead to value generation. The process of value delivery extends beyond the value chains of the individual firms. The concepts of value system entails the process of conversion of resources i.e. inputs to the outputs i.e. products or offerings resulting out of value addition. These outputs serve as inputs for the stakeholders' value chain. The stakeholders may consist of customers, suppliers, shareholders and even other participants to business such as government, publics etc. Such

interactions are greatly facilitated by the bridges built by advances in information technology. The integration of information's systems of suppliers and customers along with the firm's information systems greatly facilitates the operations. The reaction time has been reduced, so have the levels of inventories resulting into immense savings without tradeoff in the efficiency of the business operations. Often managers are tempted to look at the individual aspects of value delivery. Systems approach affirms the impact on value addition viewed in totality, accruing from a holistic viewpoint. This might call for a trade off in costs. In order to make the best use the specialized operations of each participant to the process of value chain, firms have realized the leverages accruing of outsourcing operations and concentrating on integration of the process and performance of those activities that provide long-term competitive advantage to the firms. Such activities may consist of brand building, making marketing more efficient etc. It is noteworthy that even the suppliers are not left behind in reaping the advantages accruing of such an arrangement. For them, their operations become the core activities and their capability to perform them in best of their ability lends them the desired competitive advantage.

#### **2.4.7 Supply Chain and Value Chain Management:**

**2.4.7.1 Value chain management (VCM)** is the management of interlinked value adding activities that converts inputs into outputs which, in turn add, to the bottom line and help create competitive advantage. A value chain management framework is established with a strategy process on the strategic level, a planning process on the tactic level and the operations process on the operational level

Supply chain management is the management of a network of interconnected business involved in the provision of product and service packages required by the end customers in supply chain.

**2.4.7.2 Supply chain management (SCM)** spans all the movement and storage of raw materials, work in progress inventory, and finished goods from point of origin to point of consumption. It includes forecasting, purchasing, production, planning, warehousing (in and out) and distribution all used to be in different parts of the organization.

#### **2.4.8 CRITICAL DIMENSIONS OF AGRO-PRODUCTS VALUE CHAIN**

More tightly aligned supply or value chains from genetics through producers and processors to end-users and consumers increasingly characterize the agricultural sector. The adoption of supply chain and qualified supplier approaches in the agricultural sector is a relatively new



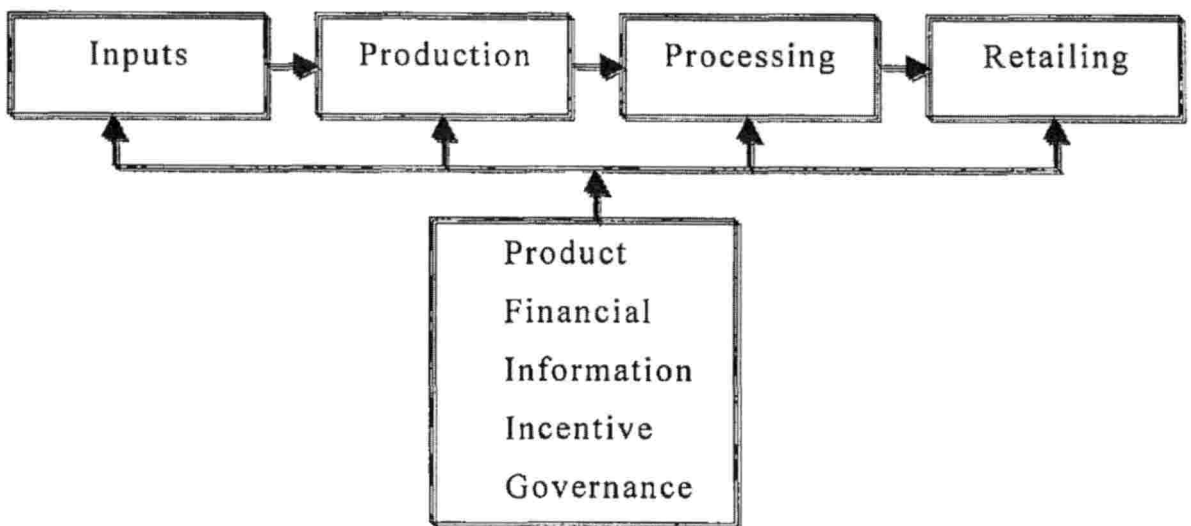
phenomena; understanding some of the critical dimensions of a supply or value chain will help to understand the implications of this new way of organizing the food production and distribution system. The fundamental concept of a supply or value chain is to explicitly specify the value creating activities in the production-distribution process, and to provide an explicit structure for the linkages among these activities or processes. For example, in the grain and oilseed production and distribution industry, the value chain might have the activities or processes and the participants depicted in below figure 2.3

- The first task in specifying a value chain is to identify the processes or activities that are necessary to create the attributes or products that will be demanded or used by the end-user or consumer.
- The second critical dimension of a value chain is the specification of the product flow features of the chain. These features would include the transportation and logistics necessary to move products between processes. The details of flow scheduling to make sure that products are available at various stages of the process without accumulating excessive inventory, the enhancement and maintenance of various quality attributes, and the full utilization of plant and equipment in all stages of the value chain to reduce down-time or bottle-necks. At the same time, a critical issue in managing the product flow in a supply chain is managing slack or flexibility to accommodate unexpected interruptions or events. Concepts of statistical process control, inventory management, and logistics management are critical to understand the product flow dimension of a value chain.
- The third important dimension of a value chain is the financial or cash flow across the participants and processes. Recent development of electronic funds transfer technology has improved the efficiency of financial and funds flow compared to earlier systems of billing and check writing. An additional element of this dimension is the sharing of financial performance information across the stages or processes and participants in the chain. Such information is typically presumed to be proprietary in nature, but more open sharing of financial information between chain participants may be critical to improving the financial and physical performance of that chain.
- A fourth critical dimension of a value chain is the information flow across the chain. Important elements of this dimension are the accuracy of messages (whether messages are signals or noise), the strength of these messages, the cost of messaging, the speed of

transmitting and receiving messages, and the openness to sharing rather than retaining critical information among participants. The information flow characteristics of a chain are becoming increasingly critical to its performance.

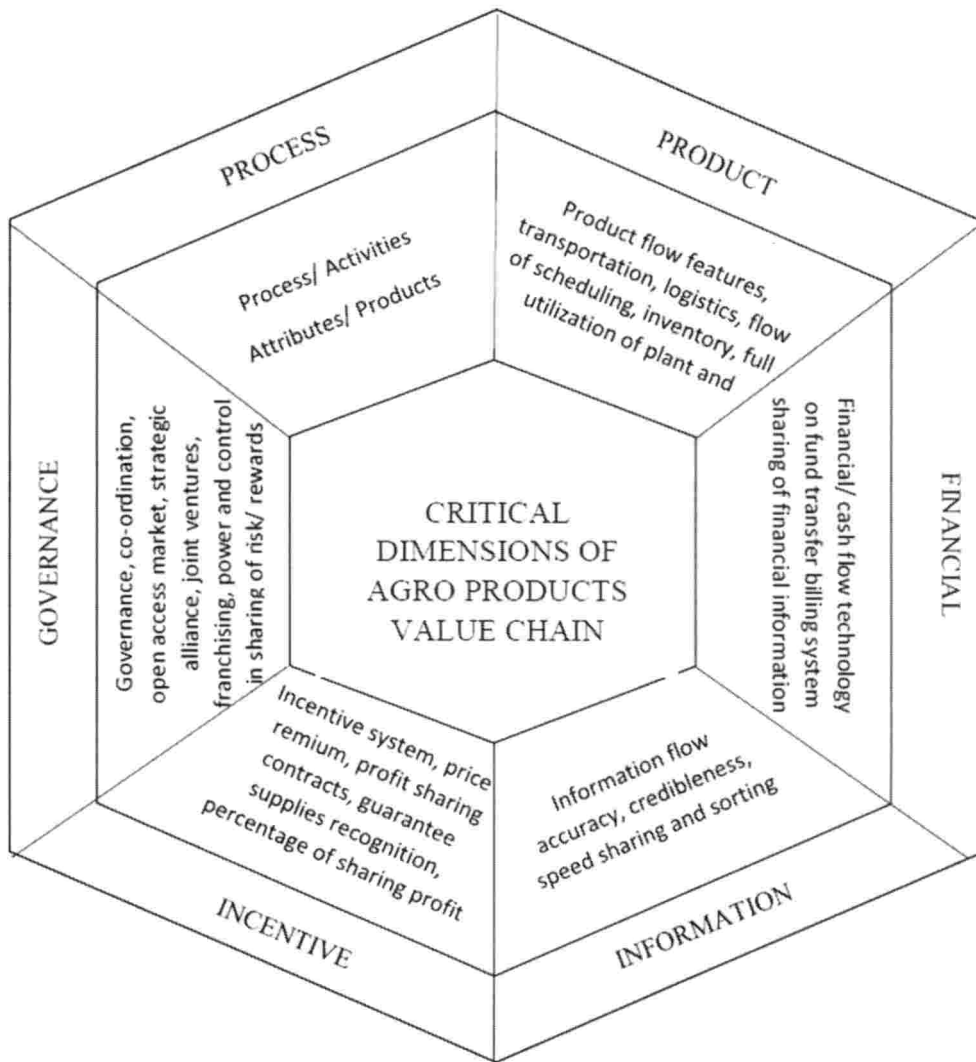
- A fifth important dimension of a value chain is the incentive systems that are in place to reward performance and share risk. Such systems might include price premiums, profit sharing, minimum pricing arrangements, window contracts, cash flow or financial assistance contracts, loan guarantees, qualified supplier recognition programs, cost sharing arrangements, long-term commitments, and knowledge on market access. Increasingly, the conflicts encountered with more rigid contract and similar incentive systems that do not adjust with market conditions and development of more flexible incentive systems such as contribution based percentage sharing of final product gross revenue.
- A sixth and final dimension of a value chain is the chain governance / coordination system. Alternative governance or coordination systems might include open access markets and various forms of contracts, strategic alliance, and joint ventures, franchising arrangements, networks, cooperatives and vertical ownership. The choice of governance / coordination system will have a significant impact on who has power and control in a value chain and how risks and rewards are shared. The figure 2.3 given below provides a visual presentation of the six critical dimensions of agro products value chain.

Fig 2.3 Critical dimensions of a value chain for agro products



Source: Michael and Lee F.Schrader, Journal of production agriculture

Fig 2.4 Six critical dimensions of a value chain for agro products



Source: Modified by the author

## 2.4.9 VALUE CHAIN MAPPING

Mapping is a process of making a pictorial representation of the VCA Mapping is considered as the tool of the value chain.

Steps involved in value chain mapping:

The value chain mapping is done by adopting the following steps:

### 1. Mapping the core processes of the value chain

The first step is to find the core processes involved in the value chain. The core process will differ depending upon the characteristics of the chain mapped.

## **2. Identifying and mapping the main actors involved in mapping.**

The next step is to map the people who are involved in the chain. In many chains, especially the poor or weaker markets, there is often no pure specialization. One actor will take on several roles.

## **3. Mapping of specific activities undertaken by actors from the core processes.**

Mapping the specific activities helps in further developing the chain. This is done by breaking down the core processes into the specific activities.

## **4. Mapping flow of products.**

This involves identifying the product at each stage of the process as they are transferred from inputs to raw materials and to final products. Mapping these flows create a clear picture of what forms of product are handles, transformed and transported at each process stage of the value chain.

## **5. Mapping the volume of products, number of actors and number of jobs in the value chain.**

Some dimensions in value chain mapping can be quantified. For example, what is the volume of products, the number of actors and the number of jobs?

The volume of products is closely related to mapping the product flow. The dimension of volume is added to following the product through the value chain. Finding out the volume of product makes it possible to have an overview of the size of the different channels within the value chain.

## **6. Mapping the geographical flow of the good or service**

Based on the mapping of process, actors and product flow, it is relatively straight forward to develop a geographical map following the trail of the product or service that is to be mapped. The first step is to identify where each of the process in the value chain are physically located, Start at the place of origin and map how the product travels from intermediary trader to wholesaler, retailer and final consumer

## **7. Mapping the value at different levels of value chain**

A core element of value chain mapping is to map the monetary value throughout the chain.

## **8. Mapping relationships and linkage between value chain actors**

It starts with mapping the actors in the value chain. The next step is to analyze the kind of relationship actors have with each other. Relationships can exist between process steps and within the same process step. Relationships or linkages between similar actors can be mapped according to three broad categories.

- **Spot market relations:**

These are relationships that are created "on the spot". Actors make a transaction with the duration and scope of that specific transaction.

- **Persistent network relation:**

In this case, actors have preference for transacting with each other time and time again. This comes with a higher level of trust and some level of independence.

- **Horizontal integration:**

This goes beyond the definition of a "relationship" since both actors share the same ownership.

## **9. Mapping the business services that feed into the value chain.**

A potential risk with value chain analysis is that the world surrounding the value chain is not taken into account. Crucial information might be found in the rules and regulations that are governing (parts of) the value chain or in services that are feeding into the chain. Mapping these services will give an overview of the potential for interventions outside the value chain itself.

## **10. Mapping constraints and potential solutions**

Constraints exist at almost all process of value chain. Initial identification of these constraints should be made at all process levels and in addition, identification of all potential solutions can be made,

### **2.4.10 Value chain analysis:**

Value chain analysis is the method for accounting and presenting the value that is created in a product or service as it is transformed from raw inputs to a final product consumed by end users. (FIAS 2007)

It is an analytical tool that helps to understand the way in which firms (large and small) are integrated and linked in the value chain. (Kaplinsky and Morris 2000).

Value chain analysis is the process of breaking chain into its constituent parts in order to better understand its structure and functioning. The analysis consists of identifying the chain actors at each stage and discerning their functions and relationships: determining the chain governance or leadership to facilitate chain formation and strengthening; and identifying value adding activities in the chain and assigning costs and added value to each of those activities. The flows of goods, information and finance through the various stages of the chain are evaluated in order to detect problems or identify opportunities to improve contribution of specific actors and the overall performance of the chain.

### **2.4.11 Conclusion**

Value Chain Analysis is a useful way of thinking through the ways in which we deliver value to our customers, and reviewing all of the things we can do to maximize that value It takes place as a three stage process:

- Activity Analysis, where we have to identify the activities that contribute to the delivery of your product or service.
- Value Analysis, where we have to identify the things that our customers in the way we conduct each activity, and then work out the changes that are needed.
- Evaluation and Planning, where you decide what changes to make and plan how you will make them.

*Chapter III*  
**COMPANY PROFILE**

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## CHAPTER III

### PROFILE OF THE COMPANY

SWAKRUSHI FARMER PRODUCER Company Limited, it is a means to collectivising small & marginal farmers, decreasing the production cost and increasing the farmers' income, build up ownership in an efficient manner with self-sustainability and self-reliance. It was established in the year 2016 and registered under Companies act, 2013.

It consists of 1000 farmer share holders, out of which 10 people were elected as Board of directors. The share capital was up to 10, 00,000 i.e. each member contribution is 1000 Rs. There are two subsidiaries under Swakrushi FPCL, Vermi compost unit, Seed and Feed processing unit.

Swakrushi FPCL has a storage godown in the Peechara village granted by NABARD, for storing the agricultural inputs.

Timely Provision of quality inputs including seeds, pesticides and fertilizers are the main activities of Swakrushi FPCL. Produce purchasing from farmers during season, process and store the produce to sell the same during off-season or when market price is high, sell their produce are the main activities of Swakrushi FPCL. The additional income generated through sale of produce during higher market prices will be credited into the FPO member's account. The Swakrushi FPO had undertaken exposure visits to Mulkanoor Cooperative Society, Eco Green Unit Coimbatore, Tamil Nadu Agriculture University and also trainings with Agriculture experts according to farmer's expectations and needs. Exposure visits, Trainings are undertaken regularly.

Swakrushi FPCL had established 15000 Metric Tons capacity 3 Godowns at Rampur Industrial Area located very near to National Highway to run the business activities.

The main activities being undertaken at Swakrushi FPCL are:

1. Trading of Paddy
2. Paddy Seed Processing Unit
3. Maize Seed Processing Unit (not yet commenced)
4. Cattle Feed manufacturing Unit



5. Organic Neem Powder & Vermi Compost Manufacturing Unit
6. Input Supply to farmers

***CHAPTER IV***  
***ANALYSIS, FINDINGS AND***  
***DISCUSSION***

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## CHAPTER IV

### ANALYSIS, FINDINGS AND DISCUSSION

The farmer producer organizations are known as Farmer's collective business processes. We need collective business processes, because the producers, who are one node of the value chain, are small holder farmers. Their land holdings are fragmented, scattered, they are heterogeneous in nature. There is tremendous pressure on the limited arable land. The heterogeneity in the people comes from the farming attitudes. The nature of the producer, whether subsistence or commercial, the existing land tenure regimes - whether a large farmer or a small farmer, whether the farmer has any other employment and non-agricultural income had led to the formation of collective business processes.

Therefore a very heterogeneous set of people available, who have to be involved in this node called producers. Finally there is very poor infrastructure support in rural areas, which resource poor farmers can access. One of the viable options among the poor farmers is that, they could try and extract value from their products, as neighbours and peer groups together as a collective. Such attempt adds strength in terms of number could pool their assets, resources, to become an entity of large enough, to participate in a win-win platform. If small farms to get commercially oriented, they need to have access to the right kind of technology, empower with bargaining power to have effective negotiations in business processes. They need to coordinate with policy makers, with other traders involved, with credit suppliers effectively. They understand to know how to use and leverage commonly owned assets. For which, they need to pool their resources, so as to become a strong enough entity to access the market.

Now this is the stage, where farmer producer organizations could work. The constraints of a small holder like lack of capital, low output from poor infrastructure, poor or non-existent business skills, lead inefficient markets. The said constraints of the small holders, could possibly managed with farmer producer organizations.

