SANKET RAI

M.B.A. (INTERNATIONAL AGRI-BUSINESS)

2016

MARKET ANALYSIS OF IRRIGATION PUMPS IN ANAND AND KHEDA DISTRICTS OF GUJARAT

BY

SANKET RAI

B.Tech. (Agriculture Engineering)

INTERNATIONAL AGRIBUSINESS MANAGEMENT INSTITUTE
ANAND AGRICULTURAL UNIVERSITY
ANAND 388 110

2016

"MARKET ANALYSIS OF IRRIGATION PUMPS IN ANAND AND KHEDA DISTRICTS OF GUJARAT"

A PROJECT REPORT

Submitted by

SANKET RAI

Reg. No. 04-2537-2014

In partial fulfillment for the award of the degree

Of

MASTER OF BUSINESS ADMINISTRATION

INTERNATIONAL AGRIBUSINESS

UNDER THE GUIDANCE

OF

Dr. Y. A. Lad

Assistant Professor

INTERNATIONAL AGRI-BUSINESS MANAGEMENT INSTITUTE

ANAND AGRICULTURAL UNIVERSITY

ANAND - 388 110

JUNE – 2016

INTERNATIONAL AGRI-BUSINESS MANAGEMENT INSTITUTE

ANAND AGRICULTURAL UNIVERSITY

ANAND -388110

CERTIFICATE

This is to certify that the project entitled **"Market Analysis of Irrigation Pumps in Anand and Kheda Districts of Gujarat"** of M.B.A (International Agribusiness) embodies bonafide research work carried out by **Sanket Rai** under my guidance and supervision and that no part of this project work has been submitted for any other degree. The assistance, guidance and help received during the course of investigation have been fully acknowledged.

Place: IABMI, Anand **(Dr. Y. A. Lad)**

Date: **Advisor**

INTERNATIONAL AGRI-BUSINESS MANAGEMENT INSTITUTE

ANAND AGRICULTURAL UNIVERSITY

ANAND -388110

CERTIFICATE

This is to certify that the project entitled "**Market Analysis of Irrigation Pumps in Anand and Kheda Districts of Gujarat"** submitted by **Sanket Rai** to the Anand Agricultural University, Anand in partial fulfillment of the requirement for the degree of M.B.A. (International Agri-Business) after presentation and defended by the candidate before the following members of the Advisory Committee. The performance of the candidate in this project has been found satisfactory; we therefore, recommend that the project report may be approved.

(Dr. Y.C. Zala)
Principal

(Dr. Y. A. Lad)
Advisor

( )
Committee Member

( )
Committee Member

Place: IABMI, Anand
Date:

( )
Committee Member

DECLARATION

I hereby declare that the project entitled **"Market Analysis of Irrigation Pumps in Anand and Kheda Districts of Gujarat"** submitted for the M.B.A (International Agribusiness) degree is my original work and this has not formed the basis for the award of any degree, associate ship or other similar titles.

Place: IABMI, Anand Name: Sanket Rai

Date: Reg. No: 04-2537–2014

Acknowledgement

I am grateful to The Standard Agro Engineers for providing me the opportunity to work on this project. My experience from this project has certainly broadened my knowledge by introducing me to the practical problems that one faces in the field.

I earnestly thank ***Mr. S. G. Patel, Managing Director, The Standard Agro Engineers*** *for his support, guidance and suggestions made at different stages of the project.*

I am very grateful to ***Mr. Nazmuddin Ahmed,*** *and* ***Mr. Rameshbhai Soni*** *who extended their helping hand and also provided me proper direction and guidance in the project. I also thank all the respondents who have given their valuable time, view, and authentic information for this project.*

With profound respect, I extend my gratitude to ***Dr. Y. C. Zala****, Principal and Dean of International Agri-Business Management Institute, AAU, Anand for providing necessary facilities during project work.*

I feel privilege in expressing my deepest sense of gratitude and humble indebtedness towards my faculty advisor ***Dr. Y. A. Lad****, Assistant Professor, International Agri-Business Management Institute, AAU, Anand for her steadfast inspiration, expert guidance, painstaking effort and keen abiding interest during the entire project work.*

I am vastly thankful to ***Dr. Mahesh Prajapti****, Assistant Professor & P.G. Coordinator, International Agribusiness Management Institute, for providing me facilities during my research work.*

I also like to present my solemn thanks to ***Dr. Ritambhara Singh****, Assistant Professor & Project Coordinator, International Agribusiness Management Institute, for her support during the entire course tenure.*

I am very thankful for the generous help received from all the faculty members of IABMI, AAU, Anand for their kind co-operation and constant motivation during my project work.

I am thankful to my all friends specially ***Mr. Vikas Gupta, Mr. Jitendra Kumar Maurya, Mr. Chirag Patel and Mr. G. Madan Mohan,*** *for their care, constant encouragement and moral support in completion of project work.*

At last but not least, I think that the words are insufficient to express deep sense of feelings and respect towards my parents, without their encouragement, blessings and benediction it would not be possible to me to complete this course. Their patience and sacrifice always have been the vital source of inspiration for me.

Place: *Anand* ***Sanket Rai***

Date:

MARKET ANALYSIS OF IRRIGATION PUMPS IN ANAND AND KHEDA DISTRICTS OF GUJARAT

Name of student	Advisor
Sanket Rai	Dr. Y. A. Lad
Reg. No. 04-2537-2014	Assistant Professor

INTERNATIONAL AGRIBUSINESS MANAGEMENT INSTITUTE
ANAND AGRICULTURAL UNIVERSITY
ANAND 388 110

ABSTRACT

Reliable irrigation reduces dependency on rain-fed agriculture in drought prone areas and helps in increasing cropping intensities in humid and tropical zones. Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. It supports almost 17% of world population from 2.4% of world geographical area and 4.2% of world's water resources. Agriculture in India contributes around 13% to the GDP and employs around 55% of the country's workforce. Among all the agricultural inputs, irrigation is a critical requirement for the favourable crop yields. About 67% of cultivable land in the country is monsoon-dependent. However, monsoon in India being highly irregular and erratic, the crop irrigation requirements need to be met by using underground water resources, which are harnessed through pumps. Irrigation pumps market is growing at a significant pace in India. The sinking groundwater levels across the country, increase in division of land, increase in cropping intensity and heavily

subsidised electricity are the major drivers for agricultural pumps market in India. Demand for irrigation pumps in the country is proliferating due to concurrent growth in agriculture.

With this background the study entitled "Market Analysis of Irrigation Pumps in Anand and Kheda Districts of Gujarat", was carried out with the following objectives; to analyze the factors which influence the buying decision of farmers, to examine the problems faced by farmers with the irrigation pumps and to conduct competitor analysis for The Standard Agro Engineers. The study covered two districts of Gujarat. Four talukas from each districts were selected purposely based on high cropping intensity. Five villages from each taluka were selected as per convenience, making a total of 20 villages from each district. Out of 40 selected villages, five farmers from each village were selected as per convenience making total sample size of 200 farmers. Furthermore, 20 dealers were also selected from the study area to fulfill selected objectives of the study. Primary data were recorded on semi structured schedule. The data were analyzed using descriptive statistics.

The study revealed that before buying the irrigation pump, customers' major consideration was low voltage compatibility of the pump followed by higher water output, price and warranty. Brand name and credit facility were less influencing factors for purchase. For brand selection, dealer's advice was the most influencing factor followed by word of mouth and technician's advice. Advertisements had very less influence in brand selection.

As far as problems faced by farmers were concerned, problem of low voltage and non-availability of repair and maintenance facility in close

proximity were the major problems faced by farmers. Two of these accounted for about 79% of problems.

Competitor analysis for The Standard Agro Engineers shows that majority of the market share was captured by Lubi (42%) followed by CRI (10%) and Varuna (8.5%). In case of dealers, good margin was the most important factor behind taking dealership of a company followed by brand image and credit facility provided by company. Dealers were least concerned about price and timely supply of pumps. There were two kinds of incentives given by companies to dealers viz. turn over discount and free gifts. For brand promotion, majority of the companies follow hoarding advertisements as a promotion tool followed by wall paintings, newspapers ads and farmer meetings.

With the existing competitive environment, it is suggested that The Standard Agro Engineers should create brand awareness among farming community and also should setup distribution channel in order to gain trust of the farmers. The company should identify the potential dealers and approach them by providing all the required support. The company should arrange meetings with local technicians to inform, educate and win their support by offering commission. Submersible pumps had more sales in the area, so company should focus on submersible pumps.