The farmer producer organization, established with a vision of multiple use perspective. The multiple use perspective would help farmers not only have better returns of investment, but also diversify risks and share the consequences of such risks indicates the promising impacts of the farmer producer organization. In quantitative terms, it would result indeed in better livelihood

opportunities, higher incomes, and lower risks for the farmers involved in the organization. Farmer producer organizations need to put systems in place and enabling systems, so that whatever new innovations they have can get quickly formalized. Some relationships in the value chain need to be revitalized, need to be changed. So a strategy of the FPO should also focus on revitalizing those links. Farmer producer organizations also concentrate on capacity building of all actors, but definitely of the marginalized ones. And this is to ensure that they start getting a greater fraction of the benefits from the value chain.

Value chain analysis is the process of breaking a chain into its constituent parts in order to have better understanding of its structure and function.

## **4.1 To map and analyze different processes and actors involved in the value chain of Maize.**

### **4.1.1 Value chain mapping of Maize:**

Value chain can be mapped and analyzed using value chain analysis including qualitative and quantitative tools. Mapping is a process of making pictorial representation of the value chain analysis. Mapping is considered as the depicting tool of the value chain. It is to understand the value chain analysed, with the help of models, tables, figures and diagrams; “a picture is worth a thousand words”. Making the value chain map is a way of making, what is seen and encountered more easily understood. The main objective of value chain mapping is to gain a basic overview to guide the full value chain analysis to be undertaken. It gives a simple outline of the value chain and visualizes networks to get a better understanding of linkages between actors and processes. It also, identifies the constraints at different operating levels in the value chain. Here, mapping of value chain of maize was attempted in the study area, following logical steps as prescribed by IFAD M4 P (2008):

Step 1: Mapping the core processes in the value chain of Maize

Step 2: Identifying and mapping the main actors involved in the processes

Step 3: Mapping the specific activities undertaken by actors in the value chain

Step 4: Mapping the flows of product, knowledge and information

Step 5: Mapping the volume of products, numbers of actors and jobs in the value chain

Step 6: Mapping the geographical flow of the product or service

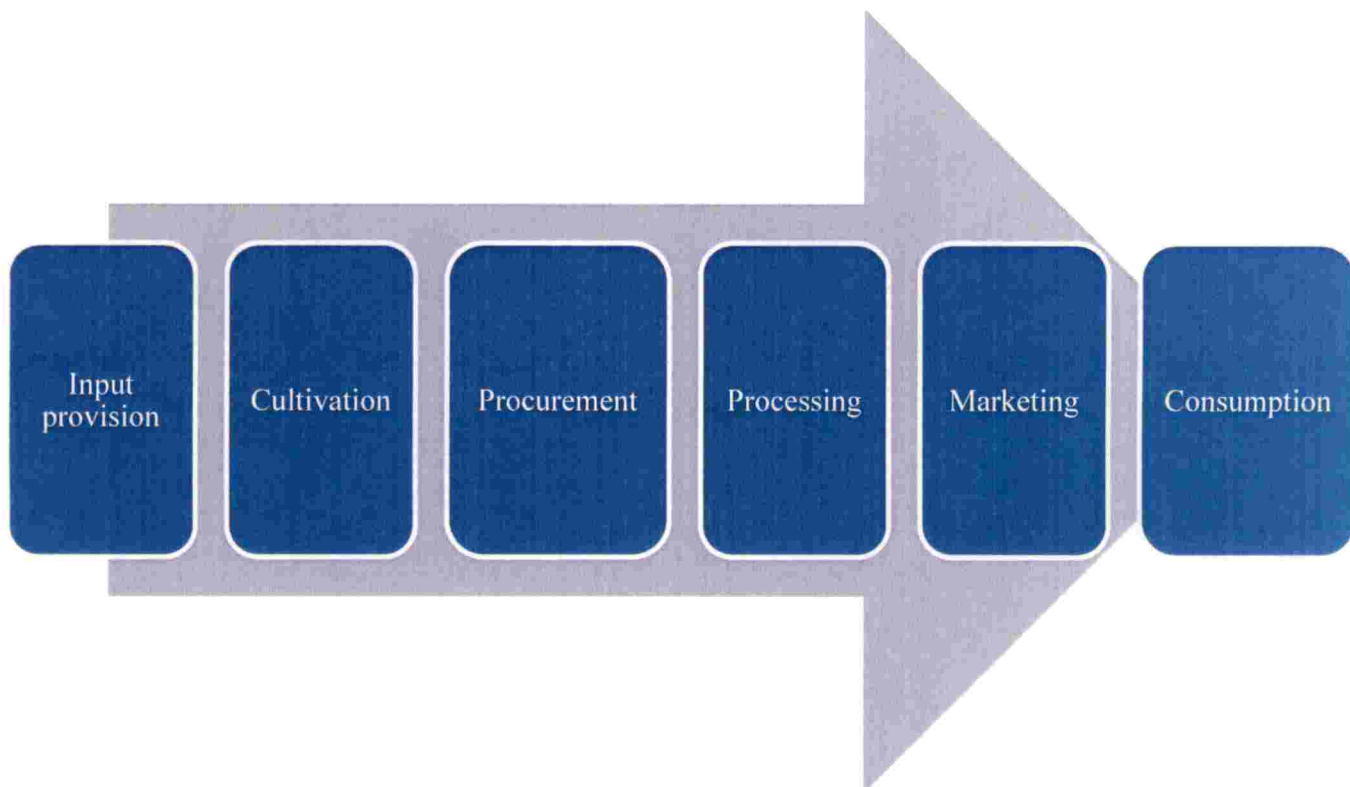
Step 7: Mapping the value at different levels of the value chain

Step 8: Mapping relationships and linkages between value chain actors

Step 9: Mapping services that feed into the value chain

Step 10: Mapping constraints at different levels of value chain.

### **Fig 4.1 Core processes in maize**



Source: Primary data

#### **4.1.1.1 Core processes**

The core processes encompassed all the major processes from input supply to reaches the final consumption stage. Input provision, farming, procurement, processing, marketing and

consumption are the core process normally seen in maize value chain. Input provision is the first stage of the value chain. It covers the supply of Maize seeds, herbicides, fertilizers, plant protection chemicals (Pesticides, fungicides), plant nutrients, credit, and equipment need to the farmers in farming. Farming enforces the production function. Procurement can be defined as the collection and storing of maize in the form of grains. Processing means a conversion of the produce from raw to value added form. Marketing includes the exchange of the produce to the ultimate end consumer.

#### **4.1.1.1.1 Input provision:**

In India Maize is grown mainly for animal feed, because of its rich nutritional qualities. The digest ability of maize fodder is higher than Sorghum, Bajra and other non-leguminous forage crops. However, in limited occasions, it also been used for human consumption. Main agri-inputs required for growing maize were seeds, machinery, fertilizers, herbicides, pesticides, agricultural labourers, credit, knowledge and information. The farmers in the study area cultivated maize mainly for the purpose of cattle feed and they used hybrids *Lakshmi 9495*, *C.P.838*, *DeKalb*. The reported yield (35 q / acre) from this particular hybrid was more compared to other hybrids. The hybrid seeds were provided through local input dealers in Peechara village and also by the Swakrushi FPCL. The machinery like tractor, rotavator, spraying equipment, maize decorticator was usually hired from the other farmers in the same village. There were no custom hiring centers in the study area or near by the study area. Fertilizers used in maize cultivation were Urea, DAP, and Potash which are all being supplied through Swakrushi FPCL and also local input dealers (The recommended dosage of N:P:K content in fodder maize are 96:32:32). Most used agro-chemicals in the maize cultivation were herbicides (Dosth super: 7 00 ml / acre), Pesticides (Thimmet: 10 kg / acre), were provided through Swakrushi FPCL, procurement agents and local input dealers. Swakrushi FPCL has a tie up arrangement with IFFCO through which, the farmer members are benefitted by availing fertilizers, herbicides and pesticides at subsidized prices as compared to private dealers. Sowing, weeding, irrigation, spraying of chemical, fertilizer application, harvesting, and primary processing were carried out by using hired locally available agricultural labourers.

The credit requirement for the maize cultivation was availed by farmers from different sources namely: Commercial banks, commission agents and money lenders. The main source of credit

was the commission agent in the village and few farmers have utilized the crop loans from regional rural banks. Knowledge and information on fodder maize cultivation and value addition were mainly availed from Agricultural scientists at Krishi Vigyan kendra and also from the resource personnel at Professor Jayshankar Telangana State Agricultural University (PJTSAU), Hyderabad..

#### **4.1.1.1.2 Cultivation:**

Maize is cultivated with duration of 90 – 110 days in Rabi season and mainly for cattle feed purpose. The crop is mainly grown in Rabi season. After the kharif crop harvested, the field get ploughed two times with the tractor drawn plough and made into ridges and furrows. During the last plough 1/3<sup>rd</sup> dosage of nitrogen (32 Kg of Nitrogen), full dosage of Phosphorous (32 Kg of Phosphorous) and ½ dosage of Potash (16 Kg of Potassium) are applied. The seed is sown on the ridges with a spacing of 45 x 10 cm. The recommended seed rate per acre is 16 kg. Majority of the member farmers bought the seeds from the Swakrusha FPCL. Only few member farmers and all the non-member farmers bought the seeds from local input dealers. After 2 days of sowing, Atrazine was sprayed on the field with the help of knap sack sprayer. 25 days after sowing, manual weeding is carried out by involving owned and hired labour. Irrigation schedule followed once in every 15 days. Critical stages of irrigation are tasseling stage and cob formation stage. Cobs are harvested only after complete drying of the crops as standing crop. The crop is usually cut from the bottom and the cobs are removed from the plant and the husk removed immediately. Cobs were sun dried for about 24 hours. After drying of cobs, kernels get separated from the cobs in a decorticator hired from the other farmers.

#### **4.1.1.1.3 Procurement:**

The Maize produced and harvested in the study area usually sold to the commission agents in the same village. All the non-member farmers and most of the member farmers dispose their produce to the commission agents at village level. Only few member farmers disposed little of their produce to Swakrusha FPCL. This happened, because of the financial bondage between the commission agents and concerned farmers. The maize procured by such commission agents' hold up to 15 days for subsequent process.

The Agricultural Produce Marketing Committee (APMC) is a marketing board established by a state government in India. Each state which operates APMC markets geographically divides the state. Markets (mandis) are established at different places within the

state. Farmers are required to sell their produce via auction at the mandi in their region. Traders require a license to operate within a mandi. Wholesale and retail traders (e.g. shopping mall owners) and food processing companies cannot buy produce directly from a farmer. APMC, Warangal is very distant from the study area i.e. about 45km and hence farmers could prefer to sell it off in the same village. Commission agents procured the produce from farmers in and around the village and send to the cattle feed producing industries in the various districts of Telangana namely Hyderabad, Siddipet and Karimnagar based on the contract.

#### **4.1.1.1.4 Processing:**

Processing activities like de-husking and separation of kernels from the cob usually done at farmer's level whereas, milling process carried out in the processing industry in the various districts of Telangana namely Hyderabad, Siddipet and Karimnagar based on the contract and also in Swakrushi FPU.

As the maize kernels are preferred the production of cattle feed, the main processing activities undertaken are crushing of kernels into a fine powder and mixing it with other supportive raw materials used in feed production. Swakrushi FPU, a part of Swakrushi FPCL known in the study area. Two types of feed produced in the Swakrushi feed unit were feed powder and pellets. The byproduct of maize (husk) could be directly used to feed the cattle.

#### **4.1.1.1.5 Marketing:**

Marketing is the process of exchanging goods and services. The Swakrushi feed producing unit manufactures the cattle feed from the maize kernels which were bought from the member farmers and as well as from other non-members. After converted as cattle feed, and then distributed it through two channels viz., at the sales center of the Swakrushi feed unit and appointed village level dealers.

#### **4.1.1.1.6 Consumption:**

Maize is consumed very less as a cereal and more often used as Cattle feed. The feed produced out of the maize kernels along with other pulses could be used both as cattle feed and poultry feed. Both pellet form and powdered forms are preferred at the consumption level.

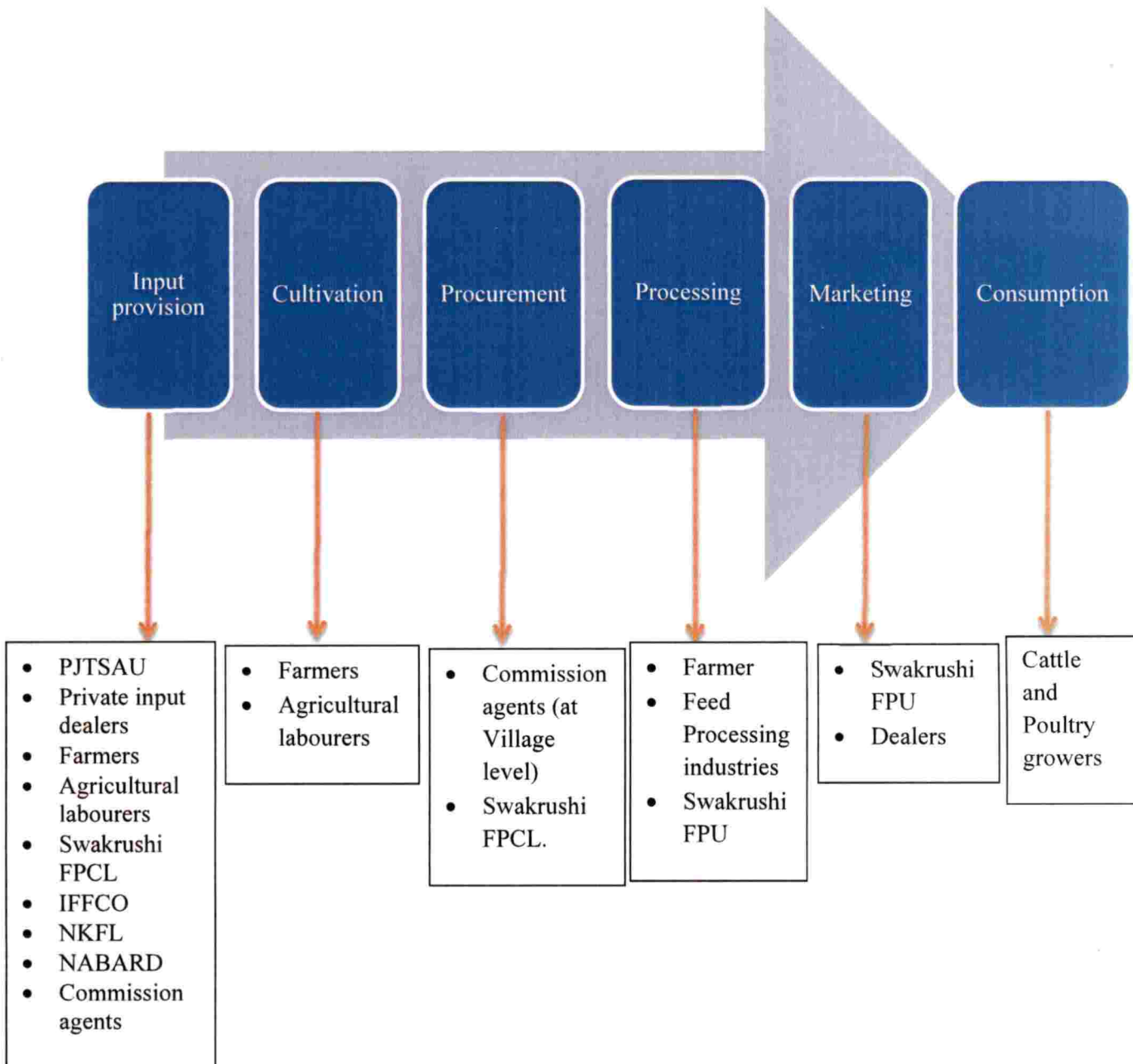
#### **4.1.1.2 Actors involved in the Process:**

Mapping of actors involved in the value chain denotes identification of persons and agencies involved in various processes of maize value chain such as input provision, farming, procurement, processing, marketing and consumption. Mapping of the actors involved in the



process would help to identify the efficiency in Maize value chain. An efficient value chain in agricultural commodities must be cost effective with only participation of necessary participants required to perform the job in any given value chain. An elongated and inefficient value chain does not create value to the participants. Mapping of actors, involved in the core processes of maize value chain is given below:

**Fig 4.2 Various actors involved in each process**



Source: Primary data

The actors involved in the core process of value chain of maize are collected by using key informants method and focus group discussion. It was found that PJTSAU, private input dealers, farmers, IFFCO, NKFL, Swakrushi FPCL, Commission agents, feed processors, Swakrushi feed processor, dealers, Cattle and Poultry growers are the major actors involved in value chain of Maize.

#### **4.1.1.2.1 INPUT PROVISION:**

The main actors involved in the input provision of maize value chain are PJTSAU, private agro-input dealers, farmers, agricultural labourers, IFFCO, NKFL, NABARD and Swakrushi FPCL, commission agents

##### **PJTSAU:**

Professor Jayshankar Telangana State Agricultural University (PJTSAU) is the Government Institution to provide technical information about new technologies, innovations, machineries which could help farmers in their cultivation. Farmers have been approaching institutions under PJTSAU like RARS, KVK for availing advisory services on pest, disease control and weed management. It regularly conducts various need based and action researches on different areas of agriculture and transfers the technology to farmers.

##### **Input dealers:**

Input dealers are private personnel at village level, who could provide farmers seeds, fertilizers, herbicides, pesticides etc. They could act as input retailers in the value chain. They have drawn the inputs from distributors and sold as retail to the farmers. There are 2 input dealers identified in the study area: Private input dealer and Swakrushi FPCL.

Swakrushi FPCL has tie up with IFFCO and provided inputs like fertilizers, pesticides and herbicides required for fodder maize cultivation at subsidized prices.

**Farmers:**

Farmers are most important actors involved in the process of Maize value chain. Both member farmers and non-member farmers are the actors in the value chain and are surveyed through focus group discussion methods. Farmer organized land, labour, capital, required material inputs for the cultivation of fodder maize. After harvesting the maize, farmers are also involved in the primary processing (separating cobs and kernels).

**Agricultural labourers:**

Agricultural labourers are the personnel inputs. They involve in cultivation activities like ploughing, land preparation, sowing, fertilizer application, manual weeding, spraying agro chemicals, harvesting the cobs, separation of kernels from cob.

**Swakrushi FPCL:**

Swakrushi FPCL is a farmer producer organization formed by the farmers in the Peechara village and registered it under Companies Act 2013. This Company provides tie ups with IFFCO to get subsidized inputs at easy reach to member farmers. It has also got a tie up with NKFL and availed fund which was utilized to purchase inputs and infrastructure.

**IFFCO:**

Indian Farmers Fertiliser Cooperative Limited, also known as IFFCO is a Multi-state cooperative society engaged in the business of manufacturing and marketing of fertilizers. It is an agreement between Swakrushi FPCL and IFFCO. It provides fertilizers, herbicides and pesticides required for the fodder maize cultivation to the member farmers during every season through Swakrushi FPCL.

**NABARD:**

NABARD has granted a building to the Swakrushi FPCL for the storage of inputs and is also the sales point where member farmers come and purchase the required inputs at a subsidized cost.

## **NKFL:**

NKFL is a subsidiary of National Bank for Agriculture and Rural Development (NABARD) with equity participation from NABARD, Govt. of Tamil Nadu, Indian Bank, Indian Overseas Bank, Tamilnad Mercantile Bank, Canara Bank, ICICI Bank, Federal Bank, Lakshmi Vilas Bank and a few Corporates / Individuals. The company is notified as a Non-Banking Finance Company (NBFC) by RBI. The main objective of the company is to provide credit for promotion, expansion and commercialization of enterprises engaged in agriculture, allied and rural non-farm activities. NKFL is providing support for livelihood/ income generating activities by extending credit to Panchayat Level Federations, Trusts, Societies and Section 25 companies/ MFIs for on-lending to its member SHGs/ JLGs.

NKFL funded the raw material cost to the Swakrushi FPCL i.e. amount required to purchase feed processing machines.

### **Commission agents at village level:**

These are the traders at village level, they provide inputs on credit basis and also they lend the money to both member farmers and non-member farmers on interest basis

#### **4.1.1.2.2 CULTIVATION:**

The main actors involved in the cultivation process of maize value chain are Farmers, Agricultural labourers.

#### **Farmers:**

Farmers are involved in cultivation of maize crop. They plough the land in such a way that makes it suitable for cultivation. They prepared broad seed bed for proper growth of seeds. They carried out timely operations from sowing to harvesting in the cultivation of maize.

#### **Agricultural labourers:**

Agricultural labourers are personnel who engaged in various activities of cultivation process. They are involved in sowing of seed, irrigation, herbicide application fertilizer application,

harvesting the cobs, decorticating activity etc. Agricultural labourers are hired and as well as owned labour engaged in cultivation process and received wages of Rs 200/ day.

#### **4.1.1.2.3 PROCUREMENT:**

The main actors involved in the procurement process of maize value chain are Commission agents at village level and Swakrushi FPCL.

##### **Commission agents at village level:**

They procured final produce from the farmers and market the produce to the cattle feed industries in various regions of Telangana State. In the current case, the commission agents are the wholesalers and they belong to the same village. After procuring they hold the produce up to 15 days till they got orders from processors. Commission agents had procured from the farmers at various prices according to the quality of grain. They had procured Maize grains at an average price of Rs1200 per quintal.

##### **Swakrushi FPCL:**

Swakrushi FPCL had also procured maize grains from member farmers. They had procured at a prices of Rs 1400 / Quintal maize grains

#### **4.1.1.2.4 PROCESSING:**

The main actors involved in the processing of maize in value chain were private feed producing industries, Swakrushi feed producing unit.

##### **Feed producing industries:**

These are the private industries producing cattle feed using maize as major Maize ingredients along with other pulses. They distributed the cattle feed through the recognized / notified distributors and dealer channels that finally could reach the cattle and poultry growers.

### **Swakrushi Feed producing unit:**

It is a subsidiary of Swakrushi FPCL. Swakrushi FPU is involved in the feed production using maize grains along with other pulses. It is producing cattle feed in the form of powder and also pellets.

#### **4.1.1.2.5 MARKETING:**

The main actors involved in the marketing process of maize value chain are Swakrushi feed sales unit, dealers.

#### **Swakrushi feed sales unit:**

They sell the cattle feed to the farmers at Swakrushi sales point and also through appointed village level dealers.

#### **Dealers:**

Dealers are the actors at local level, who could sell the cattle feed from the Private company and also Swakrushi feed company to the cattle and poultry owners.

#### **4.1.1.2.6 CONSUMPTION:**

#### **Cattle and Poultry growers:**

These are the actors of the value chain who are treated as customers. Cattle like buffaloes, cows prefer the feed produced out of maize due to its taste, palatability and also the yield of milk is high after the consumption of this feed.

### 4.1.1.3 Mapping of specific activities undertaken by the actors in the value chain of maize:

Fig 4.3 Specific activities undertaken by the actors:



Source: Primary data

The specific activities undertaken in the core processes by the various actors in the value chain of maize are shown in the above figure and each activity is explained below:

#### 4.1.1.3.1 Input provision:

Under the process of input provision, procurement of seed, purchase or hire machinery and implements required for cultivating maize were some of the specific activities carried out by farmers. Hybrids were preferred by most of the farmers as yield was more compared to open pollinated varieties. Hybrid seeds like *Lakshmi 9495*, *C.P.838*, *DeKalb* were preferred because of higher yield (each yield up to 35 quintal / acre), drought tolerance and long cobs. 16kg seed / acre required for cultivation meant for cattle feed purpose. The machinery like tractor, rotavator,

spraying equipment, maize decorticator was hired from the other farmers in the same village. Provision of inputs like pesticides, fertilizers and herbicides were performed by Swakrushi FPCL or private input dealers, commission agents. Credit for fodder maize cultivation was availed from sources like Commercial banks, private money lenders and commission agents. Credit not only includes liquid money but also inputs like pesticides, fertilizers etc.

#### **4.1.1.3.2 Cultivation:**

The main activities undertaken in maize cultivation were ploughing, land preparation, sowing, herbicide application, fertilizer application (basal and top dressing), irrigation, and weeding, harvesting, drying, separation of kernels from cob. Activities like ploughing land preparation, irrigation, primary processing are solely performed by farmers. Activities like sowing, weeding, harvesting are performed by agricultural labour including both owned and hired labour.

#### **4.1.1.3.3 Procurement:**

Procurement is the process of procuring the maize grains for further processing and marketing. Commission agents at village level procured the produce from both member farmers and non-member farmers and transport it to further processing. Swakrushi FPCL had also procured little (60 quintals) produce from the member farmers for processing.

#### **4.1.1.3.4 Processing**

Maize is cultivated mainly for cattle feed purpose. The entire produce of maize in the study area is being used for processing as cattle feed. Two types of cattle feed produced (powdered and pellets form). The main activities under processing of maize into powder form cattle feed are crushing of maize grains, addition of other raw materials (powdered form of all pulses), making powdered cattle feed. The processing of maize into pellets form follows the same procedure as mentioned earlier and it requires addition of jaggery to make pellets. Swakrushi FPCL also procured the maize produce and processed it as Cattle feed.

#### **4.1.1.3.5 Marketing**

Logistics, distribution are the main activities under marketing of cattle feed. These activities are carried out by Swakrushi Feed producing unit and other private feed producing industries.



Swakrushi feed producing unit markets the maize feed through direct selling at Swakrushi sales unit, Warangal and also through appointed dealers at village level.

**4.1.1.3.6 Consumption:**

Cattle and poultry segments prefer feed in the form of pellets and feed powder. Pellets are more preferred by cattle, because of the taste.

**4.1.1.4 Mapping the flow of product, knowledge and information:**

**Mapping the flow of products / services at various stages:**

This involves identifying the products at each stage of the process in the maize value chain as they are transformed from inputs into raw materials, to intermediate materials and to final products (feed powder and pellets). Mapping these flows creates a clear picture of what forms of products are handled, transformed and transported at each process stage of the maize value chain.

**Tab 4.1.1 Flow of products / services at various stages**

Process	Input provision	Cultivation	Procurement	Processing	Marketing	Consumption
Input form	Seeds, Machinery and implements, Agro Chemicals, credit services Advisory services on maize cultivation	Seed sowing, irrigation, plant protection chemicals, spraying, harvesting.	Procuring maize grains from farmers	Processing maize grains along with pulses and jaggery	Payment to the marketers	Consumption by cattle and poultry
Output form		Yield (Straw,	Payment to farmers	Cattle feed powder	Feed powder	High milk yield from

		cobs)	(Cash payment)	and pellets	and pellet Sales	cattle and increased no of egg production in poultry
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Source: Primary data

### Mapping the flow of information:

**Tab 4.1.2 Mapping the flow of Information**

Process/ Actors	Input provision	Cultivation	Procurement	Processing	Marketing	Consumption
Input suppliers	Price of inputs Seeds: Pendimethal in (Dosth super): Rs 480 / 700 ml Phorate (Thimmet): Rs 1000 / 10 kg					
Farmers	Information on availability and price of different agri-inputs including credit,	Information on quality standards required by the processors.	Moisture to be maintained: 8-10%, Price of the produce	Information on packaging of maize grains		

	insurance.					
Commission agents	Price of inputs Seeds: Pendimethal in (Dosth super): Rs 480 / 700 ml Phorate (Thimmet): Rs 1000 / 10 kg Interest rates for credit.		Price based on the quality of the product			
Swakrushi feed producing unit	Price of inputs Seeds: Pendimethal in (Dosth super): Rs 480 / 700 ml Phorate (Thimmet): Rs 1000 / 10 kg		Price of the produce and logistics cost	Quality standards of feed powder and pellets.	Packaging and logistics	
Retailers					Price of feed powders and pellets	
Cattle and Poultry						Price, availability and

growers						accessibility of feed powders and pellets
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Source: Primary data

**Mapping the flow of knowledge:**

**Tab 4.1.3 Mapping the flow of Knowledge**

Process/ Actors	Input provision	Cultivation	Procurement	Processing	Marketing	Consumption
Input suppliers	Knowledge on Seed rate: 16Kg/ acre and dosage of plant protection chemicals Borers: Thimmet- 10 Kg / acre, Pendimethal in: 700 ml / acre					
Farmers	.	Knowledge on Seed rate: 16Kg/ acre and dosage of plant protection chemicals				

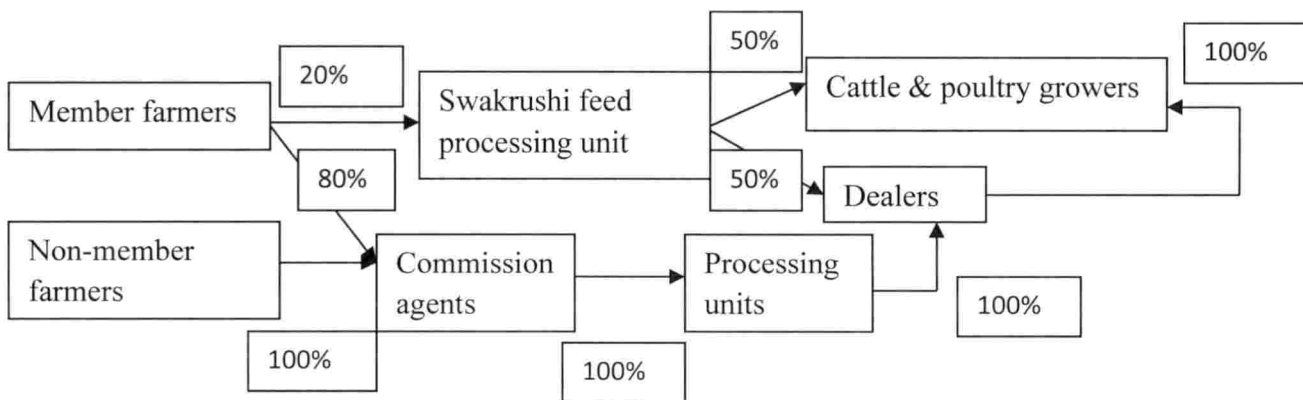
		Borers: Thimmet- 10 Kg / acre, Pendimethalin: 700 ml / acre				
Commission agents	Knowledge on Seed rate: 16Kg/acre and dosage of plant protection chemicals Borers: Thimmet- 10 Kg / acre, Pendimethalin: 700 ml / acre		Knowledge on the storage requirements of maize.			
Swakrushi feed producing unit	Knowledge on Seed rate: 16Kg/acre and dosage of plant protection chemicals Borers: Thimmet- 10 Kg / acre,	Knowledge on Good Agricultural Practices (GAP) in fodder maize cultivation		Knowledge on Good Manufacturing Practices (GMP) in maize feed production, nutritional status of feed		

	Pendimethal in: 700 ml / acre.			produced		
Retailers					Knowledge on nutritional status of the feed powder and pellets sold	
Cattle and Poultry growers						Knowledge on nutritional status of the feed powder and pellets bought

Source: Primary data

#### 4.1.1.5: Mapping the volume of products, numbers of actors and jobs in the value chain

Fig 4.4 the volume of products, numbers of actors and jobs in the value chain



Source: Primary data

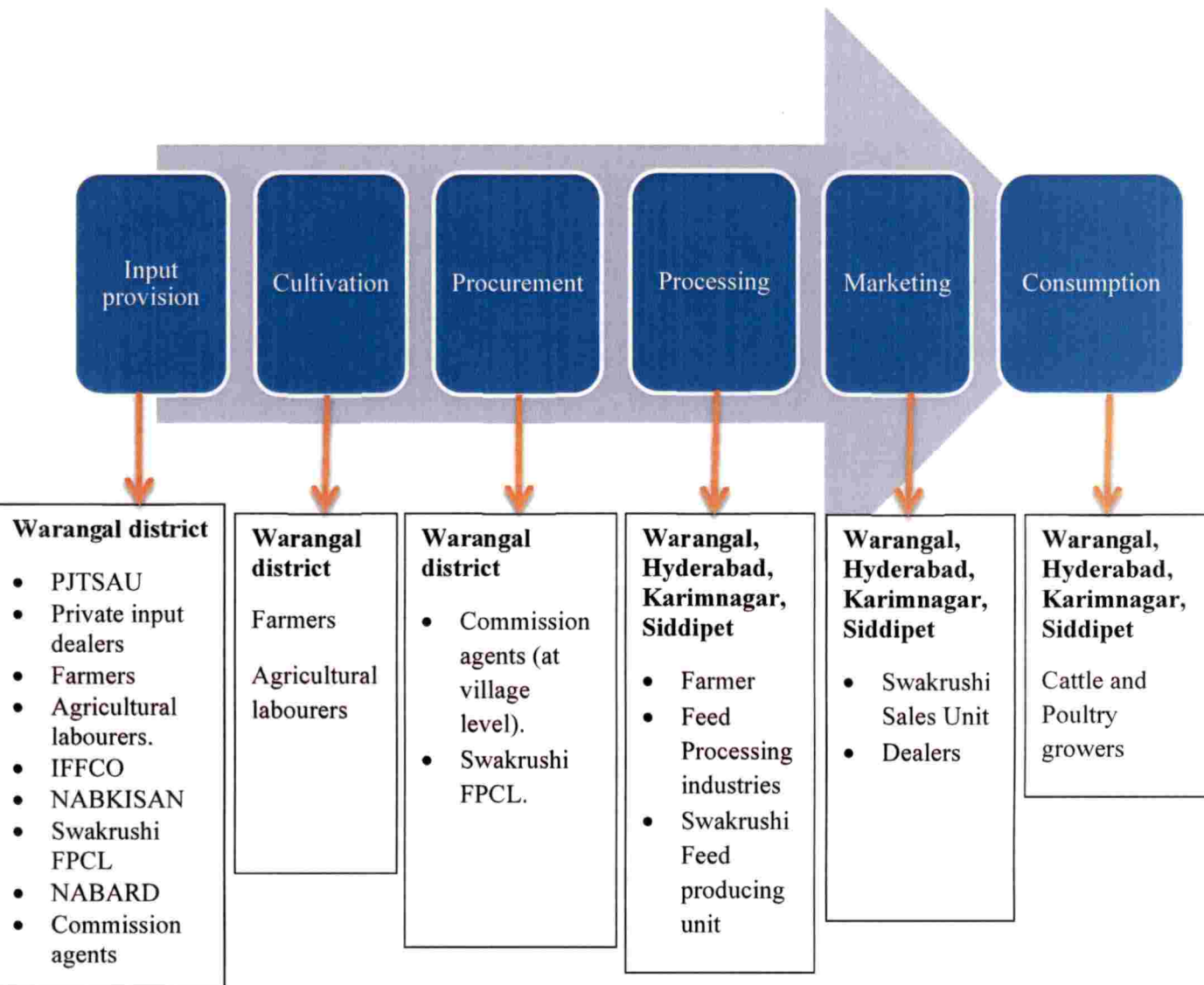
79

The figure 4.4 depicts that member farmers sell 80% quantity of the produce to the commission agents at village level and 20% of quantity to the Swakrushi feed processing unit. The commission agents in turn transfer entire (100%) of the produce to the feed processing industries. The industries and Swakrushi feed producing unit process maize grains into cattle feed. Swakrushi feed processing unit have a sales counter which accounted for 50 per cent direct sales of the produce and another 50 per cent is distributed through appointed village level dealers. The private processing industries distributed entire feed produced (100%) through its dealer network channel. Dealers would distribute to the final customers i.e. cattle and poultry growers.