LIST OF CONTENTS

Sr. No.			CHAPTER	Pg. No.
			ABSTRACT	**I**
			LIST OF CONTENTS	**IV**
			LIST OF TABLES	**VIII**
			LIST OF FIGURES	**IX**
			NOMENCLATURE	**XI**
I			**INTRODUCTION**	1
	1.1		Background of the Study	1
	1.2		Industry Profile	1
		1.2.1	Overview	1
	1.3		Growth Drivers for Irrigation Pumpsets	2
		1.3.1	Sinking Groundwater Levels in The Country	2
		1.3.2	Government Initiatives	2
		1.3.3	Increase in Division of Land	3
		1.3.4	Increasing Preference for Quality Products	3
		1.3.5	Cropping Patterns	4
		1.3.6	Electrification in Rural Areas	4
	1.4		Market Structure	4
	1.5		Supply and Demand Regions of Agriculture Pumps	6
	1.6		Value Chain for Agriculture Pumps	11
	1.7		Market Segmentation	13
		1.7.1	Market Segmentation: By type of pumps	13
		1.7.2	Market Segmentation: By Pump HP	14

	1.8		Contribution of other Agencies In The Agriculture Pumps Market	14
	1.9		Company Profile	18
		1.9.1	General Information about Company	18
		1.9.2	Company's Core Values	19
		1.9.3	Awards & Certifications	20
		1.9.4	Product Portfolio	21
	1.10		Objectives of the Study	22
II			**REVIEW OF LITERATURE**	23
III			**RESEARCH METHODOLOGY**	24
	3.1		Area of the Study	24
	3.2		Nature of Data	24
		3.2.1	Primary Data	25
		3.2.2	Secondary Data	25
	3.3		Research Design	25
		3.3.1	Sampling Method	25
		3.3.2	Sample Unit	25
		3.3.3	Sample Size	25
		3.3.4	Research Instrument	25
		3.3.5	Analytical Tools	25
		3.3.6	Garett's Ranking Technique	26
	3.4		Scope of the Study	26
	3.5		Limitations of the Study	26
IV			**RESULT AND DISCUSSION**	27
	4.1		Customers' Survey	27
		4.1.1	Different Categories of Farmers according to the Operational Holdings	27
		4.1.2	Age Group of Respondents	28

		4.1.3	Education Level of Respondents	29
		4.1.4	Occupation of Respondents	30
		4.1.5	Crops Grown by Respondents	31
		4.1.6	Method of Irrigation Employed by Respondents	33
		4.1.7	Sources of Irrigation in the Study Region	33
		4.1.8	Type of Pumps Used by Respondents	34
		4.1.9	Depth of Tubewell	35
		4.10	Sale of Irrigation Water by Farmers	36
		4.11	Income Generated by Respondents from the Sale of Irrigation Water	36
		4.1.12	Penetration of Pumps' Brand in Study Area	37
		4.1.13	HP Wise Segmentation Mix	38
		4.1.14	Mode of Purchase	39
		4.1.15	Purchase Point of Pumps	39
		4.1.16	Analysis of Factors Considered by farmers while Making Purchase Decision	40
		4.1.17	Most Important Factor Influencing Brand Selection	41
		4.1.18	Problem Faced by Farmers	42
		4.1.19	Awareness of the BEE Star Rating	43
		4.1.20	Awareness Level about TSAE and its Products	44
	4.2		Dealers' Survey	45
		4.2.1	Location of Dealers	45
		4.2.2	Education Level of Dealers	45
		4.2.3	Other Source of Income of Dealers	46

		4.2.4	Experience of Dealers in Pump Business	47
		4.2.5	Annual Turnover from Pump Business	47
		4.2.6	Status of Credit Sales by Dealers	48
		4.2.7	Credit Period Offered by Dealers	48
		4.2.8	Dealership of Brands by Respondents	49
		4.2.9	Factors Considered by Dealers while Dealing with Particular Company	50
		4.2.10	Promotional Activities Followed Companies	51
		4.2.11	Incentive Given by Companies	51
		4.2.12	Dealer Satisfaction with the Incentives and Support	52
		4.2.13	Awareness Level about TSAE and its Products	52
		4.2.14	Dealer's Response to Different Attributes of Competitor	53
V			**SUMMARY AND CONCLUSION**	55
	5.1		Summary	55
	5.2		Suggestions	58
			REFERENCES	XII
			ANNEXURE	XIV

LIST OF TABLES

Table No.	CAPTION	Page No.
1.4.1	Key Manufacturers and Their Markets	6
4.10	Sale of Irrigation Water by Farmers	36
4.1.12	Penetration of Pumps' Brand in Study Area	37
4.1.14	Mode of Purchase	39
4.1.15	Purchase Point of Pumps	39
4.1.16	Analysis of Factors Considered by Farmers while Making Purchase Decision	40
4.1.19	Effect of BEE Rating on Purchase Decision	43
4.1.20	Awareness Level about TSAE and Its Products	44
4.2.7	Credit Period Offered by Dealers	48
4.2.9	Factors Considered by Dealers while Dealing with Particular Company	50
4.2.12	Dealer Satisfaction with the Incentives and Support	52
4.2.13	Awareness Level about TSAE and its Products	52
4.2.14	Dealer's Response to Different Attributes of Competitor	53

LIST OF FIGURES

Fig No.	CAPTION	Page No.
1.6	Key Entities Involved in Agriculture Pump Supply	10
1.7.1(a)	Submersible Pump	12
1.7.1(b)	Monoblock Pump	12
1.9.4	Product Portfolio	21
4.1.1	Different Categories of Farmers according to the Operational Holdings	27
4.1.2	Age Group of Respondents	28
4.1.3	Education Level of Respondents	29
4.1.4	Occupation of Respondents	30
4.1.5(a)	Crops Grown by Respondents in Kharif Season	31
4.1.5(b)	Crops Grown by Respondents in Rabi Season	31
4.1.5(c)	Crops Grown by Respondents in Zaid Season	32
4.1.6	Method of Irrigation Employed by Respondents	33
4.1.7	Sources of Irrigation in the Study Region	33
4.1.8	Type of Pumps Used by Respondents	34
4.1.9	Depth of Tubewell	35
4.11	Income Generated by Respondents from the Sale of Irrigation Water	36
4.1.8	Type Of Pumps Used by Respondents	34
4.1.9	Depth of Tubewell	35
4.11	Income Generated by Respondents from the Sale of Irrigation Water	36

4.1.13	HP Wise Segmentation Mix	38
4.1.17	Most Important Factor Influencing Brand Selection	41
4.1.18	Problem Faced by Farmers	42
4.1.19	Awareness of the BEE Star Rating	43
4.1.20	Product Wise Awareness about TSAE	44
4.2.1	Location of Dealers	45
4.2.2	Education Level of Dealers	45
4.2.3	Other Source of Income of Dealers	46
4.2.4	Experience of Dealers in Pump Business	47
4.2.5	Annual Turnover from Pump Business	47
4.2.6	Status of Credit Sales by Dealers	48
4.2.8	Dealership of Brands by Respondents	49
4.2.10	Promotional Activities Followed Companies	51
4.2.11	Incentive Given by Companies	51

NOMENCLATURE

S.N	Abbreviation	Nomenclature
1	MNRE	Ministry of New and Renewable Energy Sources
2	NABL	National Accreditations Board for Testing and Calibration Laboratories
3	FY	Financial Year
4	CAGR	Compound Annual Growth Rate
5	Cr	Crores
6	GEDA	Gujarat Energy Development Agency
7	HP	Horse Power
8	e.g.	Example
9	etc.	Etcetera
10	Ha	Hectare
11	i.e.	That is
12	viz.	Which Means
13	ERDA	Electrical Research and Development Association
14	SITARC	Scientific and Industrial Testing and Research Centre
15	Ltd	Limited
16	Pvt	Private
17	CIAE	Central Institute of Agricultural Engineering
18	hrs	Hours
19	IPMA	Indian Pump Manufacturers Association
20	NHB	National Horticulture Board
21	SIEMA	Southern India Engineering Manufacturers Association
22	TSAE	The Standard Agro Engineers
23	et al.	And Others
24	%	Percentage
25	Rs.	Rupees
26	Fig.	Figure
27	GDP	Gross Domestic Product
29	LPG	Liberalization, Privatization and Globalization

I. INTRODUCTION

1.1 Background of the Study

The study entitled "Market Analysis of Irrigation Pumps in Anand and Kheda Districts of Gujarat" is part of a project of The Standard Agro Engineers. The study has covered two districts of Gujarat consisting 8 talukas and 40 villages. TSAE was interested to know the buying behaviour of customers and the competitive environment in the region.

1.2 Industry Profile

1.2.1 Overview

Irrigation has long been seen as an option to improve and sustain rural livelihoods by increasing crop production. It reduces dependency on rain-fed agriculture in drought prone areas and increase cropping intensities in humid and tropical zones. Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. It supports almost 17% of world population from 2.4% of world geographical area and 4.2% of world's water resources. Agriculture in India contributes to around 13% of the GDP and employs around 55% of the country's workforce. Among all the agricultural inputs, irrigation is a critical requirement for favourable crop yeilds. In India, about 88% of water is being used in agriculture. About 67% of agricultural land is monsoon-dependent. But monsoons in India being highly irregular and erratic, the agriculture water requirements need to be met by using underground water resources, which are harnessed through pumps.

Irrigation pumps market is growing at a significant pace in India. In India, agriculture sector is the largest consumer of pumps. Demand for irrigation pumps in the country is proliferating due to concurrent growth

in agriculture. The pump industry in India is over seven decades old. The first submersible pump was developed in the year 1928 in India at Coimbatore. The stimulus for growth came mainly from the emphasis on development of agriculture sector during the five year plans. The Indian Pump Industry is poised to register a faster growth rate than the global average. Indian Pump Industry reached to approximately 4.4% of the global market share in 2015, from 2.9% in 2005. According to Industry estimates, there are around 600 large, medium, and small units producing pumps. Indian Pump Manufacturers are able to meet most of the domestic market demand. With the effect of LPG (Liberalization, Privatization and Globalization) the Indian pump manufacturers have started exporting to foreign countries, Indian Pumps and Motors are now being exported to more than 70 countries, both developed and developing countries. Exports have registered 11% growth in the last two decades. (Rajasekaran and Krupa, 2013).