#### **4.1.1.6 Mapping the geographical flow of the product:**

Mapping the geographical flow of the product involves the identification of place, where each processes in the value chain are physically located. This geographical mapping starts at the place of origin and tries to trace how the product travels from input suppliers to farmers and then to processors, retailers and to reach final consumers.

**Fig 4.5 Geographical flow of the product:**



Source: Primary data

The figure 4.5 shows the geographical flow of Maize. Warangal district ranked second in the area of Rabi maize (31702 lakh ha) and stood highest in the production (203907 tonnes) of Rabi maize (Source: 2016-2017, Directorate of economics and statistics, Govt. of Telangana). It shows

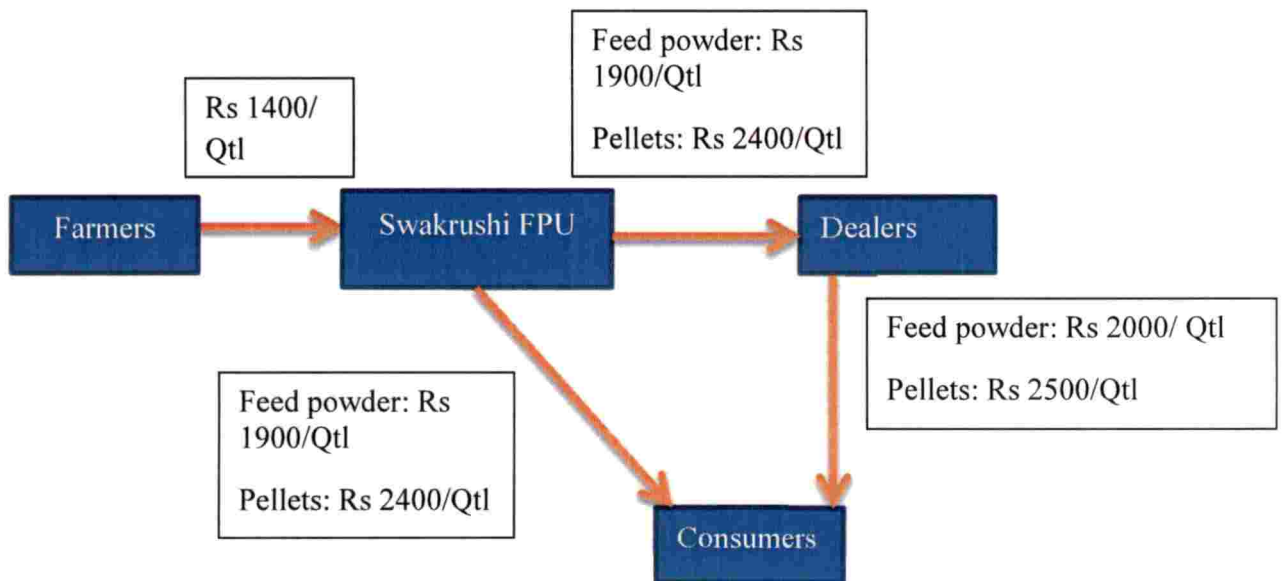


where the actors of the value chain are physically located. All the inputs required for maize cultivation is located in Warangal district. Machinery required for cultivation was hired within the village. Machinery required for primary processing was also hired by the farmers from the neighbor farmers within the village itself. Procurement is done in the Warangal district. Processing of maize into cattle feed was done in different districts including Warangal, Karimnagar, Siddipet, and Hyderabad. Consumers are mainly Cattle and Poultry growers and constitute many parts of Telangana State.

#### 4.1.1.7 Mapping the value at different levels of the value chain:

A core element of value chain mapping is to map the monetary value throughout the chain. The most straight forward depiction of a monetary flow would be to look at the value that is added at every stage throughout the chain, providing an overview of the earnings at different stages

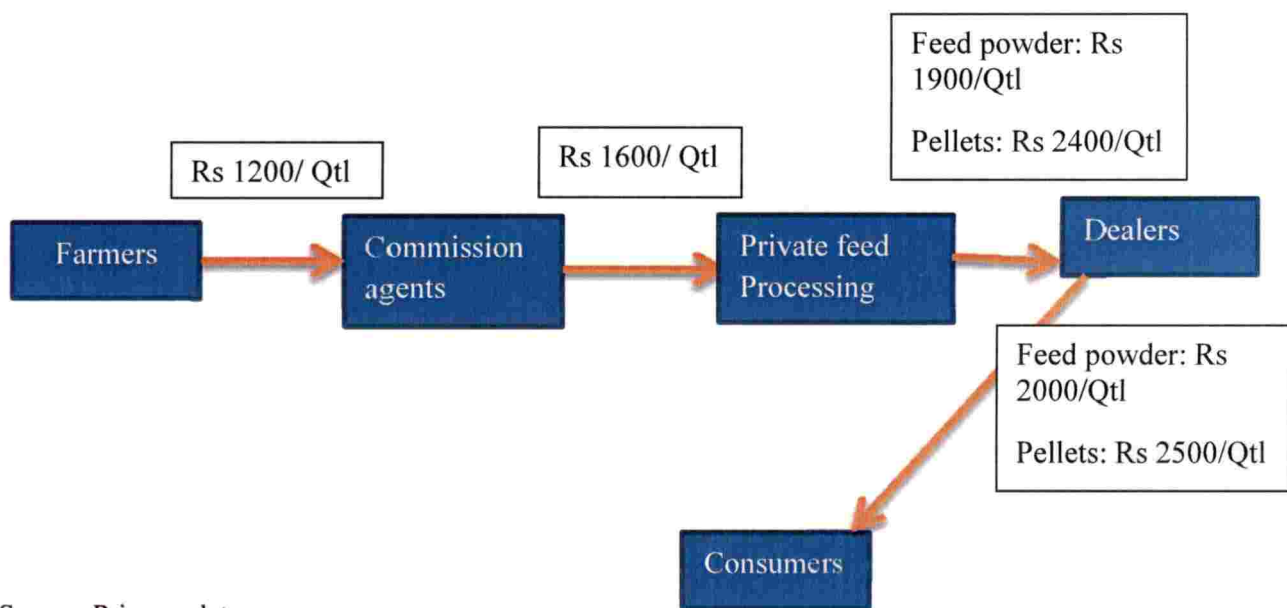
**Fig 4.6 Value at different levels of the value chain through Swakrushi FPU:**



Source: Primary data

From the figure 4.6 it can be clearly understood that that Farmers selling directly to the Swakrushi FPU got a price of Rs 1400 / Qtl. After processing, Swakrushi feed processing unit sold the maize feed powder at a price of Rs 1900/ Qtl, and pellets at a price of Rs 2400/ Qtl to the dealers and consumers. From farmers to Swakrushi FPU there is only little value added i.e. cobs are dehusked and kernels are separated from cobs. At Swakrushi FPU maize grains are converted into other feed, the core value addition happens at this stage. At dealer stage, the value added to the maize feed is transportation and storage.

**Fig 4.7 Value at different levels of the value chain through Commission agents' channel:**



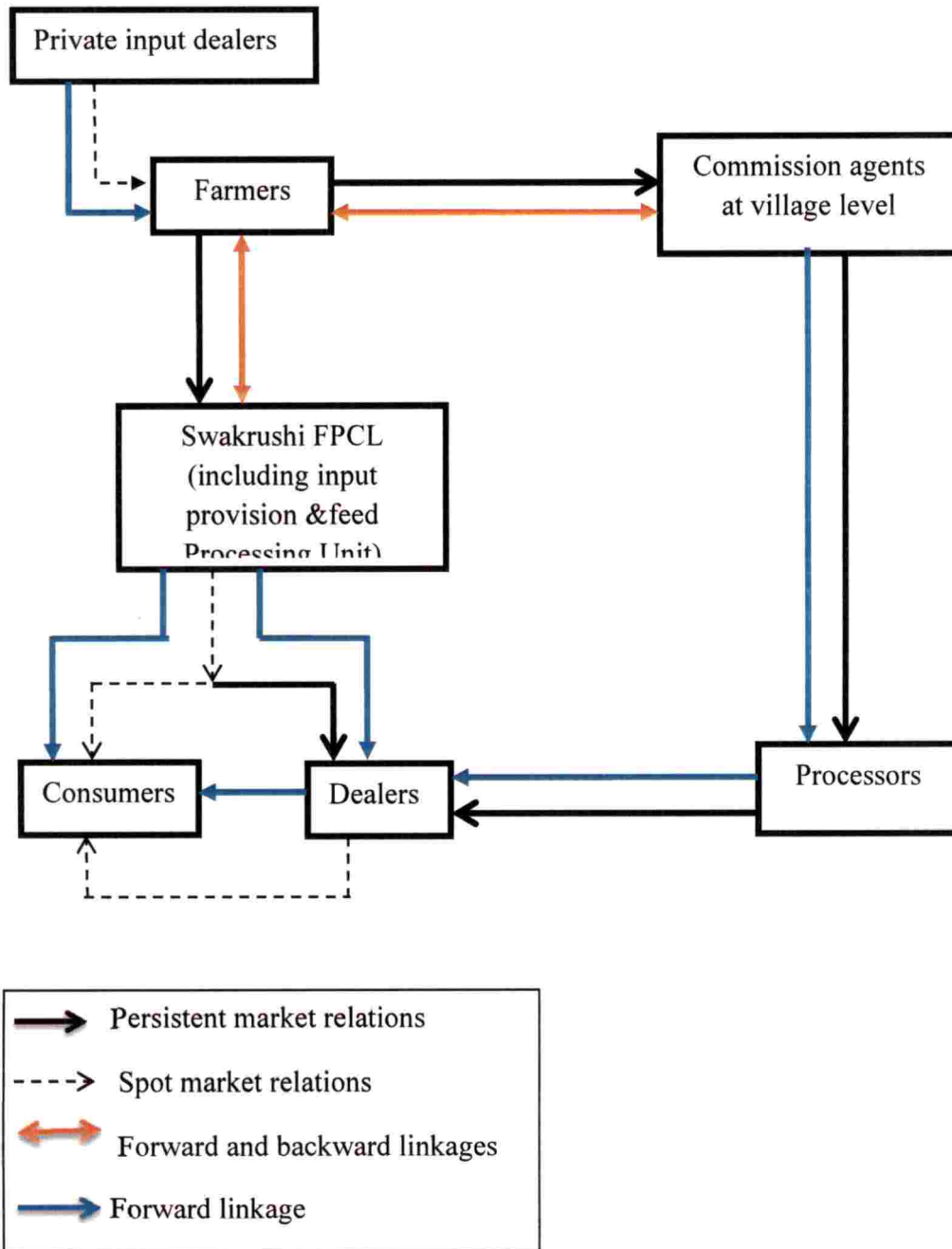
Source: Primary data

From the figure 4.7 it can be clearly understood that Farmers who sold the maize grains to commission agents got a price of Rs 1200/ Qtl In turn the commission agent sold it to Private feed processing industries in various districts of Telangana State. After processing, the private feed processing unit sold the maize feed powder at a price of Rs 1900/ Q, and pellets at a price of Rs 2400/ Q to the dealers and consumers.

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#### 4.1.1.8 Mapping relationships and linkages between value chain actor

Fig 4.8 Linkages and Relationship between various actors:



Source: Primary data

**Tab no : 4.1.1.8 Linkages and Relationship between various actors:**

Actors	Relationship linkages			
	Persistent market relations	Spot market relations	Forward linkages	Backward linkages
Input suppliers		With farmers.		With farmers
Farmers	With input suppliers, commission agents and Swakrushi FPCL & FPU			
Commission agents	With farmers and Private processors			
Swakrushi FPCL & FPU	With farmers	With consumers	With farmers, dealers	With farmers
Dealers	With Swakrushi FPU & private processors	With Consumers		
Consumers		With dealers		

Source: Primary data

**4.1.1.8.1 Persistent market relation:**

From the figure 4.7 it can be clearly understood that continuous arrow represents the persistent market relations. It shows that, there exists a persistent relation between farmers and commission agents, farmers and Swakrushi FPCL for the activities like input provision, Swakrushi FPCL and dealers for marketing of processed maize feed, commission agents and private processors for processing, private processors and dealers for marketing of processed maize feed.

**4.1.1.8.2 Spot market relations:**

From the figure 4.7, the discontinued arrow lines show the spot market relations. It means actors make only spot market transactions with each other. The relationship between private input dealers and farmers for the activities like input provision, Swakrushi FPU and consumers,

dealers and consumers for marketing processed maize feed, reveal that transactions between them are on spot.

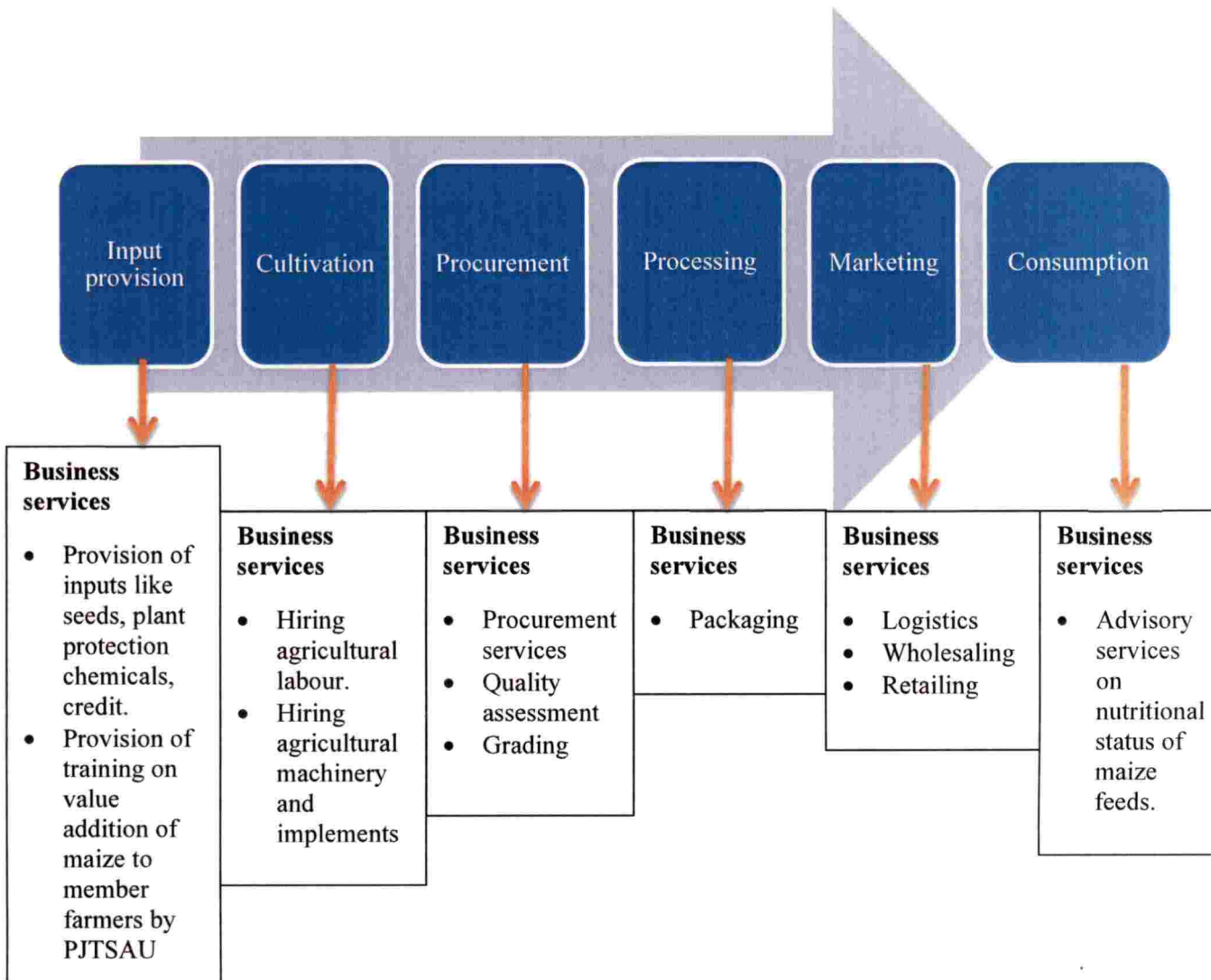
#### **4.1.1.8.3 Forward and backward linkages:**

From the fig 4.7, the relationship between input dealers and farmers, commission agents and processors, processors and dealers, dealers and consumers, Swakrushi FPCL and dealers, Swakrushi FPCL and consumers provides for forward linkages.

#### **4.1.1.9 Mapping the Business services that feed into the Maize Value chain:**

There are number of business services that feed into each process of the Maize value chain. Various kind of business services that feed at different levels of value chain

**Fig 4.9 Business services**



Source: Primary data

The above figure 4.9 indicates the various business services that feed into the maize value chain.

#### **4.1.1.9.1 Input provision:**

The business services that are involved in the process of input provision are supply of inputs like seeds, fertilizers, plant protection chemicals. These business services were provided by

Swakrushu FPCL and private input dealers locally available. Training was conducted on value addition of maize to the member farmers at National Institute of Rural Development (NIRD).

#### **4.1.1.9.2 Cultivation:**

The business services at the cultivation stage include hiring agricultural labour and agricultural machinery and implements required for maize cultivation. Labour services were availed within the village. Agricultural machinery and implements required for cultivation included tractor drawn plough, rotavator, and decorticator. These machinery and implements were hired from the neighbouring farmers within the village.

#### **4.1.1.9.3 Procurement**

The business services at procurement stage included procurement services, grading and quality assessment. Procurement services like procuring the maize grains and logistics were provided by Swakrushu FPU and commission agents locally available in the village. Commission agents had Grain Moisture Meter that measures moisture in the grains and then quality is assessed based on moisture and size of the grains.

#### **4.1.1.9.4 Processing**

Processing and Packaging of the processed maize feed was the main business service involved in processing stage of maize feed. Since, Maize was cultivated only for the purpose of cattle feed, training was given to the Swakrushu FPU supervisor on processing of cattle feed.

#### **4.1.1.9.5 Marketing:**

The main business services involved in the marketing stage of maize value chain are logistics, wholesaling and retailing. These services are provided by the processors. Swakrushu FPU distributes its feed products through two channels viz., own retailing unit and through appointed village level dealers.

#### **4.1.1.10. Mapping the constraints at different levels of value chain:**

##### **4.1.1.10.1 Farmers:**

- Unfavourable climatic conditions i.e. consecutive dry spells during 2016-17 and 2017-18.

- Lack of market place at farmer's level for selling the grains.
- Lack of technical and advisory services on production and post-production aspects from the agricultural experts.

#### **4.1.1.10.2 Commission agents:+**

- Lack of storage go-down.

#### **4.1.1.10.3 Processors:**

- Lack of knowledge on effective use of feed processing machinery.
- Only little supply of maize grains by member farmers.
- The raw material had to be bought from different places increasing transportation cost to the Swakrushu feed processors.
- Inadequate capital to run the business.
- Lack of raw material availability.
- High price competition by other big foreign market players in the study area.

#### **4.1.1.10.4 Dealers / Retailers:**

- Lack of awareness among farmers regarding nutritional aspects of maize grain feed, ultimately affecting the demand for processed maize feed.
- High transportation costs.
- Scattered customers (Cattle and poultry growers)

#### **4.1.1.10.5 Consumers:**

- Lack of awareness among farmers regarding nutritional aspects of maize grain feed
- Lack of regular supply of maize feed by Swakrushu feed processing unit.



## 4.2 To study the constraints faced by the actors involved in the value chain of Maize.

### 4.2.1 Socio economic profile of farmers:

#### 4.2.1.1 Gender of the farmer respondents

**Tab 4.2.1.1: Gender of the farmer respondents**

Gender	Member farmers		Non Member farmers	
	Frequency	Percentage	Frequency	Percentage
Male	27	90	25	83.33
Female	3	10	5	16.67
Total	30	100	30	100

Source: Primary data

From the table 4.2.1.1, it could be understood that majority of the member farmers of Swakrushu FPCL are males (90 percent) and only 10 percent are females. It is also evident that non-member farmers 83.3 percent are males and only 16.67 percent are females. It can be understood that women are more engaged in the household activities and field activities.

#### 4.2.1.2 Age wise classification of the farmer respondents

**Tab 4.2.1.2 Age wise classification of the farmer respondents**

	Marginal farmers		Small farmers		Medium farmers			
	Member farmers	Non Member farmers	Member farmers	Non Member farmers	Member farmers	Non Member farmers	Member farmers	Non Member farmers
Young aged (20-40)	6 (20)	5 (16.67)	4 (13.33)	4 (13.33)	0 (0)	0	10 (33.3)	9 (30)
Middle aged (40-60)	9 (30)	11 (36.67)	6 (20)	6 (20)	2 (6.67)	0	17 (56.67)	17 (56.67)

Old aged (Above 60)	1 (3.3)	3 (10)	1 (3.3)	1 (5)	1 (3.3)	0	3 (9.9)	4 (13.33)
	16 (53.3)	19 (63.3)	11 (36.63)	11 (36.67)	3 (9.9)	0	30	30 (100)

Figures in parentheses show percentage of total respondents

Source: Primary data

From the figure 4.2.1.2 it is evident that member farmers who were surveyed in the study area were marginal farmers accounted for (53.3 per cent) and representing middle age group (40-60) and 36.63 per cent of small farmers also representing the middle age group and medium with 9.9 per cent. The young age group represents 33.3 percent. It may be understood that young age farmers are contributing less. For old age people it is difficult to adopt new technologies, work collectively and bargain with commission agents or traders and hence Swakrushi FPCL will be a good platform increasing their margin. In general, to conclude that young to middle aged group (90.1 per cent) were the member farmer respondents of Swakrushi FPCL. The farmer category medium and old aged group found to be less. It is also evident non- member farmers who were surveyed in the study area were marginal farmers accounted for (63.3 per cent) and representing middle age group (40-60) and 36.67 per cent of small farmers also representing the middle age group. The young age group represents 30 percent.

#### 4.2.1.3 Educational Status of farmer respondents:

**Tab 4.2.1.3 Educational Status of farmer respondents:**

Educational status	Member farmers		Non Member farmers	
	Frequency	Percent	Frequency	Percent
Lower Primary School	14	46.67	11	36.7
Upper Primary School	3	10	7	23.3
High School	9	30	7	23.3
Higher Secondary School	1	3.33	4	13.3
Under Graduate	3	10	1	3.3
Total	30	100	30	100.0

Source: Primary data

From the table 4.2.1.3 it can be understood that majority of the member farmers (46.67) and non-member farmers have completed lower primary school. 30 percent member farmers and 23.3 percent non-member farmers have completed high school. 10 percent member farmers and 23.3 percent non-member farmers have passed upper primary school. 3.33 percent member farmers and 13.33 percent non-member farmers have completed higher secondary school. 10 percent member farmers and 3.3 percent non -farmers have completed Under Graduation.

**4.2.1.4 Occupation status of farmer respondents:**

**Tab 4.2.1.4 Occupation status of farmer respondents:**

			Secondary occupation				Total
			Pure Agriculture	Carpentry	Cattle	Hamali	
Member farmers	Primary occupation	Agriculture	10 (33.3)	0 (0)	15 (50)	5 (16.7)	30 (100)
Non-member farmers			7 (23.33)	2 (6)	15 (50)	6 (20)	30 (100)

Figures in parentheses show percentage of total respondents

Source: Primary data

From the table 4.2.1.4 we can understand that primary occupation of all the member farmers and non-member farmers is agriculture and secondary occupation of 50 per cent of both member famers and non-member farmers is cattle rearing and 16.7 member farmers and 20 percent non-member farmers' works as Hamali. 6 percent non-member farmers also work as carpenters for their livelihood In general it can be concluded that only 33.3 percent of member farmers and 23.3 percent non-member farmers depends purely on agriculture.

#### 4.2.1.5 Membership status of farmer respondents

**Tab 4.2.1.5 Membership status of farmer respondents**

Membership status	Member farmers		Non Members	
	Frequency	Percentage	Frequency	Percentage
Ordinary member	28	93.3	0	0
Office bearer	2	6.7	0	0
Total	30	100	0	0

Source: Primary data

From the above table 4.2.1.5 it is clear that most of the member farmer respondents (93.3 per cent) were ordinary members of the Swakrushu FPCL. Only 6.7 percent of the surveyed member farmers were office bearers (board of directors) of Swakrushu FPCL.

#### 4.2.1.6 Classification of farmers based on land holdings

**Tab 4.2.1.6 Classification of farmers based on land holdings**

Land holding	Member farmers n=30		Non-member farmers n=30	
	Frequency	Percentage	Frequency	Percentage
Marginal farmers	16	53.3	19	63.3
Small farmers	11	36.7	11	36.7
Medium farmers	3	10	0	0
Total	30	100	30	100

Source: Primary data

From the above table 4.2.1.6 we can conclude that Swakrushu FPCL is dominated by the presence of marginal farmers (53.3 per cent) followed by Small farmers (36.7 per cent). Medium farmers accounts for only 10 per cent. 63.3 percent non-members are marginal farmers and 36.7 percent non-member farmers are small farmers, there are no medium and large farmers.

#### 4.2.1.7 Purchasing source of various agro-inputs by farmers:

**Tab 4.2.1.7 Purchasing source of various agro-inputs by farmers:**

Source of agro inputs	Seeds		Fertilizers		Herbicides		Pesticides		Credit	
	Member farmers	Non-member farmers	Member farmers	Non-member farmers	Member farmers	Non-member farmers	Member farmers	Non-member farmers	Member farmers	Non-member farmers
Swakrushu FPCL	24 (80)	0 (0)	20 (66.7)	0 (0)	20 (66.7)	0 (0)	20 (66.7)	0 (0)	0 (0)	0 (0)
Cooperative institutions	3 (10)	9 (30)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Private traders	1 (3.3)	11 (36.7)	2 (6.7)	17 (56.7)	2 (6.7)	17 (56.7)	2 (6.7)	17 (56.7)	0 (0)	0 (0)
Commission agents	2 (6.7)	10 (33.3)	8 (26.7)	13 (43.3)	8 (26.7)	13 (43.3)	8 (26.7)	13 (43.3)	13 (43.3)	15 (50)
Commercial banks	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12 (40)	7 (23.3)
Money lenders	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (16.7)	2 (6.7)
Total	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)	30 (100)

Figures in parentheses show percentage of total respondents

Source: Primary data

From the figure 4.2.1.7 it is understood that majority of the member farmers (80 per cent) have purchased seeds from Swakrushu FPCL, 10 percent of the member farmers purchased seeds from cooperative institutions, 6.7 percent member farmers purchased from Commission agents and 3.3 percent member farmers purchased seeds from private traders. Majority of the member farmers (66.7 per cent) have purchased fertilizers from Swakrushu FPCL, 26.7 percent member farmers purchased from Commission agents and 6.7 percent member farmers purchased fertilizers from private traders. Majority of the member farmers (66.7 per cent) have purchased herbicides from

Swakrushu FPCL, 26.7 percent member farmers purchased from Commission agents and 6.7 percent member farmers purchased herbicides from private traders. Majority of the member farmers (66.7 per cent) have purchased pesticides from Swakrushu FPCL, 26.7 percent member farmers purchased from Commission agents and 6.7 percent member farmers purchased pesticides from private traders. 43.3 percent member farmers availed credit from commission agents and 40 per cent member farmers' availed credit from commercial agents and 16.7 percent availed credit from money lenders

The table 4.2.1.7 also represents that 36.7 per cent non-member farmers have purchased seeds from private traders, 33.3 percent of the non-member farmers purchased seeds from Commission agents, 30 percent non-member farmers purchased from cooperative institutions. Majority of the non- member farmers,(56.7) percent purchased herbicides, fertilizers, pesticides from private traders and 43.3 percent non- member farmers purchased fertilizers, herbicides and pesticides from commission agents. 50 percent of the non-member farmers have availed credit from the commission agents and 23.3 percent of the non-member farmers' availed credit from the commercial banks and 6.7 percent of the non-member farmers' availed credit from the Money lenders.

#### 4.2.1.8 Reasons to continue growing maize crop

**Tab 4.2.1.8 Reasons to continue growing maize crop**

Factors	Member farmers		Non-member farmers	
	Yes	No	Yes	No
High market value	2 (6.7)	28 (93.3)	3 (10)	27 (90)
Low Cost of cultivation	24 (80)	6 (20)	21 (70)	9 (30)
Increasing demand	21 (70)	9 (30)	21 (70)	9 (30)
Satisfactory returns	22 (73.3)	8 (26.7)	18 (60)	12 (40)

Figures in parentheses show percentage of total respondents

Source: Primary data

From the table 4.2.1.8 it can be understood that majority of the member farmer respondents (80 percent) had revealed that they continue to grow maize because of its low cost of cultivation followed by satisfactory returns (73.3 percent), increasing demand (70 per cent) and very few member farmers (6.7 percent) have reported high market value. In general it can be concluded that low cost of cultivation, satisfactory returns from maize crop and increasing demand for maize are the major reasons contributing for the continual cultivation of maize crop.

From the table 4.2.1.8 it can be understood that majority of the non-member farmer respondents (70 percent) had reported that they continue to grow maize because of its increasing demand and low cost of cultivation (70 per cent), satisfactory returns (60 percent), and very few non-member farmers (10 percent) have reported high market value. In general it can be concluded that increasing demand for maize, low cost of cultivation, and satisfactory returns from maize crop are the major reasons contributing for the non-member farmers to continue, cultivation of maize crop.

### **Technical and advisory services availed by farmer respondents**

**Tab 4.2.1.9 Technical and advisory services**

	Member farmers		Non-member farmers	
	Frequency	Percent	Frequency	Percent
Yes	4	13.33	3	10.0
No	26	86.67	27	90.0
Total	30	100	30	100.0

Source: Primary data

The table 4.2.1.9 represents that majority of the member farmers (86.67 percent) and non-member farmers (90 percent) do not avail technical and advisory services related to maize farming. Only 13.33 percent member farmers and 10 percent of non-member farmers have reported that they are availing technical services from Krishi Vigyan Kendra. Both member farmers and non-member farmers have reported that they are not getting sufficient technical advisory services from Mandal agricultural office.

#### 4.2.1.10 Marketing channel

**Tab 4.2.1.10 Marketing channel**

Marketing channel	Member farmers		Non-member farmers	
	Frequency	Percentage	Frequency	Percentage
Commission agents	18	60	30	100
Swakrushu FPU	0	0	0	0
Both	12	40	0	0
Total	30	100	30	100

Source: Primary data

From the table 4.2.1.10 it can be understood that majority of the member farmers (60 percent) farmers sell the entire produce (maize grain) to the commission agents at village level and 40 percent of the member farmers sell their produce (maize grains) to both commission agents and Swakrushu FPU. This is because of the financial bondage between commission agents and member farmers. In general all of the member farmers sell the produce (maize grains) to the commission agents at village level and 40% of the member farmers sell only little of their produce (maize grains) to Swakrushu FPU and majority of the produce (maize grains) to the commission agents. All the non-member farmers have reported that they market their produce (maize grains) through Commission agents at village level.



#### 4.2.1.11 Constraints faced by the member farmer in cultivation of fodder maize crop:

**Tab 4.2.1.11 Constraints faced by the member farmer in cultivation of fodder maize crop:**

Constraints	Least felt	Some-what felt	Moderately felt	Extremely felt	Most extreme	Score	Index	Rank
Lack of good seed	5	22	12	40	0	79	52.67	6
Lack of good quality fertiliser	10	30	15	0	0	55	36.67	10
Lack of good quality pesticides	10	40	0	0	0	50	33.33	11
Price of seeds not reasonable	7	28	21	8	0	64	42.67	7
Price of fertilizers not reasonable	17	22	6	0	0	45	30	12
Price of pesticides not reasonable	13	18	15	12	0	58	38.67	8
Non availability of labourers	0	0	3	80	45	128	85.33	4
Labour cost	0	0	9	48	75	132	88	3
Attack of pests and diseases	13	16	24	4	0	57	38	9
Lack of knowledge about application of input and supply	0	6	24	24	65	119	79.33	5
Poor climatic conditions	1	0	0	4	140	145	96.67	2
Lack of extension services	0	0	6	0	140	146	97.33	1

Source: Primary data

From the table 4.2.1.11 it is evident that the member farmers ranked lack of extension services, poor climatic conditions, labour cost, non-availability of labourers, and lack of knowledge about application of input and supply (1, 2, 3,4 and 5 ranks respectively) and were the most severely felt constrain faced by the member farmers. The main reasons behind these constraints are lack of support from Mandal agricultural officers, severe drought occurred consecutively from past three years, migration of labour leading to the scarcity of labour, ultimately causing an increase in labour cost. Lack of good seeds, prices of seeds and unreasonable prices of seeds and pesticides were the problems some-what felt by the member farmers. It was also found that lack of good quality pesticides and price of fertilizers not reasonable were the least faced constraints.

#### 4.2.1.12 Problems faced by the member farmers in marketing of the produce

**Tab 4.2.1.12.1 Respondent ranking regarding the problems in marketing of the produce**

Problems	Ranking from 1-7 based on severity of the problem						
	1	2	3	4	5	6	7
lack of fair traders	12	10	8	0	0	0	0
lack of fair price	4	9	17	0	0	0	0
lack of post-harvest operations	0	0	0	7	3	19	1
lack of storage	0	0	0	16	9	5	0
lack of transport	0	0	0	7	18	5	0
lack of market place	14	11	5	0	0	0	0
lack of demand	0	0	0	0	0	1	29

Source: Primary data

**Tab 4.2.1.12.2 Percent position and Garrett score**

Rank	Formula	Percent position	Garrett score
1	$100*(1-0.5)/7$	7.142857	78
2	$100*(2-0.5)/7$	21.42857	65
3	$100*(3-0.5)/7$	35.71429	57
4	$100*(4-0.5)/7$	50	50
5	$100*(5-0.5)/7$	64.28571	42
6	$100*(6-0.5)/7$	78.57143	34
7	$100*(7-0.5)/7$	92.85714	22

Source: Primary data

**Tab 4.2.1.12.3 Ranking according to the score obtained by multiplying with Garrett value:**

N=30 R=7	1*78	2*65	3*57	4*50	5*42	6*34	7*22	Total scores	Average scores	Rank
lack of fair traders	936	650	456	0	0	0	0	2042	68.06667	1
lack of fair price	312	585	969	0	0	0	0	1866	62.2	3
lack of post harvest operations	0	0	0	350	126	646	22	1144	38.13333	6
lack of storage	0	0	0	800	378	170	0	1348	44.93333	4
lack of transport	0	0	0	350	756	170	0	1276	42.53333	5
lack of market place	1092	715	85	0	0	0	0	1892	63.06667	2
lack of demand	0	0	0	0	0	34	638	672	22.4	7

Source: Primary data

In order to understand the actual problems that the farmers are facing in marketing of maize, the respondents were enquired on the real problems faced by them during marketing of their produce, and were asked to rank the problems according to the severity. The table 4.2.1.12.3 shows that most of the member farmers expressed that lack of fair traders is the major problem faced by them followed by lack of market place and lack of fair price. For the member farmers even though the price given by Swakrushi FPCL is more than that given by commission agents, farmers still dispose most of the produce to the commission agents because of the financial bondage. Also there is no proper access to market place and also market is situated at a distance of 45 km from the study area, most of the member farmers are disposing their produce to commission agents at village level.