1.3 Growth drivers for irrigation pumpsets

1.3.1 Sinking Groundwater Levels in the Country

Groundwater is the most dependable water resource for the Indian agriculture sector and accounts for nearly 60% of the total irrigated area. However, year after year, there is continuous decrease in the groundwater level. Coupled with the increasing incidence of poor monsoons, this is posing a major challenge for Indian farmers. In sight of this, the number of pumps installed in the country is expected to increase over time.

1.3.2 Government Initiatives

Both the central and various state governments have come up with various policies to assist the growth of the agriculture sector. The schemes vary from heavily subsidised electricity or even free electricity

in some cases. State governments have also launched various schemes to increase the number of pump connections every year. Such policies are motivating the farmers across the country to set up independent irrigation facilities in order to ensure continuous availability of water. Consequently, such policies are directly driving the demand for pumps. With minimal or no expenditure on pump electricity, farmers are motivated to install new pumps (Badiani and Jessoe, 2011).

1.3.3 Increase in Division of Land

The continuous increase in population and the number of nuclear families across India has prompted the rapid division of agricultural land, which, in turn, has led to an increase in number of land owners. The increasing trend necessitated for independent irrigation facilities among farmers is driving the demand for the agricultural pumps in rural India.

1.3.4 Increasing Preference for Quality Products

With an increase in the income levels of farmers, there is a rising demand for higher quality products. Farmers are comparatively more aware about the benefits of quality pumps. Increased levels of production has a direct impact on the income levels of farmers, and act as a key driving factor influencing the shift in priorities in pump selection from cost to quality. This shift has provided an immense boost to the organised sector, encouraging players to launch better quality pumps in the market.

1.3.5 Cropping patterns

Intensification and off-season cultivation has pushed the demand for pumps.

1.3.6 Electrification in Rural Areas

Electrification of villages will boost the requirement of agricultural pumpsets

1.4 Market Structure

The agriculture sector accounts for approximately 88% of India's total water consumption, and pumps are the most vital element of the irrigation process. The agriculture pump market in India was valued at about INR 8600 cr. in 2014-15, and is expected to reach INR 19,020 cr. by 2019, growing at a CAGR of 17.5% (IPMA, 2015). India has a strong pump manufacturing base with both Indian and international players involved in the market. The pump industry is composed of a large number of Small Scale Industries (SSI) units, large manufacturers and many overseas manufacturers. The industry is fragmented, with the presence of both organised and unorganised players, and competition from international companies who have set up their base in India.

The players in the industry can be segmented into organised and unorganized market. The unorganised sector has a strong presence in almost all the demand regions for agricultural pumps. Players from the unorganised sector offer farmers cost-effective products by pricing their pumps at 30-40% lower rates. These players are generally unaccountable for all kind of taxes and excise duties. Hence, they save a significant amount on input costs, and pass on these savings to farmers, leading to stiffer competition for the organised sector.

The organized sector of agricultural pumps market comprises a large number of players, with national and regional-level presence. National level manufacturers operate their business throughout a number of states

with the help of its wide distribution network. Regional level manufacturers operate their business in limited regions i.e. states, districts, cities etc. and has a limited distribution network. According to Shakti Renewable Energy Foundation, national-level players dominate the organized sector of this market with a market share of 67% by value and 56% by volume. However, regional players also hold a significant market share, estimated at approximately 33% by value and 44% by volume.

High quality products and wide distribution network are considered to be the key strengths of national level players. National players such as Texmo, CRI, Lubi and KSB are among the market leaders in agricultural pump market. At the same time, better understanding of farmers' preference in the region and cost-effectiveness are major growth drivers for regional players. Regional players such as Oswal, Chetan, Ambuja, Aroma, and V-Guard have stronghold in regions such as Rajasthan, Uttar Pradesh, Gujarat, Punjab & Haryana, Karnataka and Maharashtra.

Indian pump manufacturers appear to completely fulfill the domestic demand for pump usage, with more than 600 manufacturers producing around 1.2 million pumps annually. The industry is balanced in terms of demand-supply, with domestic companies meeting 95% of the requirements and imports constituting the remaining 5% (Shakti Renewable Energy Foundation, 2012).

Table 1.4.1 Key Manufacturers and Their Markets

Manufacturer	Sales from agriculture pumps		Key markets
	Value	Volume	
Texmo Industries	350 Cr.	2,10,000	Tamil Nadu, Andhra Pradesh, Karnataka, Rajasthan, Madhya Pradesh, Maharashtra
CRI Pumps	270 Cr.	1,54,000	Karnataka, Tamil Nadu, Andhra Pradesh, Rajasthan, Punjab, Haryana, Uttar Pradesh, Bihar, West Bengal
Lubi Group	200 Cr.	1,20,000	Equally distributed all over India
KSB	161 Cr.	90,000	Uttar Pradesh, Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Gujarat, Bihar, West Bengal
Falcon Pumps	93 Cr.	51,000	Karnataka, Tamil Nadu, Andhra Pradesh, Gujarat, Maharashtra, Madhya Pradesh

Source: IPMA.

1.5 Supply and Demand Regions of Agriculture Pumps

Supply regions

Agricultural pumps are primarily manufactured at five locations in India, with several other regional manufacturing units catering only to local markets. Three of the top five manufacturing locations are in Gujarat, one is in Tamil Nadu and the third is in Madhya Pradesh.

1. **Manufacturing location: Gujarat**

Organised players have a strong market presence in Gujarat. However due to the farmers' preference for cost-effective solutions, these players face difficulties in terms of product acceptance. With the government actively promoting star ratings, farmers are more aware about the need for such certified products, which has promoted many organised players to also offer energy-efficient pumps. However, cost-related issues still pose as major restraints for the organised sector.

2. **Manufacturing location: Tamil Nadu**

Coimbatore is the largest manufacturing hub for pumps, and accounts for around 40% of the total industry supply. At the same time, it also experiences stiff competition, since it also harbors the largest number of unorganised players.

3. **Manufacturing Location: Madhya Pradesh**

Dewas, along with Coimbatore and Ahmedabad, is one of the major manufacturing hubs in the country. Here, regional players serve their nearby areas with a small distribution network. However, local farmers have a marked preference for manufacturers who are located near them, as also for cost-effective products. At the same time, organised players face stiff competition due to dealers' penchant for promoting regional brands, which offer the latter better profit margins.

Demand regions

Demand is primarily concentrated in the following regions-

1. **Primary Demand Locations in the East Zone**

In the Eastern zone, West Bengal is the major demand hub for low-cost pumps. Farmers in this region have budget constraints, and hence cost is the major influencing factor during the purchase process. Further, power supply is also poor and irregular in this region. As a result, unorganised players dominate the local market. This region is also a major hub for cheap imported pumps from China.

Major Manufacturers	
National brands ☆ Texmo ☆ KSB ☆ CRI ☆ Crompton ☆ Varuna	Regional brands ☆ Villiers ☆ Kalama ☆ Atul Shakti

2. **Primary Demand Locations in the North Zone**

The North zone is characterized by a mix of national and regional players, which varies with each state. Uttar Pradesh and Rajasthan are dominated by players from the unorganised sector. However, Punjab and Haryana have a substantial presence of large farmers with large land holdings and better income.

Major Manufacturers	
National brands ☆ Texmo ☆ KSB ☆ CRI ☆ Lubi ☆ Varuna	Regional brands ☆ Oswal ☆ Aroma ☆ Hi-tech ☆ Pluga ☆ Chetan ☆ Ambuja

3. Primary Demand Locations in the West Zone

Gujarat is characterized by the dominance of regional players who have low awareness about the star rating. Farmers in Gujarat are more inclined towards cost-effective pump sets. As per estimates, Maharashtra has the largest number of pumps installed approximately 32 lakh. In Maharashtra, the local-made pumps or those manufactured from Gujarat are preferred due to their low costs.

Major Manufacturers	
National brands ☆ Texmo ☆ Kirloskar ☆ CRI ☆ Lubi ☆ Crompton ☆ Varuna	Regional brands ☆ Akash ☆ Jalganga ☆ Jagdish ☆ Shiv Shakti ☆ Mahalaxshmi ☆ Wega

4. Primary Demand Locations in the South Zone

Andhra Pradesh is the second-largest hub in terms of current pump installations, and has approximately 27 lakh pumps all over the state. In South India, farmers are now becoming more aware about star

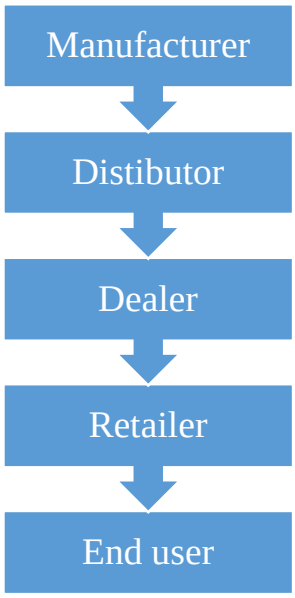
ratings, and are accepting star-rated pumps. Coimbatore, being the largest manufacturing hub, offers better quality at better prices; hence, farmers are more selective with respect to quality.

Major Manufacturers	
National brands	Regional brand
☆ Texmo	☆ V-Guard
☆ Kirloskar	☆ Lakshmi
☆ CRI	☆ Mak
☆ Falcon	☆ JK Pumps
☆ Suguna	☆ Krishna

1.6 Value Chain for Agriculture Pumps

A 'value chain' is a representation of the various entities (with different roles) that are involved in the production and consumption of goods and services. There are four key entities involved in the value chain for agriculture pumps in India, as depicted in Figure 1.6.

Figure 1.6 - Key Entities Involved in Agriculture Pump Supply



Presence	Deal In	Margin (%)
Producer of Pumps		
Regional, State, Sub state	Pumps of only single manufacturer	3-5
Sub state	Pumps of more than one manufacturer	7-8
Sub state, Local	Multi-brand pumps and various other products	10-12
Farmer		

(Source: Shakti Renewable Energy Foundation, 2012)

Distributors procure the pumps directly from the manufacturer's factory or from their sales depot. Distributors are authorized distributor i.e. they deal in products of only one manufacturer, they order regular stocks from the manufacturer. Distributors have a margin in the range of 3-5%.

Dealers purchase pumps from the manufacturer or get it from the authorized distributor. Dealers have a typical margin of 7-8% depending

on product type and customer requirement. Dealers have pumps of different brands and may deal in various other products.

Retailers procure the goods from the distributor/dealer and keep stock of different brands according to the demand and requirement in their region. Some small local shops also keep stock of pumps and act as retail points. Retailers have a margin of around 10-12% and can go higher for pumps from manufacturers of unorganized market. Farmers are the end user in the value chain of agriculture pumps.

There are two ways to depict value chain for agricultural pumps; according to the manufacturer's presence it has been defined below

1. Manufacturers with National presence
    - With reference to national manufacturers, distributor or dealers order the pumps from manufacturers. Dealers also procure it from authorized distributors who get their supply from the manufacturers or collect it from the depot.
    - Farmers buy pumps from dealers or they buy it from the retailer who falls within their vicinity.

2. Manufacturer with regional presence
    - With reference to regional manufacturers, dealers or retailers collect pumps from regional manufacturers and farmers buy it from them.
    - Alternately farmers prefer to purchase it from the local dealers as they find it cheaper and services are handy.

1.7 Market Segmentation

1.7.1 Market segmentation: By types of pumps

There are two types of pumps used by the Indian agriculture sector.

I) Monoblock pumps

II) Submersible pumps

Monoblock pumps are characterised by a common shaft for all their rotating parts.

Submersible pumps have a sealed motor that is closely coupled to the pump, with the whole assembly submerged deep in the water that is to be pumped out.

Fig 1.7.1 (a) Submersible Pump

Fig. 1.7.1 (b) Monoblock Pump

Monoblock pumps played a major role in irrigation development in the agricultural sector. With the continuous depletion of groundwater, monoblock pumps are technologically incapable of drawing out water in most of the agricultural regions. Monoblock pumps are now getting replaced by submersible pumps in the agricultural sector. As per IPMA estimates the market share of monoblock pumps is continuously decreasing and presently accounts for only 28% of the total market. Submersible pumps are expected to further strengthen their market share, and will gradually phase out monoblock pumps.

1.7.2 Market Segmentation: by pump HP

Across the country, farmers are using agriculture pumps of different horse powers. The HP specification is generally common within a region and depends largely on ground water level. Farmers from regions where the ground water level is low use pumpsets of high HP rating such as 10 HP, 15 HP and even upto 50 HP in some extreme cases. Apart from the ground water level conditions farmers also use high HP pumpsets to have higher water output.

In terms of market value, at all India level 5 HP pumpset have dominance with 35% market share followed by pumpsets with 7.5 HP and 10 HP having 26% and 15% market share respectively.

1.8 Contribution of Other Agencies in the Agriculture Pumps Market

Key Associations

- **IPMA**

The Indian Pump Manufacturers Association (IPMA) is the apex body for the Indian pump industry. It represents over 150 manufacturers. IPMA played an important role in the inclusion of minimum efficiency norms in the Indian standards. It promotes the growth of the pump industry in accordance with the government, technical and standardization authorities. It has a separate agricultural committee to cater to industry concerns. The association was also involved in BEE's Standards and Labeling Programme. IPMA is regularly engaged in conducting conferences, seminars and workshops to create awareness and knowledge. IPMA plans and undertakes various activities from time to time, such as:

- Hold regional, national and international conferences, seminars, workshops, meetings, trade fairs and exhibitions.

- Submits recommendations, representations and memoranda to Central and State governments on issues affecting the pump industry.
- Strives to promote exports.
- Spreads awareness and extends participation of the industry on national concerns such as energy conservation. Draft for almost every standard on pumps is prepared by members of IPMA.
- Being on the technical committees of BIS, IPMA is involved intensively both in formulation of new standards and revision of existing standards. IPMA also promote implementation of these standards.

❖ **SIEMA**

The Southern India Engineering Manufacturers Association (SIEMA) represents and protects the interest of micro, small, medium and large-scale engineering industries.

- The association aims to increase the awareness and provide a common platform for sharing of knowledge and best practices in manufacturing.
- It also represents grievances of its members to the government and other authorities. SIEMA is associated with BIS and Ministry of Power to formulate standards for energy conservation and pumps.
- The association has been involved with Bureau of Indian standards (BIS) for establishing standards in agriculture and domestic pump sets. It also played a key role in formulating Quality Standards in BEE.

❖ **SITARC**

Scientific and Industrial Testing and Research Centre (SITARC) had been established to promote testing, research and Industrial activities. SITARC is promoted by SIEMA and Coimbatore District Small Industries Association (CODISSIA); it is also a recipient of Coimbatore Industrial Infrastructure Association (COINDIA) projects. SITARC is associated with various government agencies such as BIS and BEE, and provides various services such as product and system certification, and star labeling for different pumps.

Key Organizations (Government and Private)

❖ **GEDA**

Gujarat Energy Development Agency (GEDA) operates in the field of renewable energy development and energy conservation. It has been developing and promoting renewable energy programmes under the Ministry of New and Renewable Energy Sources (MNRE) and the State-Designated Agency (SDA) for BEE. In agriculture, it encourages the application of solar photovoltaic pumps, which operate on power generated using solar photovoltaic (PV) systems. GEDA has successfully conducted various projects on solar, wind and bio energy, and is currently setting up a solar city in Gandhinagar, Gujarat.

❖ **CIAE**

Central Institute of Agricultural Engineering (CIAE) is concerned with issues related to agricultural engineering. It undertakes research and development work in the spheres of agricultural mechanisation, energy efficiency, and soil and water conservation for proficient use of energy sources in agriculture. The Irrigation and Drainage

Engineering Division of CIAE has set up an automated testing centre for testing centrifugal pumps. It also undertakes various training programmes at the national level.

❖ **ERDA**

Electrical Research and Development Association (ERDA) is managed by elected and nominated members from the industry, as well as representatives from the Council of Scientific and Industrial Research (CSIR), Government of Gujarat and invited experts. ERDA has been providing technological support to electrical industry by testing, product certification, consultancy, and research and development. ERDA has a large laboratory and testing centre, which is supported by the Gujarat government and the Government of India.

Testing Labs

❖ **NABL**

National Accreditations Board for Testing and Calibration Laboratories (NABL) is an autonomous body under the guidance of the Department of Science and Technology. NABL provides the government, industry associations and the industry with third-party quality assessment, and testing and calibration laboratories. It also provides laboratory accreditation services to laboratories that perform testing and calibration in accordance with ISO/IEC 17011:2004. It has an agricultural equipment testing facility in Pune, and various other testing facilities all over India.

Industry Magazine

- **Pumps India**

This is a Pump Industry-related magazine that provides updates related to inventions, R&D, technology upgrades, and other related information from the industry. The magazine is published on a bi-monthly basis. It has a directory of manufacturers and dealers, with a guide for buyers that contains information about various pumps, technical data pertaining to pumps, selection process guidelines and other relevant information for the users.

1.9 COMPANY PROFILE

"THE STANDARD AGRO ENGINEERS"

1.9.1 General Information about Company

The Standard Agro Engineers is a private limited company located in Rajkot, Gujarat is a notable manufacturer of agricultural machinery in Gujarat. The company has started to manufacture diesel engines in early 1970 and today it is an exporter, manufacturer and supplier of generator sets, oil engines, grinding mills and pumps.

The company has main two department i.e. one production department and another commercial department. Production department consist of more than 6 cupola furnaces, workshop machineries, turning and grinding shop, testing shop, colour shop, assembling shop, packing shop including stores for ready components and dispatch department. The commercial division handles all the commercial activities including exports.

The company markets its products in all major states of India and in many foreign countries. Until today, The Standard Agro Engineers has been working with more than 23 countries globally.

The Standard Agro Engineers has been exporting its products in the following countries-

Morocco	Nigeria	Sudan	Saudi Arabia
Senegal	South Africa	Egypt	Sri Lanka
Ivory Coast	Tanzania	Syria	Malaysia
Ghana	Kenya	Turkey	USA
Thailand	Portugal	Iran	Uganda
Dubai	Ethiopia	Iraq	

1.9.2 Company's Core Values

- Quality is delivered with each product, to each customer.
- Applying innovative ideas, consistently.
- Creating unique and best ever machines.
- Maintain relationship with business associates.

Vision: Standard agro engineers' vision is to become a global business name which mainly workout all the products for farmers. Along with helping farmers, providing employment to qualified manpower is our Mission.