#### 4.2.1.13 Cost of cultivation is calculated per acre for the fodder maize

**Tab 4.2.1.13 Cost of cultivation is calculated per acre for the fodder maize**

S.No	Item	Assumptions used	MF(Rs/ acre)	NMF (Rs/ acre)
A	OPERATIONAL COSTS			
A <sub>1</sub>	Seed	16 Kg/ acre	3000	4000
A <sub>2</sub>	Land preparation and Ploughing	2 Man days/ acre	3400	3400
A <sub>3</sub>	Sowing	4 Man days/ acre	800	800
A <sub>4</sub>	Fertilizers (N:P:K)	96:32:32 Kg/acre 3 Man days/ acre	3640	3850
A <sub>5</sub>	Plant protection chemicals:			
	Dosth super (Pendimethalin)	700 ml	1920	2080
	Thimmet (Phorate)	10 Kg		
A <sub>6</sub>	Irrigation	3 times	200	200
A <sub>7</sub>	Weeding	10 Man days/ acre	3000	3000
A <sub>8</sub>	Harvesting	5 Man days/ acre	1500	1500
A <sub>9</sub>	Dehusking	10 Man days/ acre	2000	2000
A <sub>10</sub>	Primary processing	1 Man days/ acre	800	800
A <sub>11</sub>	Interest on working capital: 7% of labour cost and material cost multiplied	$7\% * 18310 * 2/12$	238.7	252.35

	by crop period			
<b>A</b>	<b>TOTAL OPERATIONAL COSTS (TOC)</b> A <sub>1</sub> + A <sub>2</sub> + A <sub>3</sub> +A <sub>4</sub> +A <sub>5</sub> +A <sub>6</sub> +A <sub>7</sub> + A <sub>8</sub> + A <sub>9</sub> + A <sub>10</sub> + A <sub>11</sub>		<b>20698.70</b>	<b>21882.35</b>
<b>B</b>	<b>FIXED COSTS</b>			
B <sub>1</sub>	Depreciation for rotavator and knapsack hand sprayer	Estimated life: Rotavator: 10 years Knap sack sprayer: 5 years	22940	22940
B <sub>2</sub>	Rental value of owned land		6666.67	6666.67
B <sub>3</sub>	Interest on fixed capital		1056	1056
<b>B</b>	<b>FIXED COSTS: B<sub>1</sub>+ B<sub>2</sub>+ B<sub>3</sub></b>		<b>30662.67</b>	<b>30662.67</b>
<b>C</b>	<b>TOTAL COSTS( TOTAL OPERATIONAL COSTS+ FIXED COSTS)</b>		<b>51361.37</b>	<b>52545.02</b>
D	YIELD		38Q	38Q
E	PRICE/ Q		1400	1200
F	GROSS RETURNS (D*E)		53200	45600
G	NET RETURNS (F-C)		1838.63	-6945.02
H	NET OPERATIONAL RETURNS		32501.3	23717.65
I	<b>BCR = (H/TOC)</b>		<b>1.58</b>	<b>1.1</b>

Source: Primary data

The table 4.2.1.13 shows that variable cost incurred by the member farmers in cultivation of maize is Rs 20698.70 and non-member farmers incur Rs 21882.35. BCR ration for member farmers is 1.58 i.e. for every one rupee invested in maize cultivation member farmers benefit an addition of Rs 0.58. BCR ration for non- member farmers is 1.1 i.e. for every one rupee invested in maize cultivation member farmers benefit an addition of Rs 0.10

#### 4.2.1.14 COST CONCEPTS:

##### 4.2.1.14.1 Cost A1

**Cost A1:** Value of purchased input materials (seeds, plant protection chemicals, fertilizers), hired human labour, machinery labour, animal labour, depreciation on farm implementation and farm buildings, irrigation charges, taxes and interest on working capital.

**Tab 4.2.1.14.1 Cost A1**

Items	Assumptions	Member farmers	Non-member farmers
Hired human labour	2	6900	6900
Hired machinery labour	2	2800	2800
Purchased value of seeds	Seed rate: 16 Kg/ acre	3000	4000
Fertilizers	96:32:32 Kg/acre	3040	3250
Plant protection chemicals		1320	1480
Interest on working capital		238.7	252.3
Depreciation		22940	22940
TOTAL		40238.7	41608.35

Source: Primary data

The Table no 4.2.1.12.1 shows the cost A1 and it includes hired human and machinery labour, purchased value of inputs, interest on working capital and depreciation. The difference between Member farmers and non-member farmers is up to Rs 1400 per acre. This difference explains a farmer can enjoy benefits being a member and also incurs less cost compared to being a non-member. As member farmers got inputs at a subsidized cost, he incurred less cost of cultivation compared to non-member farmers.

#### 4.2.1.14.2 CostA2:

**Cost A2 = A1+Imputed value of family labour**

**Tab 4.2.1.14.2: Cost A2**

Item	Member farmers	Non-member farmers
A1	40238.37	41608.35
Imputed value of family labour	3200	3200
TOTAL	43438.37	44808.35

Source: Primary data

#### 4.2.1.14.3 Cost B1

**Cost B1: A1+ interest on value of owned capital assets excluding land**

**Tab 4.2.1.14.3 Cost B1**

Item	Member farmers	Non-member farmers
A1	40238.37	41608.35
interest on value of owned capital assets excluding land	1056	1056
TOTAL	41294.37	42664.35

Source: Primary data

#### 4.2.1.14.4 Cost B2

**Cost B2: B1+ Rental value of owned land and rent paid for leased in land**

**Tab 4.2.1.14.4 Cost B2**

Item	Member farmers	Non-member farmers
B1	41294.37	42664.35
Rental value of owned land and rent paid for leased in land	6666.67	6666.67
TOTAL	47961.04	49331.02

Source: Primary data

#### 4.2.1.14.5 Cost C1

**Cost C1: B1+ Imputed value of family labour**

**Tab 4.2.1.14.5 Cost C1**

Item	Member farmers	Non-member farmers
B1	41294.37	42664.35
Imputed value of family labour	3200	3200
TOTAL	44494.37	45864.35

Source: Primary data

#### 4.2.14.6 Cost C2

**Cost C2: B2+ Imputed value of family labour. This is also known as Cost of cultivation**

**Tab 4.2.1.14.6 Cost C2**

Item	Member farmers	Non-member farmers
B2	47961.04	49331.01
Imputed value of family labour	3200	3200
TOTAL	51161.04	52531.01

Source: Primary data



### Cost C3

**Cost C3: Cost C2+ 10% of Cost C2 (on account of marginal functions performed by labour)**

**Tab 4.2.1.14.7 Cost C3**

Item	Member farmers	Non-member farmers
C2	51161.04	52531.01
10% of Cost C2	5116.10	5253.10
TOTAL	56277.04	57784.01

Source: Primary data

#### 4.2.1.15 Marketing efficiency:

Channels of marketing

##### Channel I:

Farmers → Commission agents → Processors → Dealers → Consumers

##### Channel II

Farmers → Swakrushi FPU → Dealers → Consumers

**Tab 4.2.1.15.1 Price and Marketing costs**

Particulars	Member farmers (Rs / Q)		Non-member farmers (Rs / Q) (Channel I)
	Channel I	Channel II	
Selling price	1200	1400	1200
Cost price (Total cost / yield)	1300	1300	1370
Marketing Costs	26.31	0	26.31

Source: Primary data

The marketing costs include the transportation of maize grains from farm gate to the place of procuring within the village. It costs 1000 Rs to transport 38 Qtls of maize grain and hence for

each quintal its marketing cost will be Rs 26.31 and the member farmers who sold their produce to Swakrushi FPU did not incur any marketing cost as it was borne by Swakrushi FPU.

**Tab 4.2.1.15.2 Marketing margin, Net marketing margin and Marketing efficiency index**

Particulars	Member farmers (Rs / Q)		Non-member farmers(Rs / Q) (Channel I)
	Channel I	Channel II	
Marketing margin (Selling price-Cost price)	-100	100	-170
Net marketing margin (Marketing margin–marketing cost)	-126.31	100	-196.384
Market efficiency index {ME = SP / (MC+ MM)}	-11.1	14	-6.11

Source: Primary data

The marketing margin received by the member farmers when marketed through Swakrushi FPCL (Channel II) is Rs 100 and when marketed through Channel I he incurs a loss of Rs 100 on every quintal of maize grain sold. In case of non-member farmer, as he has to market only through channel I, he also incurs loss of Rs 170 on every quintal of maize grain sold.

#### **4.2.2 Commission agents:**

Commission agent also known as commercial agents work as middlemen between vendors and buyers. In India, commission agent plays a major role in marketing of agricultural produce. He directly procures from the farmer and markets the produce either for further processing or direct consumption. In case of maize, commission agents in the village level procure the produce from the farmers and sell it off to processors located in various parts of Telangana.

Two commission agents were identified in the study area who procure the produce of both members and non- members and dispose the produce to the processors for further processing. They procure the produce from farmers on credit basis.

These commission agents have moisture content machines which measure the moisture of the maize grains. If the moisture reads more than 10% the grain would sent back to the farmer for further drying. If the grains are smaller in size, then the price of the produce varied from Rs 1100- Rs 1200 per quintal. The average price was Rs 1200 per quintal

The commission agents sold the produce to the processors on credit and receive the amount only after 15 days. Transportation charges are borne by processors. Transport trucks arrive into the village from where the commission agents supervise the loading of whole produce into the truck. Hamali or local loading people were employed to load the produce into the truck. Loading charges was paid by Commission agents. Each bag of maize grain (50 kg) accounts for the loading charges of Rs 5/.

As there was lack of market place and also processors were sending the ready trucks to the village itself, all the farmers were attracted to it and sell off their produce to these commission agents. Commission agents receive more than 10% additional value on each quintal produce sold. This can be exemplified by an example, in the Rabi 2017 the average price at which, farmer sold the maize grains was Rs 1200 per quintal, the commission agents sold the same produce at price Rs1600 per quintal.

#### **4.2.3 Processors**

Processors are one of the main constituent links of maize value chain. Maize is the most common grain used for cattle feed. The energy value of maize is commonly used as a standard with which other energy sources are compared. Thus, if the relative energy value of maize is taken as 100, the energy value of other grain sources is generally lower. The efficient utilization of the gross energy is mainly due to the low fiber content of the maize kernel and the high digestibility of its starch. The crude protein content of maize is relatively low, ranging from 8–11%.

Maize grains is processed into cattle feed by grinding and mixing with pulse powders. A processing unit identified in the study area i.e. Swakrushi FPU for processing maize into cattle feed. It is a subsidiary under Swakrushi FPCL and established in 2017, located in the industrial

area of Rampur, Warangal. Feed processing machinery was bought with the fund given by NKFL( NABKISAN Financial Limited).

The machinery used by Swakrushi FPU are crushing machine, mixing tank, pellet producing machine, weighing machine, bagging machine and packaging machine. The capacity of the crushing machine is 6.5 Q of grain per hour. The capacity of mixing tank is 7.5 tonnes per hour.

The major operations involved in the production of maize feed are: raw materials preparation (procurement of maize), primary crushing, assorting and measuring, fine crushing, mixing along with pulses, second crushing, pellet making, and packaging.

Since the Swakrushi FPU was established in 2017 and had operated only in one season i.e. January 2018, very few member farmers had sold their produce to the Swakrushi feed producing unit. The rest of the raw material i.e. maize grains were bought through a procuring agent.

#### **4.2.4 Dealers:**

The survey conducted revealed that there were no private dealers selling maize feed in the study area. There were only dealers appointed by Swakrushi feed processing unit in the study area. These dealers followed personal selling method of marketing maize feed. They procure the maize feed powder from the Swakrushi feed processing unit at Rs 1800/100 kg and sell it at Rs 1900/100 kg. Pellets are procured at Rs 2400/100 kg and sold at a price of Rs 2500/100 kg. Dealers get a margin of Rs 100 on every 100 kg maize feed powder. Transportation charges are borne by the dealers and it is included in the margin.

Swakrushi feed processing unit also has a retailing unit where it retails its feed products. Cattle growers poultry growers can come and directly purchase maize feed powder and pellets from the Swakrushi feed retail unit for a lesser price of Rs 1900/100 kg and Rs 2400/100 kg respectively.

#### 4.2.5 Socio economic profile of consumers:

##### 4.2.5.1 Age group of the consumers:

**Tab 4.2.5.1 Age group of the consumers:**

	Frequency	Percent
20-40 (Young age)	9	30.0
40-60 (middle aged)	20	66.7
Above 60	1	3.3
Total	30	100.0

Source: Primary data

From the table 4.2.5.1 it is evident that majority of the consumers (66.67 %) who were surveyed in the study area were representing middle age group (40-60) and 30 per cent the cattle growers were representing young age group (20-40). There were only 3.3 percent cattle growers under old age group.

##### 4.2.5.2 Gender of the consumers

**Tab 4.2.5.2 Gender of the consumers**

Gender	Frequency	Percent
Male	25	83.3
Female	5	16.7
Total	30	100.0

Source: Primary data

The table 4.2.5.2 represents that of the surveyed consumers 83.3 per cent are males and only 16.7 per cent are female members.

#### 4.2.5.3 Educational status of the consumers:

**Tab 4.2.5.3 Educational status of the consumers:**

Education	Frequency	Percent
Lower Primary School	14	46.7
Upper Primary School	5	16.7
High School	7	23.3
Higher Secondary School	3	10.0
Under Graduate	1	3.3
Total	30	100.0

Source: Primary data

The table 4.2.5.3 represents that among the 30 consumers surveyed, only 3.3 percent have passed under graduate and 10 persons have passed higher secondary school and 23.3 percent have passed high school and 16.7 have passed upper primary school. 46.7 percent consumers have passed only lower primary school.

#### 4.2.5.4 Frequency of purchase:

**Tab 4.2.5.4 Frequency of purchase:**

Frequency of purchase	Frequency	Percent
Monthly	7	23.3
once in two months	23	76.7
Total	30	100.0

Source: Primary data

The tab 4.2.5.4 shows that that, majority of the consumers (76.7 %) had purchased the feed once in two months and 23.3 percent consumers had purchased feed monthly.

#### 4.2.5.5 Place of purchase

**Tab 4.2.5.5 Place of purchase**

Place of purchase	Frequency	Percent
Swakrushu feed processing sales unit	4	13.33
Retailer shops	26	86.67
Total	30	100.0

Source: Primary data

From the table 4.2.5.5 it can be understood that 86.67 percent cattle growers are purchasing from retail shops at village level. 13.33 per cent cattle growers' purchase from the sales unit of Swakrushu feed processing company sales unit.

#### 4.2.5.6 Awareness of Value added products

**Tab 4.2.5.6 Awareness of Value added products**

S.No	Value added products	Yes	No	Total
1	Cattle feed	30 (100)	0 (0)	30 (100)
2	Corn flour	30 (100)	0 (0)	30 (100)
3	Snacks	22 (73.3)	8 (26.7)	30 (100)
4	Biscuits	3 (10)	27 (90)	30 (100)

Figures in parentheses show percentage of total respondents

Source: Primary data

Consumers were surveyed on the value added products of maize. The tab 4.2.5.6 shows that 100 per cent consumers were aware of value added products namely cattle feed and corn flour. 73.3 percent of consumers reported that they were aware of snacks made out of maize. Only 10 percent of consumers are aware of biscuits made out of maize.

#### 4.2.5.7 Consumer Satisfaction on the Maize based feed powder and pellets of Swakrushi FPU

Tab 4.2.5.7 Consumer Satisfaction on the feed powder and pellets of Swakrushi FPU

Factors	Scores	Index	Satisfaction level
Quality of product	143	95.33	HS
Accessibility of the product	121	80.67	S
Availability	59	39.33	MDS
Preferred by cattle	139	92.67	HS
Delivery services	55	36.67	MDS
Overall satisfaction	517	68.93	S

Source: Primary data

Table 4.2.2.6.6 indicates that the consumers were highly satisfied (HS) with the quality of product. Consumers have reported that feeding of cattle with Swakrushi feed products, given more milk yield. Consumer shown highly satisfied (HS) status as it is preferred by the cattle, expressed satisfaction (S) with accessibility of the product. While they were moderately dissatisfied (MDS) with the availability and delivery services of Swakrushi feed products. While considering the overall satisfaction of the consumers it was found that they were satisfied (S) with the various factors taken for studying satisfaction dimension.

### 4.3 SWOC ANALYSIS

SWOC analysis is a strategic and structured planning method used to measure Strengths, weaknesses, opportunities and challenges involved in a project or in a business venture. SWOC analysis can be carried out for a product, place, industry or a person.



### **Strengths:**

They are essentially the competitive advantages that the business possesses, and include the unique resources to which it has access, operational procedures it has perfected, technologies it owns and its unique selling point.

### **Weakness:**

They are the factors that place the business at a disadvantage against its competition. Lack of certain strengths could even be a weakness. The perception of others is also important. Knowing its own weaknesses allows a business to identify factors it should avoid in building strategic plans if it can't convert them into strengths.

### **Opportunities**

Opportunities indicate external factors that the business can take advantage of. Trends related to the business could be counted as opportunities, as could changes in government policies and regulations. Businesses can build their strategic plans around opportunities.