1.9.3 Awards & Certifications

The company has received various awards in exports from various association, councils, and government sectors such as,

- **Highest Export Performance Award 1999-2000** by Engineering Export Promotion Council.
- **Regional Trophy for Top Exporters 2000-2001** by: Engineering Export Promotion Council.
- **Highest Export Award 2001-2002** by Engineering Export Promotion Council.
- **Exporter Award 2001-2002** by State Government of Gujarat.
- **Best Exporter Award 2002** by Rajkot Engineering Association Award Ceremony.
- **Export Award 2003-2004** by Engineering Export Promotion Council.
- **Excellence Highest Export Performance Award 2003-2004** By Engineering Export Promotion Council.
- **Best Exporter Award 2004-2005** by Greater Rajkot Chamber of Commerce and Industries.
- **Highest Export Award 2004-2005** by Rajkot Engineering Association.
- **Out Standing Export Performance 2001-2002** by Department of Industries and Mines, Government of Gujarat.
- **Outstanding Export Performance 2001-2002** by Rajkot Engineering Association.
- **Award for Outstanding Contribution in the Indian Industries 2005** by Greater Chamber of Commerce & Industries, Rajkot.

1.9.4 Product portfolio

		
Cub Diesel Engine	**Agriculture Pumpset**	**Compact DG Set**
		
Generator Set	**Petter Diesel Engine & Pumpset**	**Comet Light Weight Couple Set**
		
Lister Diesel Engine	**Hindory Diesel Engine**	**Motor Body Casting**

Fig 1.9.4 Product portfolio

1.10 Objectives of the Study

1. To analyze the factors which influence the buying decision of customers.
2. To examine the problems faced by farmers with the irrigation pumps.
3. To conduct competitor analysis for The Standard Agro Engineers.

II. REVIEW OF LITERATURE

- **Suresh (2000)** conducted a study on "Dealer Perception towards the Performance of Different Pumps-A Survey". The main objective of the study was to find the dealer's perception and their expectation towards pumps. The study found that a good distribution channel and advertisement increase the sales. Dealers reported that for successful company, the pumps should be of good quality and they should be capable of running in low voltage.
- **Ganapathi *et al* (2010)** In their study "Users' Preference of Motor Pumps in Rural Areas with Reference to Coimbatore District", they have concluded that low voltage capability of pumpsets was the most important attribute for farmers followed by warranty, price, standards and higher water output. Word of mouth had the most significant influence on brand selection by farmers followed by other influencing factors such as retailer's feedback, banner advertisement, television ads and availability of retailer in proximity. Farmers are found to be to unconcerned about BEE star rating as there were flat rate tariff for electricity consumed in agriculture activities.
- **Moniruzzaman (2015)** conducted a study to examine dealer's perception, consumer brand preference and dealer's expectation with reference to Beacon pumps in Chennai. The study concluded that brand image was the most important factors for dealers followed by timely supply, price, good margin and credit facility. On the other hand, quality was the most important factor for customers followed by brand name, low price and after sales service. Dealers referred TV advertisements highly effective advertisement media followed by point of purchase advertisements for promotion.

III. RESEARCH METHODOLOGY

3.1 Area of the Study

The area covered for the study was Anand and Kheda districts of Gujarat. In these two districts, 4 talukas with maximum cropping were selected from each district. Further, from each taluka, 5 villages were selected as per convenience and finally 5 respondents from each village were interviewed. Apart from farmers, 20 dealers from these districts were selected as per convenience to analyze the competitors of Standard Agro Engineers in the study area. Together, a total of 200 farmers and 20 dealers were selected for the sample study.

Table 3.1: The Distribution of Sample

District	Taluka	Villages	No. of respondents
Anand	Anand	Kasor, Samarkha, Sarsa, Khandhali, Sandesar	5 farmers from each village i.e. 100 customers
	Borsad	Napa Talpad, Dedrada, Davol, Kinkhlod, Ras	
	Petlad	Vatav, Dantali, Bhatial, Palaj, Sunav	
	Sojitra	Piplav, Virol, Deva Talpad, Isnav, Runaj	
Kheda	Nadiad	Salun Talpad, Alindra, Dabhan, Tundel, Surasamal	5 farmers from each village i.e. 100 customers
	Kheda	Hariyala, Goblej, Antroli, Dathal, Radhu	
	Mahemdavad	Aamsaran, Sansoli, Varsola, Sojali, Vadadla	
	Matar	Radhwanaj, Sandhana, Traj, Gharmada, Dethali	
	Total		**200**

3.2 Nature of data

3.2.1 Primary Data

Primary data were gathered with the help of semi-structured schedule. The data were collected from 200 customers and 20 dealers of irrigation pumps in Anand and Kheda districts of Gujarat.

3.2.2 Secondary data

Secondary data were collected from Private and Government publications, journals, books and relevant websites.

3.3 Research design

3.3.1 Sampling Method

The sampling method is non probability sampling under which convenience sampling technique was used.

3.3.2 Sample Unit

Customers and dealers of irrigation pumps located in Anand and Kheda districts of Gujarat.

3.3.3 Sample size

A sample of 200 farmers and 20 dealers were selected.

3.3.4 Research instrument

Considering the nature of study as well as for obtaining correct information from the respondents, it was decided to collect information through semi-structured schedule prepared with the help of available related literature and research reports.

3.3.5 Analytical Tools

Tabular Analysis, Graphical Presentation, Pareto analysis and Garrett Ranking Technique.

3.3.6 Garett's Ranking Technique

First stage: Ranking given by respondents for each factor was analyzed.

Second stage: Ranks assigned by the individual respondents were converted into percent position value by using the formula.

Per cent position= $100(R_{ij}-0.5)/N_j$

Where, R_{ij} stands for rank given for i^{th} factor by the j^{th} individual.

N_j stands for number of factors ranked by j^{th} individual.

Third stage: Each per cent position value was converted into scores by reference to Garett's Table.

Fourth stage: Summation of these scores for each factor was worked out for the number of respondents who ranked for each factor. Mean scores were calculated by dividing the total score by the number of respondents.

Fifth stage: Overall ranking was obtained by assigning ranks I, II, III, IV, VI, VII and VIII in the descending order of the mean score.

3.4 Scope of the Study

The study would be useful to analyze market of irrigation pumps in the study area, so that the organization can develop marketing strategies accordingly.

3.5 Limitation of the Study

- Convenient sampling may not show a true picture as this is non-probabilistic sampling.
- Analysis is purely based on responses of respondents.
- Respondents may have given biased responses.

IV. RESULTS AND DISCUSSION

The study entitled "Market Analysis of Irrigation Pumps in Anand and Kheda Districts of Gujarat" has been carried out within the line of objectives and research methodology. Respondents were asked several questions as per semi-structured schedule. The response of the respondents were observed and noted down. The results were analyzed mainly with respect to the response of the respondents. The results so observed are incorporated in this chapter under different headings.

4.1 Customer Survey

4.1.1 Classification of Farmers on the Basis of Land Holding.

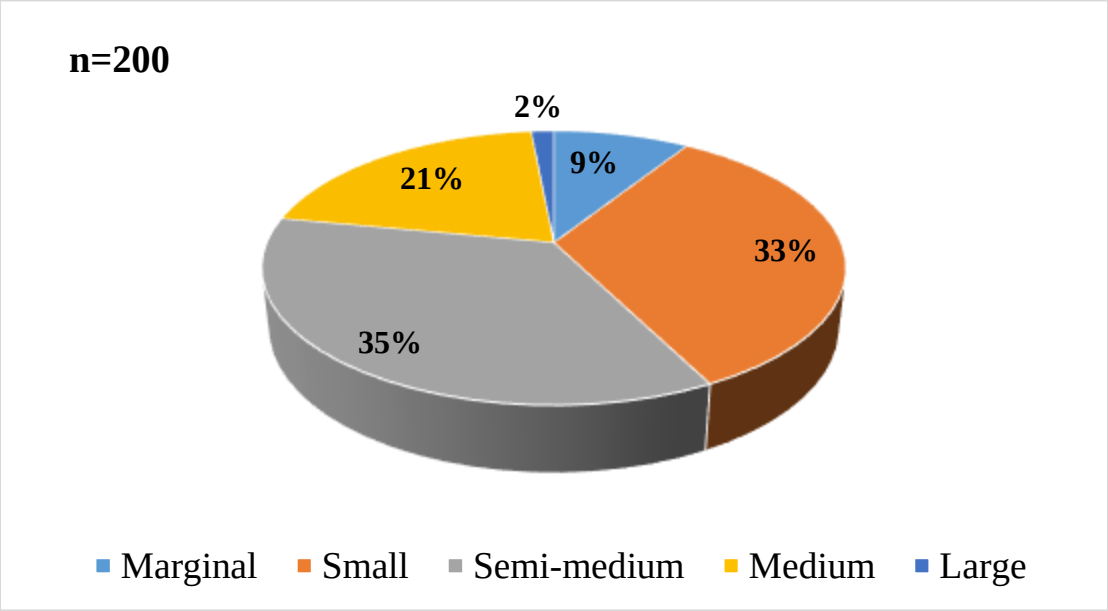


Fig. 4.1.1 Classification of farmers on the basis of land holding

The classification of sample farmers is presented in Fig. 4.1.1. The farmers were classified into five categories viz. marginal farmers, small farmers, semi-

medium, medium farmers and large farmers. A farmer was considered as marginal farmer if their operational holding was up to 1 Ha, from 1 to 2 Ha operational land holders was considered as small farmers, from 2 to 4 Ha operational land holders as semi-medium farmers, from 4 to 10 Ha operational land as medium farmer and more than 4 Ha operational land holding as large farmers (Agriculture Census, 2011). Among the sample farmers majority was of semi-medium farmers (35%) followed by small farmers (33%) and medium farmers (21%). 9% of respondents were marginal farmers and only 2% were large farmers.