### **Challenges:**

Elements in the environment that could cause trouble for the business or project

SWOC analysis of Maize Value chain with reference to Swakrushi FPCL given as below:

#### **4.3.1 Strengths:**

- Tie ups with IFFCO, NKFL, which led to reduced input cost and easy availability of inputs to the farmer.
- Regular cultivation of maize in the study area
- Maize is cultivated for about 50 ha in the study area.
- Wide range of exposure visits i.e. Mulkanoor Cooperative society, training at NIRD, Hyderabad on value addition of maize.
- Development in rural areas led to more membership

#### **4.3.2 Weaknesses:**

- Lack of advisory and technical support in cultivation practices of maize

- Financial bondage between the commission agents and farmers restrict the farmers from selling the produce to Swakrushi FPCL.
- Lack of awareness among farmers regarding the activities of Swakrushi FPCL
- Lack of adequate capital.
- Subject to seasonal availability of raw material used for processing

#### **4.3.3 Opportunities:**

- Increasing demand for maize feed. The estimated demand for maize grains to process into cattle feed is 20 tonnes.
- Presence of only one intermediary ie; commission agent in the Maize value chain of the study area provides an opportunity to eliminate them easily.
- Developing trend of Farmer producer companies.
- Institutional linkages like NABARD, NKFL and IFFCO.
- Foreseen opportunity of developing brand and brand loyalty.
- APMC, Warangal is located within 45 km of distance from the study area

#### **4.3.4 Challenges:**

- Financial bondage between farmers and commission agents leading the farmers to dispose their produce to commission agents at a lower price.
- Absence of Government support in price fixation for maize
- Political discrimination in the study area.
- Availability of low quality feed materials in the market at lower prices.
- Seasonal availability of raw materials.

#### 4.3.5 COWS Matrix for the fodder maize value chain through Swakrushu FPCL:

	<b>Opportunities (O)</b>	<b>Challenges (C)</b>
<b>Strengths</b>	<ul style="list-style-type: none"> <li>• <b>Regular cultivation of maize in the study area.</b></li> <li>• Maize is cultivated for about 50 ha in the study area.</li> <li>• Development in rural areas led to more membership</li> <li>• Increasing demand for maize feed. The estimated demand for maize grains to process into cattle feed is 20 tonnes in the study area.</li> <li>• Foreseen opportunity of developing brand and brand loyalty.</li> </ul>	<ul style="list-style-type: none"> <li>• Financial bondage between farmers and commission agents leading the farmers to dispose their produce to commission agents at a lower price.</li> <li>• Absence of Government support in price fixation for maize</li> <li>• Availability of low quality feed materials in the market at lower prices.</li> <li>• Seasonal availability of raw materials.</li> </ul>
	<b>SO (Maxi-Maxi strategy)</b>	<b>SC (Maxi-Mini strategy)</b>
<b>Weakness</b>	<ul style="list-style-type: none"> <li>• Lack of advisory and technical support in cultivation practices of maize</li> <li>• Presence of only one intermediary i.e., commission agent in the Maize value chain of the study area provides an opportunity to eliminate them easily.</li> <li>• Lack of adequate capital.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of awareness among farmers regarding the activities of Swakrushu FPCL.</li> <li>• Absence of Government support in price fixation for maize</li> <li>• Political discrimination in the study area.</li> </ul>
	<b>WO (Mini-maxi strategy)</b>	<b>WC (Mini- Mini strategy)</b>

*Chapter V*

***SUMMARY OF FINDINGS, SUGGESTIONS  
AND CONCLUSION***

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## CHAPTER V

### SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

Agriculture is the backbone of the Indian economy. The economic growth of the country is directly linked to the growth in agriculture. Maize is the third most important cereal, after rice and wheat, for human food. It directly contributes almost 10 per cent to the Indian food basket and 5 per cent to the world dietary energy supply. It is the most versatile crop and is grown in more than 166 countries across the globe, including tropical, subtropical and temperate regions, from sea level to 3000 m above sea level. Maize is grown throughout the year in India. It is predominantly a kharif crop with 85 per cent of the area under cultivation in the season. It accounts for 9 per cent of total food grain production in the country.

Maize has great potentialities in contributing to total food production in India. It is cultivated in about 8.02 million ha (Source: Indiaagristat.com) with a total production of 26.63 lakh tonnes in Telangana especially in the districts of Karimnagar, Warangal, Nizamabad, Adilabad, Medak and Ranga Reddy. The crop is grown mainly for grain purposes; in urban areas it is raised round the year for green cobs and green fodder. In southern states like Karnataka, Telangana and Andhra Pradesh, Tamil Nadu maize is also grown as a Rabi crop.

The concept of value chain has now been extended to whole supply chains and distribution networks in the form of integrated value chain, with integration of seed companies (enterprises), their suppliers and customers to determinate, create, fulfill and communicate value in the global environment. Agricultural value chains in India are characterized by poor logistics, delays, and wastages and highly fragmented marketing chains often with six to ten intermediaries that weaken farmer's incentives to improve quality. The market map is a conceptual and practical tool that helps us to identify policy issues that may hinder or enhance the functioning of a value chain and also the institutions and organizations providing the services. The major actors in the maize value chain are input suppliers, producers, commission agents, processors, retailers consumers, institutional setup of state and central government.

The liberalization and privatization of Indian Agriculture saw the State withdrawing from many productive and economic functions, a space that was readily claimed by the private agribusiness sector. A lone farmer struggling with multiple circumstances beyond his control, led to the formation Farmer Producer Organization (FPO). The FPO's major operations will include supply

of seed, fertilizer and machinery, market linkages, training and networking and financial and technical advice.

## **5.1 Major findings:**

The major findings of the study are summarized below:

### **5.1.1. Input provision:**

- Sources of argil inputs for maize among the member farmers were found to be Swakrushi FPCL, Commission agents, Private traders, Cooperative institutions, Commercial banks, money lenders.
- Sources of argil inputs for maize among the non-member farmers were found to be Commission agents, Private traders, Cooperative institutions, Commercial banks, money lenders.
- Technical and advisory services were availed mainly from Krishi Vigyan Kendra, Warangal.

### **5.1.2 Cultivation:**

- The main actors involved are farmers and agricultural labourers
- Maize is cultivated mainly using hybrid seeds in the study area. These hybrids are highly responsive to the fertilizer application. Plant protections chemicals were used to control pests and diseases.
- The crop was mainly cultivated for feed purpose by both member farmers and non-member farmers and hence close planting was followed.
- Variable cost incurred by the member farmers in cultivation of maize is Rs 20698.70 and non-member farmers incurred Rs 21882.35. BCR ration for member farmers is 1.5 i.e. for every one rupee invested in maize cultivation member farmers benefit an addition of Rs 0.5. BCR ration for non- member farmers is 1.1 i.e. for every one rupee invested in maize cultivation member farmers benefit an addition of Rs 0.10.

### **5.1.3 Procurement**

- Swakrushi FPU and also local Commission agents are the main actors involved and procure the produce from both member farmers and non-member farmers.
- The price given by Swakrushi FPU was 1400 Rs / Quintal and the price given by the Commission agents was 1200 Rs / Q.

#### **5.1.4 Processing:**

- Only one processor was identified in the study area i.e. Swakrushi FPU in the study area.

#### **5.1.5 Marketing:**

- Swakrushi feed processing unit distributed the cattle feed powder and pellets through direct sales and also through appointed village level dealers.

#### **5.1.6 Consumption**

- Cattle and poultry growers are the main customers.
- They bought the feed powder from Swakrushi FPCL at a price of Rs 1800/ 100 kg and pellets at a price of Rs 2500 / 100 Kg.

#### **5.1.7 Constraints faced by various actors:**

##### **5.1.7.1 Socio economic profile of farmers**

- Majority of the member farmers of Swakrushi FPCL are males (90 %) and only 10 percent are females. It is also evident that non-member farmers 83.3 percent are males and only 16.67 percent are females. It can be understood that women are more engaged in the household activities and field activities.
- Majority of the member farmers (46.67%) and non-member farmers have completed lower primary school. 30 percent member farmers and 23.3 percent non-member farmers have completed high school. 10 percent member farmers and 23.3 percent non-member farmers have passed upper primary school. 3.33 percent member farmers and 13.33 percent non-member farmers have completed higher secondary school. 10 percent member farmers and 3.3 percent non -farmers have completed Under Graduation.
- Primary occupation of all the member farmers and non-member farmers is agriculture and secondary occupation of 50 per cent of both member famers and non-member farmers is cattle rearing and 16.7 member farmers and 20 percent non-member farmers' works as Hamali. 6 percent non-member farmers also work as carpenters for their livelihood In general it can be concluded that only 33.3 percent of member farmers and 23.3 percent non-member farmers depends purely on agriculture.
- Member farmers who were surveyed in the study area were marginal farmers accounted for (53.3%) and representing middle age group (40-60) and 36.63 per cent of small farmers also representing the middle age group and medium with 9.9 per cent. The young age group represents 33.3 percent. It may be understood that young age farmers are contributing less.

For old age people it is difficult to adopt new technologies, work collectively and bargain with commission agents or traders and hence Swakrushu FPCL will be a good platform increasing their margin. In general, to conclude that young to middle aged group (90.1%) were the member farmer respondents of Swakrushu FPCL. The farmer category medium and old aged group found to be less. It is also evident non- member farmers who were surveyed in the study area were marginal farmers accounted for (63.3%) and representing middle age group (40-60) and 36.67 per cent of small farmers also representing the middle age group. The young age group represents 30 percent.

- Most of the member farmer respondents (93.3%) were ordinary members of the Swakrushu FPCL. Only 6.7 percent of the surveyed member farmers were office bearers (board of directors) of Swakrushu FPCL.
- Majority of the member farmers (80%) have purchased seeds from Swakrushu FPCL, 10 percent of the member farmers purchased seeds from cooperative institutions, 6.7 percent member farmers purchased from Commission agents and 3.3 percent member farmers purchased seeds from private traders. Majority of the member farmers (66.7%) have purchased fertilizers from Swakrushu FPCL, 26.7 percent member farmers purchased from Commission agents and 6.7 percent member farmers purchased fertilizers from private traders. Majority of the member farmers (66.7%) have purchased herbicides from Swakrushu FPCL, 26.7 percent member farmers purchased from Commission agents and 6.7 percent member farmers purchased herbicides from private traders. Majority of the member farmers (66.7%) have purchased pesticides from Swakrushu FPCL, 26.7 percent member farmers purchased from Commission agents and 6.7 percent member farmers purchased pesticides from private traders.
- 36.7 per cent non-member farmers have purchased seeds from private traders, 33.3 percent of the non-member farmers purchased seeds from Commission agents, 30 percent non-member farmers purchased from cooperative institutions. Majority of the non- member farmers,(56.7) percent purchased herbicides, fertilizers, pesticides from private traders and 43.3 percent non- member farmers purchased fertilizers, herbicides and pesticides from commission agents. 50 percent of the non-member farmers have availed credit from the commission agents and 23.3 percent of the non-member farmers' availed credit from the commercial banks and 6.7 percent of the non-member farmers' availed credit from the Money lenders.



- Majority of the member farmer respondents (80%) had revealed that they continue to grow maize because of its low cost of cultivation followed by satisfactory returns (73.3%), increasing demand (70%) and very few member farmers (6.7%) have reported high market value. Majority of the non-member farmer respondents (70%) had reported that they continue to grow maize because of its increasing demand and low cost of cultivation (70%), satisfactory returns (60%), and very few non-member farmers (10%) have reported high market value.
- Majority of the member farmers (86.67%) and non-member farmers (90%) do not avail technical and advisory services related to maize farming. Only 13.33 percent member farmers and 10 percent of non-member farmers have reported that they are availing technical services from Krishi Vigyan Kendra. Both member farmers and non-member farmers have reported that they are not getting sufficient technical advisory services from Mandal agricultural office.
- Majority of the member farmers (60%) farmers sell the entire produce (maize grain) to the commission agents at village level and 40 percent of the member farmers sell their produce (maize grains) to both commission agents and Swakrushu FPU. This is because of the financial bondage between commission agents and member farmers. In general all of the member farmers sell the produce (maize grains) to the commission agents at village level and 40% of the member farmers sell only little of their produce (maize grains) to Swakrushu FPU and majority of the produce (maize grains) to the commission agents. All the non-member farmers have reported that they market their produce (maize grains) through Commission agents at village level.
- Member farmers ranked lack of extension services, poor climatic conditions, labour cost, non-availability of labourers, and lack of knowledge about application of input and supply (1, 2, 3,4 and 5 ranks respectively) and were the most severely felt constrain faced by the member farmers. The main reasons behind these constraints are lack of support from Mandal agricultural officers, severe drought occurred consecutively from past three years, migration of labour leading to the scarcity of labour, ultimately causing an increase in labour cost. Lack of good seeds, prices of seeds and unreasonable prices of seeds and pesticides were the problems some-what felt by the member farmers. It was also found that lack of good quality pesticides and price of fertilizers not reasonable were the least faced constraints.

- Member farmers expressed that lack of fair traders is the major problem faced by them followed by lack of market place and lack of fair price. For the member farmers even though the price given by Swakrushi FPU is more than that given by commission agents, farmers still dispose most of the produce to the commission agents because of the financial bondage. Also there is no proper access to market place and also market is situated at a distance of 45 km from the study area, most of the member farmers are disposing their produce to commission agents at village level.

#### 5.1.7.2 Socio economic profile of consumers:

- Majority of the consumers (66.67 percent) who were surveyed in the study area were representing middle age group (40-60) and 30 per cent the cattle growers were representing young age group (20-40). There were only 3.3 percent cattle growers under old age group.
- 83.3 percent were males and only 16.7 % were female members.
- Only 3.3 percent have passed under graduate and 10 persons have passed higher secondary school and 23.3 percent have passed high school and 16.7 have passed upper primary school. 46.7 percent consumers have passed only lower primary school.
- Majority of the consumers (76.7 %) had purchased the feed once in two months and 23.3 percent consumers had purchased feed monthly.
- 86.67 percent cattle growers are purchasing from retail shops at village level. 13.33 per cent cattle growers' purchase from the sales unit of Swakrushi feed processing company sales unit
- 100 per cent consumers were aware of value added products namely cattle feed and corn flour. 73.3 percent of consumers reported that they were aware of snacks made out of maize. Only 10 percent of consumers are aware of biscuits made out of maize.
- Consumers were highly satisfied (HS) with the quality of product. Consumers have reported that after feeding the cattle with Swakrushi feed products, cattle started to feed more and leading to more milk yield. This represents that the consumer is highly satisfied (HS) as it is preferred by the cattle. The study finds out that the consumers were satisfied (S) with accessibility of the product. While they were moderately dissatisfied (MDS) with the availability and delivery services of Swakrushi feed products. While considering the overall satisfaction of the consumers it was found that they were satisfied (S) with the various variables surveyed.



## **5.2 Suggestions**

Based on findings of the study, the following suggestions have been drawn to improve the cultivation and marketing of maize value chain:

### **5.2.1 Mapping the Value Chain:**

- Presently not all the member farmers are purchasing inputs from Swakrushi FPCL; therefore awareness should be created among farmers through farmer to farmer communication, promotions, advertisements by focusing the benefits.
- Regular meetings have to be conducted at Swakrushi FPCL that develops awareness among the farmers.
- The technical know-how about better crop management practices should be disseminated across the maize growers. They largely depend on the seed and input dealers, for such information, which in most of the cases is not scientific.
- Maize production marketing linkages are extremely weak and need to be strengthened. There is a need to develop mechanism for strengthening the maize production- processing- marketing system. The nearby APMC, Warangal facility could be explored for e-platform utilization.
- Swakrushi FPCL has to be strengthened with adequate Government support for marketing and processing of maize feed.
- Swakrushi FPU has to create more awareness among the farmers through advertisements showing the benefits received by the member farmers while they market their produce to Swakrushi FPU at higher prices compared to commission agents.
- Institutional linkages with Swakrushi FPCL have to be strengthened further for value addition and processing.

### **5.2.2 To analyze Constraints faced by various actors:**

#### **5.2.2.1 Farmers:**

- Trainings should be given to farmers on natural farming in maize in order decrease the excessive use of chemicals ultimately leading to reduction in cost of cultivation.

- Awareness should be spread among the farmers regarding the collective marketing through Swakrushi FPCL which ultimately yields higher returns to the farmers.
- Technical and Advisory support regarding maize cultivation should be provided to the farmers through Swakrushi FPCL.

#### **5.2.2.2 Swakrushi feed processing unit:**

- In order to improve the quality of procured maize, the company may promote Good Agriculture Practices among the member farmers by providing more training classes.
- Feed powder and pellet production should happen year round ultimately leading to year round availability of maize feed.

#### **5.2.2.3 Dealers:**

- As the maize feed powder and pellet is subject to seasonal availability, dealers are showing less interest towards the relationship between dealers and Swakrushi FPCL.
- Appropriate demand should be given as feed back to the Swakrushi feed processing unit, in order to increase the production of feed powder and pellets

#### **5.2.2.4 Consumers:**

- Delivery services have to be provided by Swakrushi FPU so that consumers can save time, efforts and money.

### **5.3 CONCLUSION:**

Agriculture is the backbone of the Indian economy. The economic growth of the country is directly linked to the growth in agriculture. Maize is the third most important cereal, after rice and wheat, for human food. It directly contributes almost 10 per cent to the Indian food basket and 5 per cent to the world dietary energy supply. It is the most versatile crop and is grown in more than 166 countries across the globe, including tropical, subtropical and temperate regions, from sea level to 3000 m above sea level. Maize is grown throughout the year in India. It is predominantly a kharif crop with 85 per cent of the area under cultivation in the season. It accounts for 9 per cent of total food grain production in the country.

The failure of government to activate regulatory bodies and strengthen public institutes has left farmers in the lurch. The middlemen are exploiting the farmers by speculating on price and weight. Farmers also face problems of seasonal price fluctuation and lack of basic marketing infrastructure.

Here lies the importance of producer companies where majority of members are the producers and development of which has many beneficial feedback effects on agriculture. The most direct one is, of course, the stimulus it provides for increased agricultural production through market expansion. In fact very often, the establishment of processing facilities is itself an essential first step towards stimulating both consumer demand for the processed product and an adequate supply of the raw material. The provision of transport, power and other infra-structural facilities required for agro industries also benefits agricultural production. The development of these industries provides a more favourable atmosphere for technical progress and the acceptance of new ideas in farming itself. Producer companies are often blamed as they have not reached the ultimate farmers.

There are 5 main actors in the fodder maize value chain namely farmers, commission agents, processors, dealers, consumers

Lack of extension services, poor climatic conditions, labour cost, non-availability of labourers, and lack of knowledge about application of input and supply were the most severely felt constrain faced by the member farmers. The main reasons behind these constraints are lack of support from Mandal agricultural officers, severe drought occurred consecutively from past three years, migration of labour leading to the scarcity of labour, ultimately causing an increase in labour cost. Lack of good seeds, prices of seeds and unreasonable prices of seeds and pesticides were the problems some-what felt by the member farmers. It was also found that lack of good quality pesticides and price of fertilizers not reasonable were the least faced constraints.

As every coin has two sides i.e. positive and negative Swakrushi FPCL also has its own limitations. As the feed processing unit commenced and operated only in one season, it takes time to establish its unique identity.



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## ***APPENDIX***

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## INTERVIEW SCHEDULE FOR INPUT SUPPLIERS IN MAIZE VALUE CHAIN

### Socio economic characteristics

1. Name of the respondent-
2. Age in Years -
3. Gender- Male  Female  Trans Gender
4. Contact Address-
5. Educational qualification

LPS		UPS		HS		HSS		UG		PG		Technical Education	
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6. Type of business:
7. Do you know the different hybrids of fodder maize cultivated? Yes/No  
If yes, please mention:
8. Name the agricultural inputs that you are selling specific for fodder maize cultivation

Particulars	
Seed	
Fertilizers	
Herbicides	
Pesticides	
Organic fertilizers	
Others (Specify)	

9. Details of purchase and sales of inputs:

Name of the inputs	Source of supply	Quantity purchased at a time (Kg)	Purchasing price (Rs)	Selling price (Rs)	Constraints
Seed					
Fertilizers					
Herbicides					
Pesticides					
Organic fertilizers					
Others (Specify)					

10. Who all are your customers?
11. Frequency of purchase of inputs by farmers cultivating maize  
a) Weekly b) By- weekly c) Monthly
12. How you are transferring the knowledge of inputs to the farmers
13. Relationship with farmers:  
a) Weak b) Strong c) Semi-strong d) No opinion
14. What about the demand for inputs?

Particulars	Low	Medium	High
Seed			
Fertilizers			
Herbicides			
Pesticides			
Organic fertilizers			
Others (Specify)			

15. From where you are getting information about market?

a) Newspapers b) Television c) Friends d) Others (Specify)

16. Promotional methods used for increasing the sales volume

a) Advertisement                                      b) Word of mouth communication  
c) Discounts    d) Others (Specify)

17. Does unawareness of farmers regarding the application of certain pesticides/fertilizers affect the sales? Yes/No

If yes, how?

18. Whether any subsidy of discount is granted for farmers? Yes/No

If yes, for what and at what rate?

19. Whether any Government policy regarding Fodder Maize affected your business? Yes/No

# INTERVIEW SCHEDULE FOR FARMERS

## Socio economic characteristics

1. Name of the respondent-

2. Age in Years -

3. Gender- Male  Female  Trans Gender

4. Contact Address-

5. Educational qualification-

LPS		UPS		HS		HSS		UG		PG		Technical Education	
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6. Occupation-

Primary

Secondary

7. Main source of livelihood : Primary/ Secondary / Both

8. Annual income

A) below 25,000

B) 25,000-50,000

C) 50,000 – 1,00,000

D) 1 lakh and above

9. Experience in Farming (Years)

10. Membership in Social Organization -----

Farmer interest groups / GIG/ FPO/Others

a. Current status of Member Position: Ordinary member / Office bearer

## PART B

### Core processes involved in Maize cultivation

11. Details of land holdings in acres

a) Area owned:

b) Area in lease:

c) Area leased out:

Total

12. Major crops grown and its season

Name of the Crop	Area in acres		Type of the crop	
	Kharif	Rabi	Main	Intercrop

13. How many years you have been involved in maize farming.....

14. Which variety or hybrid of Maize have you cultivated?

Previous Season:

Current Season:

Next Season:

15. Why did u Chose particular variety or hybrid of maize and its special attributes

Variety	Hybrid

16. Where do you get inputs for Maize Cultivation?

Particulars	Seed	Herbicides	Fertilizers	Pesticides
Own production				
Buy from Market Source / Agents				
Swakrushi Farmer Producer Company				
Fellow Farmers				
Co-operative Institutions				
Private traders / Company				
Commission agents				
Other (specify)				

17. How do you grow Maize as

- a. Main Crop
- b. Inter Crop with.....
- c. Mixed Crop

18. Why do you continue to grow this crop

- High market value: Rs
- Low cost of cultivation: Rs
- Increasing demand: Qtls
- Satisfactory return Rs
- Others - specify

19. Number of Maize plants per acre

Main Crop	Inter Crop

20. Method of cultivation

- a) Traditional method of farming
- b) Modern method of farming,
- c) Organic
- d) Others

21. Sources of irrigation: Rainfed / Irrigated

If irrigated then source of irrigation:

Method of irrigation: Ridge and furrows / drip / sprinkler

22. What are the main pests or diseases attacking the plant?

23. What are the remedial measures followed to control pests and diseases?

24. Are you availing credit - Yes / No

25. If yes , credit availing details

Source of credit	Amount	Rate of interest	Period
Cooperative banks			
Commercial banks			
Money lenders			
SHG'S			

Commission agents			
Others			

## Production aspects

26. What was the yield obtained for maize during last season?

Particulars	Pure crop	Mixed crop	Inter crop
Average yield (kg/acre)			

Particulars	Quantity in kg
Home consumption	
Seed purpose	
Marketable Surplus (MS=Production-Consumption)	
Marketed Surplus	

27. Whether are you getting any technical and advisory support for maize cultivation?

28. If yes, kindly indicate from where did you avail the service

KVK  Swakrushi FPCL  DAATTC  Others

29. What are the main problems you have faced in maize farming? Rank the problem

(Rank 1,2,3,4,5 according to the severity of the problem)

5- Most extreme 4- Extreme 3 - Moderate 2- Somewhat 1 - Least felt

Problems	1	2	3	4	5
Lack of Good seed					
Lack of good quality fertiliser					
Lack of good quality pesticides					
Price of seeds not reasonable					
Price of fertilisers are not reasonable					
Price of pesticides are not reasonable					

Non availability of labourers					
Labour cost					
Attack of pest and diseases					
High cost of irrigation					
Lack of knowledge about application of input and supply					
Poor climatic conditions					
Lack of extension services					
Others					

30. How often do you consume Maize and its product

- Daily
- Weekly
- Fortnightly
- Often but not specific duration
- Seldom

### Marketing details

31. Channel through which do you market maize crop and the quantity sold

Channel	Grain Quantity sold (in Quintals)	Price per Quintal
Farm Gate contractors		
Swakrushu FPCL		
Direct to market		
Private traders		
Commission agents		
Others		

32. Who bears the transportation and labour cost incurred in loading and unloading for the processing of produce - Self /Buyer / Shared

Cost incurred.....

33. What kind of relationship and linkage did you established with the buyer?



- a. Spot market relations
- b. Network relations
- c. Contract
- d. Other

34. Are you able to sell the marketable surplus easily - Yes/ No

35. If No, how do you manage the unsold produce?

36. Whether Maize has adequate demand in the market- Yes or No

If yes whether in Kharif / Rabi

37. Are you satisfied with the price that you are getting for your output – Yes or No

38. Price / Kg that you got till now

Maximum Price	
Minimum Price	
Average Price	

39. What are the criteria used for fixing the price of your commodity?

40. From where, you get maximum price for your maize produce – Farm gate contractors, Private traders, Swakrushi FPCL, Local market , Direct to market, Others and Why?

41. What is the value added products of Maize that you are aware of?

List it

42. Whether you have taken up any value added product from Maize? Yes/No

43. If yes,

Name of the Value added Product	Form of the product	Price
\		

44. Did you realize enough profit from Maize cultivation- Yes/No.

Whether it met your Cost of cultivation. If No why?

45. What are the problems that do you face in marketing the crop? (Rank 1,2,3,4,5,6,7 according to the intensity of the problem)

Problems	Rank from 1-7
Lack of fair traders	
Lack of fair price	
Lack of post-harvest operations	
Lack of storage	
Lack of transport	
Lack of market place	
Lack of demand	
Others specify	

**QUESTIONNAIRE FOR COMMISSION AGENTS / WHOLE SALERS / SWAKRUSHI FPCL**

1. Name of the respondent

2. Address:

3. Age (Years):

4. Gender- Male  Female  Transgender

5. Educational qualification-

Lower primary school		Upper Primary School		High School		Higher Secondary School		Under Graduate		Post Graduate	
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6. Details of procuring Maize

Different forms of procurement:

Source	Quantity procured (in quintals)	Price/Quintal	Remarks
Through Agency			
Farmer directly supply			
Swakrushi FPCL			
Own cultivation			
Others			

7. Is there any contract established between your firm and farmers? Yes/No

If yes- type of contract – oral or written?

8. Terms of contract –

a. Period of contracting in years .....

b. Commission in Percentage .....

c. Other conditions if any .....

9. Demand of Maize? (Low, Medium, High)

10. What are the factors affecting the demand of Maize?
11. Will you be able to meet the entire demand of the customer-Yes/ No
12. What about the supply – (Low, Medium, High)
13. Mode of payment – cash /credit
14. If credit, period of credit (15days / 30 days / 45 days / 60 days / 90 days )
15. Total cost incurred for various variables at Wholesaler's level

Particular	Procurement	Sales
Transportation		
Labour charge ( Loading / unloading)		
Storage / Rent (Godown)		
Godown insurance		
Total cost		

16. What are the terms of payment in non-contract basis?

**DETAILS OF SALE**

17. Details of cost of procurement and sales in the last year:

Particular	Quantity (kg)	Price
Procuring		
Sales		

18. Who is your potential / target customer
19. Do you have any storage facility Yes / No
20. If yes, what kind of facility you extend for storing the Maize?
21. How many days will you take to sell out Maize?
22. How many days you could keep the Maize without deterioration?
23. Is there any loss due to wastage or Weight loss- Yes / No

24. What is the probable estimated total loss on account of in percentage?

25. How will you compensate such loss occurred due to wastage  
...../...../.....

26. Type of marketing risk faced in unsold produce, spoilage / low price / default in payment

27. Problems in the marketing of Maize

1 - Most extreme 2 – Extreme 3 – Moderate 4. Somewhat 5 – Least felt

Problems	1	2	3	4	5
High transportation cost and heavy loss during transportation					
Lack of storage facility					
Poor quality of produce					
Non availability of processing facilities					
Lack of Marketing Information					
Other					

28. Suggestions if any?

## QUESTIONNAIRE FOR PROCESSORS

1. Name and Address of the Company:

2. Year of Establishment:

3. Plant Capacity per annum:

4. Total Investment (In Rs):

5. Total Number of Employees:

6. Nature of Milling:

Dry Milling  Wet Milling  Others

7. Please mention the procurement of maize.

a. Directly purchase from farmers.

b. Purchase from dealers.

c. Purchase from government warehouse

d. Importing

e. If, any other specify

8. Please mention the procurement cost of maize per ton.

S.No	Particulars	Amount
01	Price of raw maize	
02	Transportation cost	
03	Commission	
04	Others	

9. Procurement practice of maize:

a. Regularly according to the requirement.

b. During season and stock it.

c. If, any other practice please specify...

10. In your opinion, what type of maize is more suitable for processing?

a. Traditional

b. Hybrid.

C. Other

11. Do you have contract farming arrangement:

a. Yes.

b. No

12. Is the raw maize availability is as per your requirement?

a. Yes.

b. No

13. Are you providing any agricultural extension service to Maize growers?

a. Yes

b. No

14. If yes, which of the following areas.

- a. Seed selection
- b. Farm technology
- c. Post-harvest management
- d. If any other please specify...

15. The Maize is processed in your plant for producing which of the following end products?

- a. Food products
- b. Animal feeds
- c. Industrial product
- d. If any other specify

16. Please indicate the main and By-products obtained by processing one ton of Maize at your plant

S.No	Product	Recovery (kg/Ton)	Market Price (Rs/kg)
1	Starch		
2	Liquid Glucose		
3	Gluten		
4	Maltodextein		
5	Maize Germ		
6	Maize Husk		
7	Corn steep liquor		
8	Maize Gluten		
9	Losses		

17. Please mention the industry to which you supply the above products:

18. Please, mention the cost and proceeds of maize processing per ton in your plant:

S.No	Particulars	Amount
1	Cost of Procurement	
2	Processing cost	
3	Sales proceeds	
4	Cost Benefit Ratio	

19. Where do you market the end products obtained from Maize processing,  
a. Local Market, b. National market c. International Market
20. In your opinion, which are the following products are economically more viable. ( If your answer is more than one rank them in order)
- a. Food products  
b. Starch.  
c. Animal feeds.  
d. Industrial products.  
e. If any others please specify.
22. If you are facing any problem, please specify the area of problem:
- a. Raw material.  
b. Capital.  
c. Technology.  
d. Marketing.  
e. Manpower.  
f Plant location  
g. If any others please specify.
23. Would you like to give any suggestions to overcome the above mentioned problems?



## QUESTIONNAIRE FOR RETAILERS IN MAIZE VALUE CHAIN

1. Name of the respondent-

2. Age in Years -

3. Gender- Male  Female  Trans Gender

4. Contact Address-

5. Educational qualification-

LPS		UPS		HS		HSS		UG		PG		Technical Education	
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6. Nature of business:

Wholesale  Retail  Co-operative  Others (Specify)

7. Annual income: Rs

8. How far you are dealing with maize feed? Months/Years

9. Who are all your potential suppliers?

a) Wholesalers

b) Private agents

c) Processors

d) Swakrushi feed producing unit

e) Distributors

10. In which form you are purchasing maize feed (Pellets/Feed powder/ Both)?

11. What criteria do you considered by you for fixing the price of produce?

12. Procurement of Maize feed:

Source	Quantity procured (in quintals)	Price/Quintal	Remarks
Through Agency			
Swakrushi Feed Producing Unit			
Others			

13. What is the Period / Frequency of purchase? Daily / Weekly / Bi weekly / Monthly

14. Do you hire transport? Yes/No

If yes, what is the cost incurred for transport?

15. Did you availed finance and credit support for your business transaction from anywhere? Yes/ No

If yes, please mention the source of support?

16. Distribution channel of produce:

Particulars	Quantity	Price	Mode of receipt (Immediate cash/ Credit / Through Account transfer / others )	Place of sale (Domestic / Inter town / Inter District)	Time of settlement (Spot/ Monthly / No specific time)
Consumers					
Others(Specify)					

17. Do you have provision for storage? Yes/No

18. Where you are storing maize feed?

Storage house  Sacks  Plastic bags  Hired godowns  Others (Specify)

19. Reasons for storing:

Low market demand  Low price  Future trading  Others (Specify)

20. Storage capacity: (In bags/MT)

21. Normal period of storage: (In weeks/months)

22. At what price you are selling?

Particulars	Price (Rs/ 50 kg)
Feed powder	
Pellets	

23. Who all are the consumers?

a) Cattle growers b) Poultry growers c) Hatcheries d) Others (Specify)

24. What is the cost involved in each stage of procurement and transaction?

S.No	Stages	Cost involved (In Rs)	Remarks
1	Procurement		
2	Transportation		
3	Loading & Unloading		
4	Packing		
5	Rent		
6	Marketing		
7	Others (Specify)		

25. Whether you are getting any technical guidance/advisory service from anywhere? Yes/No

If yes, mention from where?

26. What is the revenue you are getting? Rs. Per year

27. Has there been an increase or decrease in demand for maize feed in recent years?

28. Do you think supply of maize feed in the market is according to the demand? Yes/No

29. Do you maintain good relationship with farmers and other actors in the value chain?

Actors	Nature of relationship (Procurement / Exchange & Stock / Supply of raw material / Processing / Others)	Remarks
Retailers vs. Processors		
Retailers vs. Distributors		
Retailers vs. Consumers		
Others (if any)		

30. How do government policies influencing your sales (Specify)?

31. Problems in the marketing of Maize feed

5 - Most extreme 4 – Extreme 3 – Moderate 2 – Somewhat 1 – Least felt

Problems	5	4	3	2	1
High transportation cost and heavy loss during transportation					
Lack of storage facility					
Poor quality of produce					
Non availability of processing facilities					
Lack of Marketing Information					
Other					

## QUESTIONNAIRE FOR CONSUMERS

1. Name of the respondent;

2. Address:

3. Age :

4. Gender: Male  Female  Transgender

5. Educational status –

Lower primary school	Upper Primary School	High School	Higher Secondary School	Under Graduate	Post Graduate
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6. Do you have the habit to purchase Maize regularly -

7. From where you are purchasing?

Swakrushi FPCL  Retailer shop  Directly from the farmers  Others

8. Are you getting the Maize at reasonable price and quality? Yes/No

9. Are you aware of value added products of Maize? Yes/ No

10. Which are the value added products of Maize that you are aware of?

11. Which are the brands of value added products that you are aware of?

12. Consumption pattern of Maize and Maize value added products?

S No.	Product	Source of Purchase	Price	Quantity
1	Maize Cobs			
2	Corn flour			
3	Others			

13. Consumers attitude towards Maize and its product. (Give appropriate scale 1-5)

Variable	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
Quality of product and hygiene is good					
Price of Product is reasonable					
Products are easily available					
Taste of product is good					
No scope of improving the product					
I prefer brand					

14. What are the main dissatisfaction you have, with regard to Maize and its value added products?

15. Suggestions if any –

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