4.1.2 Age Group of Respondents

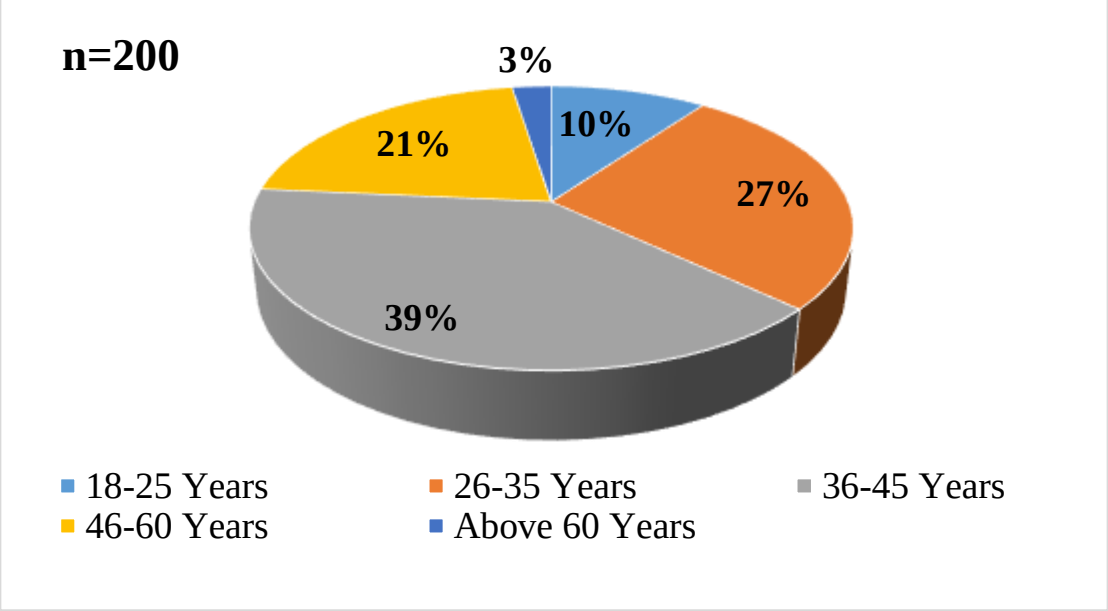


Fig. 4.1.2 Age group of respondents

As presented in Fig. 4.1.2, 39% of the sample farmers belonged to the age group of 36-45 years followed by age group of 26-35 years (27%) and 46-60 years age group (21%). Age group of 18-25 years accounts 10% of the total sample farmers. More than 60 years of age were observed to be less involved according to the observation.

4.1.3 Education Level of Respondents

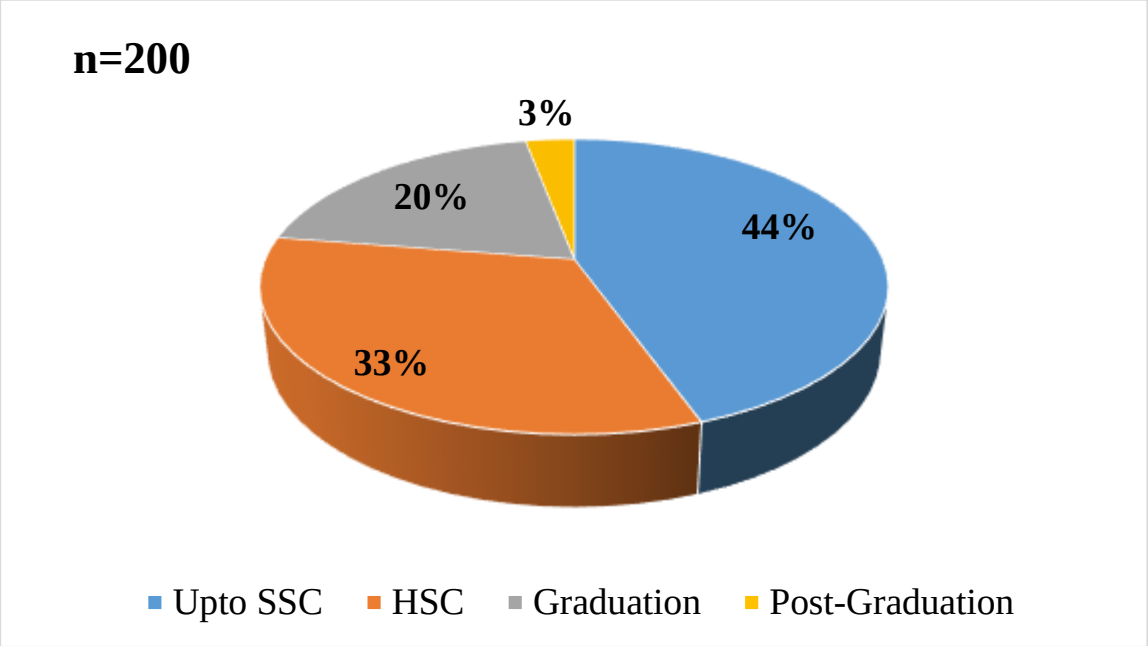


Fig. 4.1.3 Education level of respondents

The educational status of the sample farmers interviewed is presented in Fig. 4.1.3. The figure indicates all of the farmers interviewed were literate. A large proportion of the farmers were educated up to SSC (44%) followed by HSC (33%) and 20% farmers were graduate. Only 3 % farmers were post graduate.

4.1.4 Occupation of Respondents

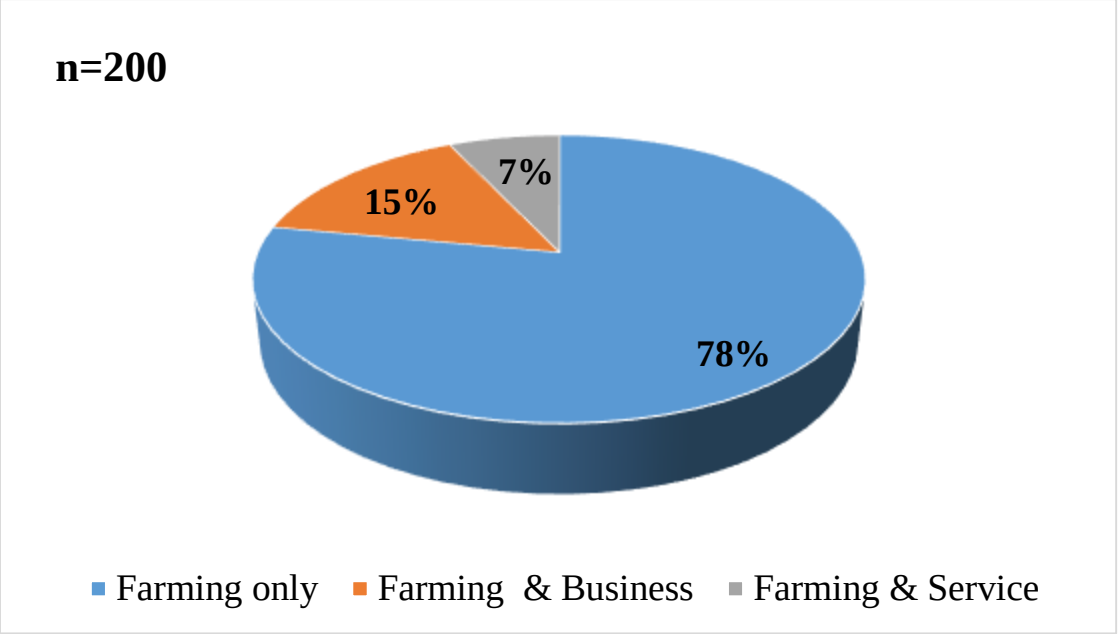


Fig. 4.1.4 Occupation of Respondents

The occupation of sample farmers is presented in Fig. 4.1.4, Majority of the farmers had only farming (78%) as source of income while some farmers had farming and business (15%) and farming and service (7%) as source of income. The farmers having any other source of income like village kiosk, trading of fruits and vegetables, and other profitable activity was considered as farmer having farming and business as source of income. The farmer who was employed in any government or private institution was considered under farming and service.

4.1.5 Crops grown by Respondents

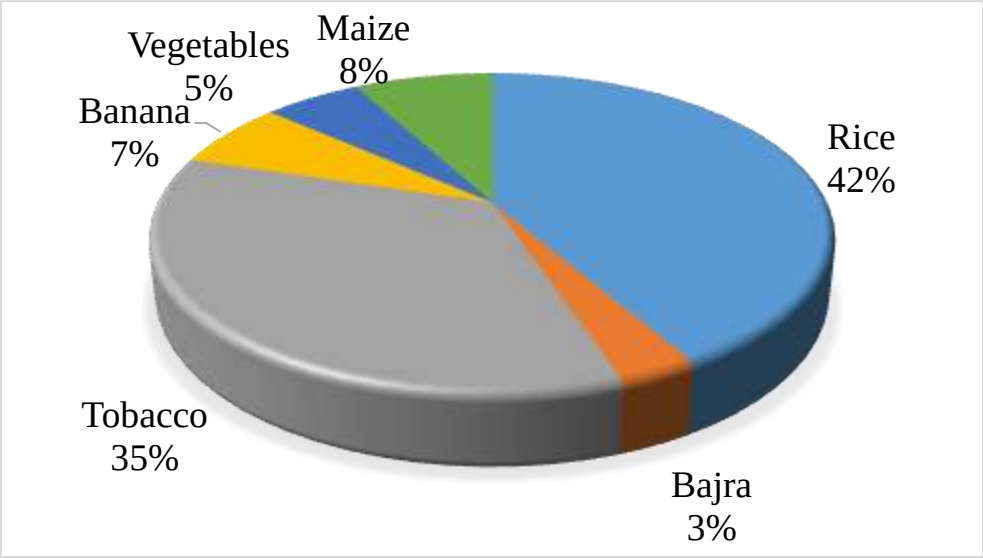


Fig. 4.1.5 (a) Crops grown by respondents in kharif season

Fig. 4.1.5 (a) represents the crops grown by respondent farmers in kharif season. Among the respondents rice was grown by 42% of respondents, followed by Tobacco (35%), Maize (8%), Banana (7%) and Vegetable crops (5%). Bajra was grown only by 3% of the farmers.

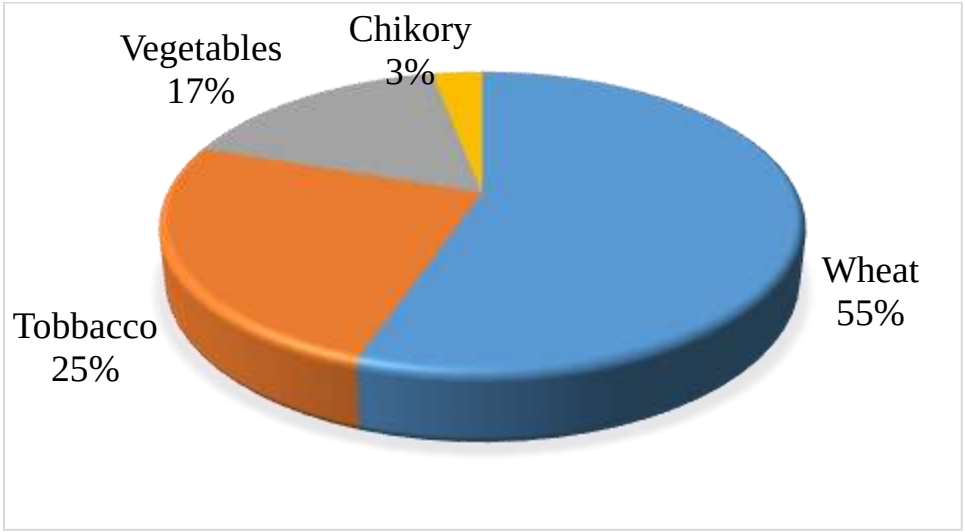


Fig. 4.1.5 (b) Crops Grown by Respondents in Rabi Season

In Rabi season among the crops grown by respondent farmers, wheat was grown by 55% of respondents, followed by Tobacco (25%), and Vegetable crops (17%). Chicory grown by 3% of the farmers.

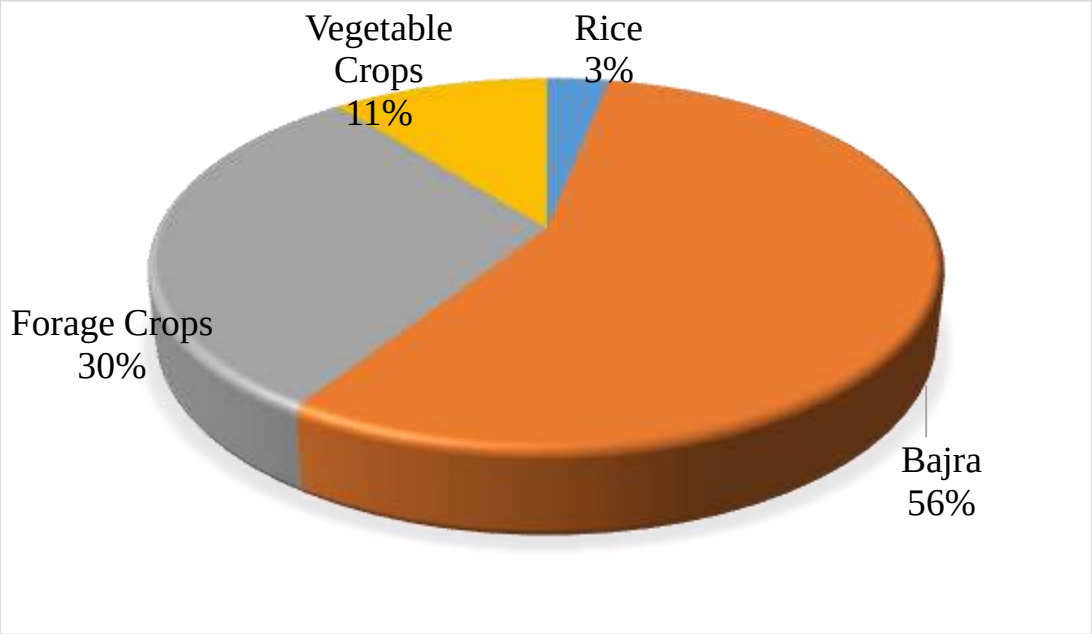


Fig. 4.1.5 (c) Crops Grown by Respondents in Zaid Season

Fig. 4.1.5 (c) represents the crops grown by respondent farmers in Zaid season. As per the Fig. majority of respondent farmers grown Bajra in Zaid season (56%), followed by Forage crops (30%), and Vegetable crops (11%). Rice grown by 3% of the farmers from Nadiad taluka.

4.1.6 Method of Irrigation Employed by Respondents

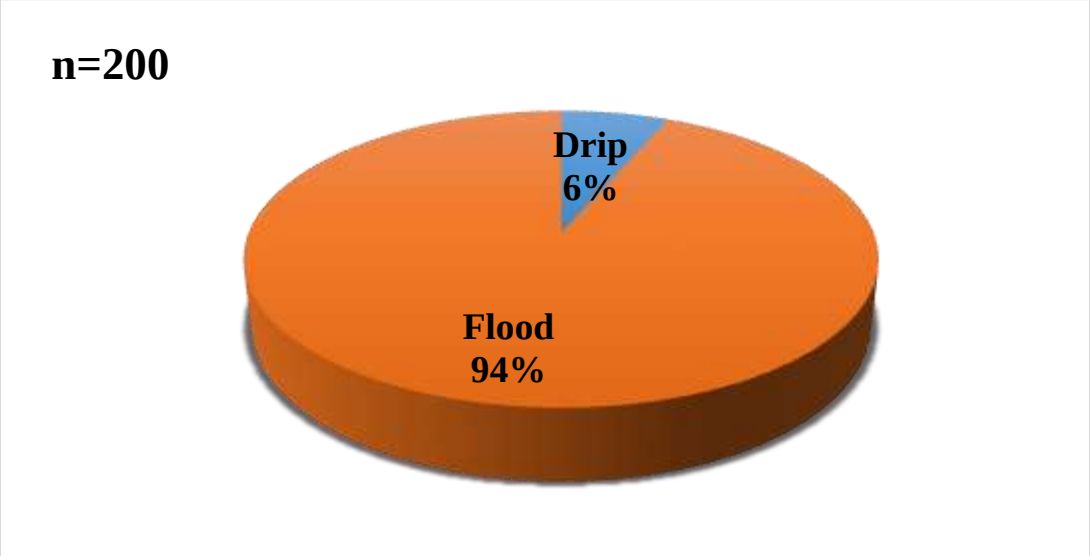


Fig. 4.1.6 Method of irrigation employed by respondents

Method of irrigation of sample farmers is presented in Fig. 4.1.6. Only 6% of the farmers had drip irrigation in their field and these farmers were Banana cultivators. Majority of farmers (94%) used flood irrigation.

4.1.7 Sources of Irrigation in the Study Region

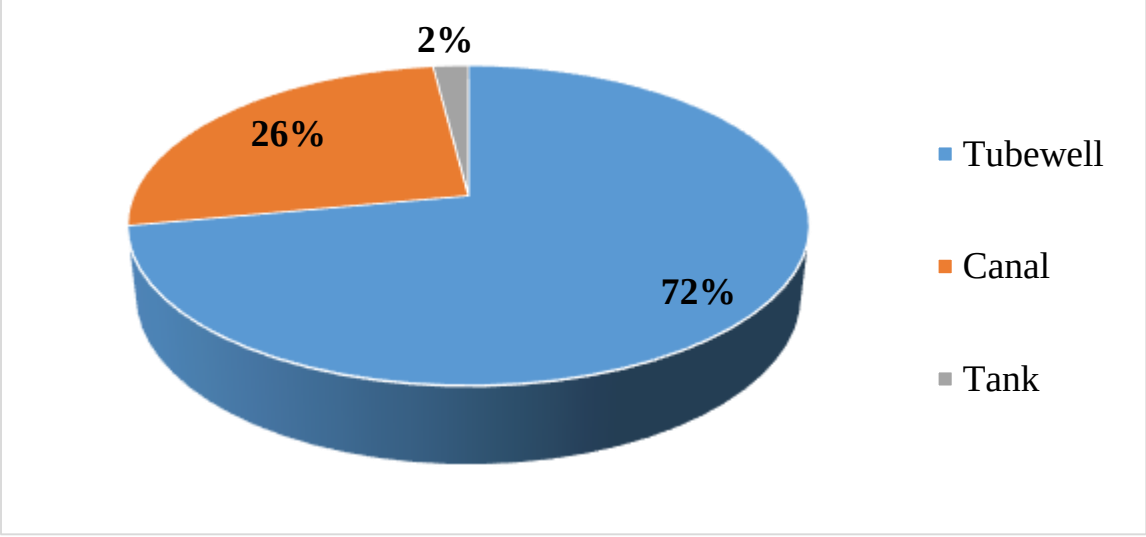


Fig. 4.1.7 Sources of irrigation in the study region

Out of total sample farmers surveyed, about 72% respondents were using canal as their prime source of irrigation, 28% were using canal as their source of irrigation, and only 7.5% respondents were dependent on tank for irrigation. Fig. 4.1.7 shows the same diagrammatically.

4.1.8 Type of Pumps Used by Respondents

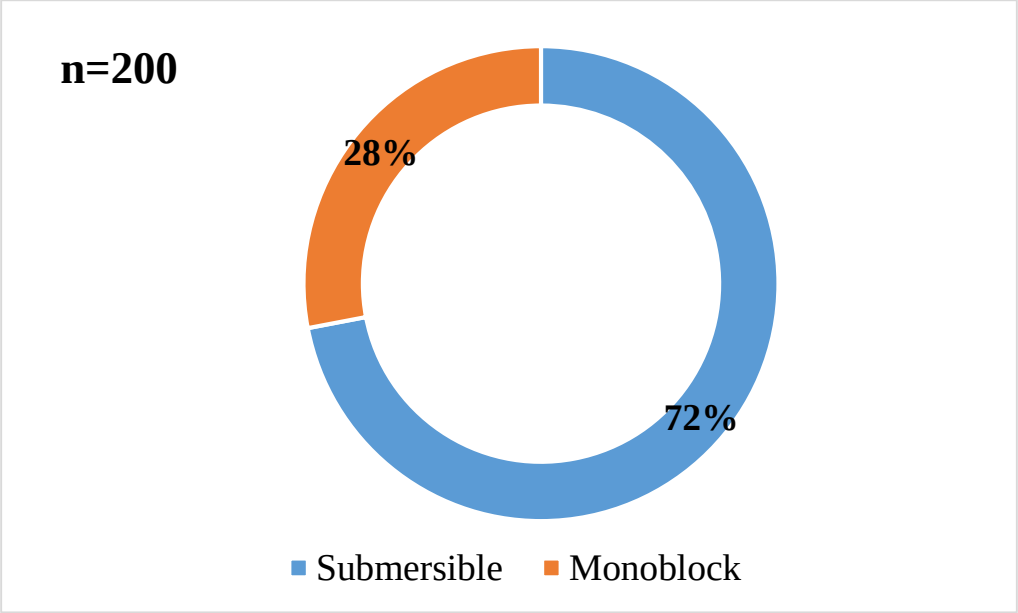


Fig. 4.1.8 Type of Pump Used by Respondents

Fig. 4.1.8 shows the type of pump used by respondents. 72% of the respondents have used submersible pumps for irrigation in their fields. Only 28% had monoblock pumps. Since majority of farmers in the study area had tubewell (72%) as prime source of irrigation, there is not much requirement of monoblock pumps compared to submersible pumps.

4.1.9. Depth of Tubewell

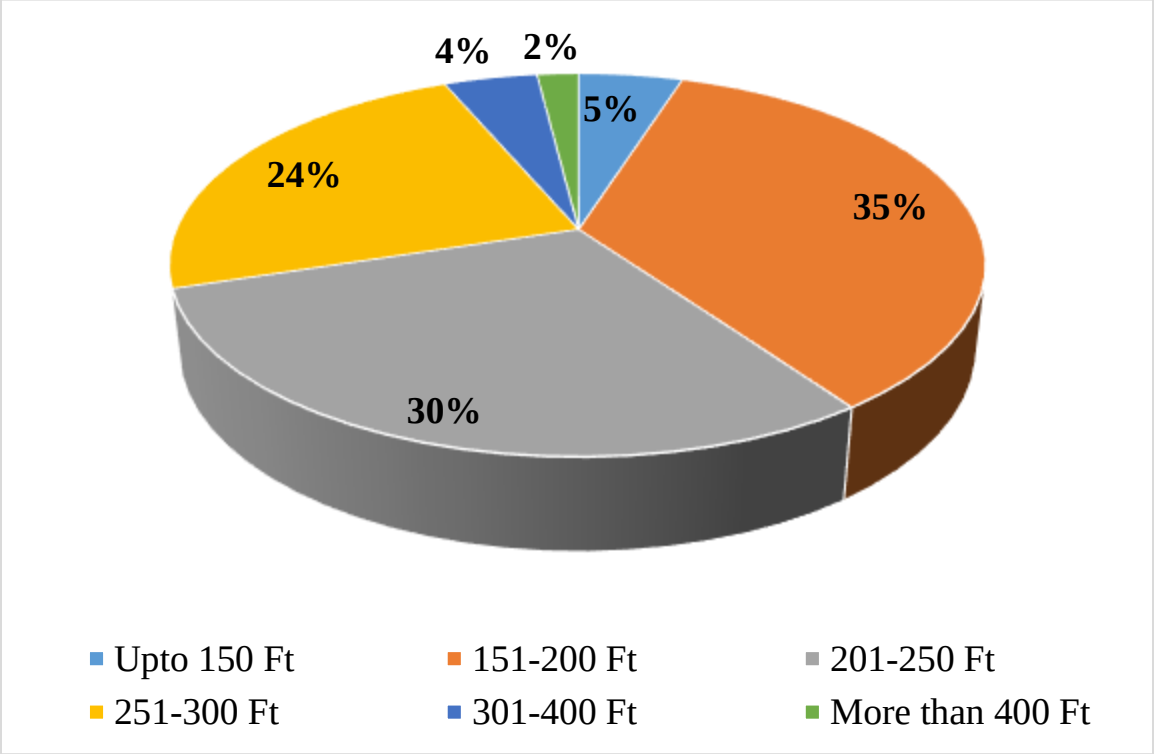


Fig. 4.1.9 Depth of tubewell

Depth of Tubewell of sample farmers is presented in Fig. 4.1.8, Majority of the tubewells were 151-200 ft deep (35%) followed by 201-250 ft (30%) and 251-300 ft (24%). Some of the tubewells were 301-400 ft (5%), 301-400 ft (4%), only 2% farmers had more than 400 ft deep.

4.1.10 Sale of Irrigation Water by Farmers

Table 4.1.10 Sale of irrigation water by farmers

Sell irrigation water	No. of respondents	In Percentage
Yes	96	48%
No	104	52%

As per Fig. 4.1.10, 52% farmer used water for irrigating their fields and had not sold water to other farmers. On the other hand, 48% farmers sold water to other farmers, such farmers were mainly small and marginal farmers those are interested to take advantage of economies of scale by selling the water.

4.1.11 Income Generated by Respondents from the Sale of Irrigation Water

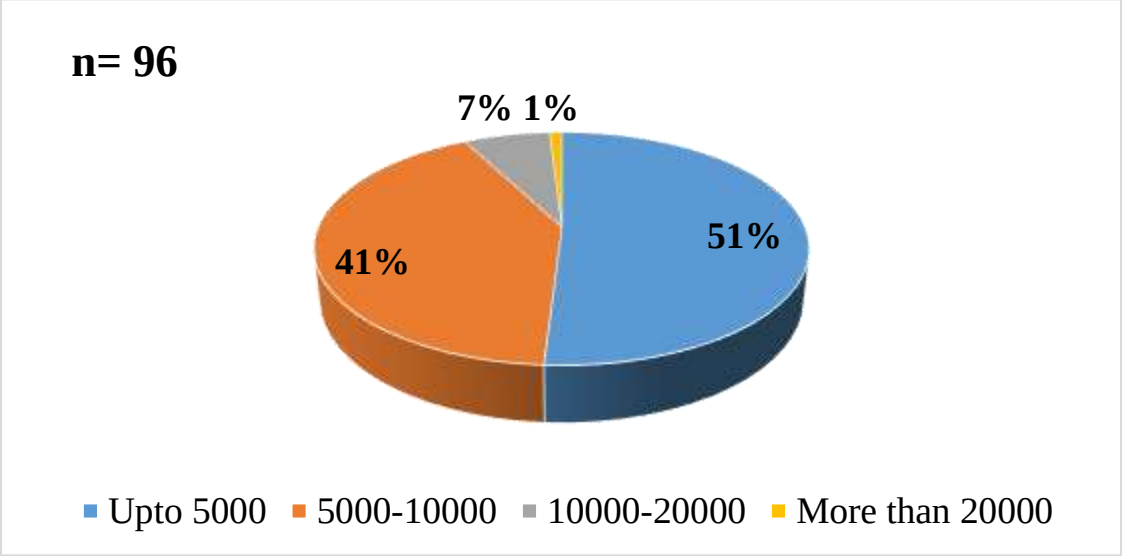


Fig. 4.1.11 Income generated by respondents from the sale of irrigation water

48% farmers sold irrigation water to other famers, among them 51% of respondents earned annual income upto Rs. 5,000 from selling water followed

by Rs. 5000-1000 (41%). 7% of the farmers earned annual income of Rs. 10,000-20,000 and only 1% farmers earned more than Rs. 20,000.

4.1.12 Penetration of Pumps' brand in study area

Table 4.1.12 Penetration of Pumps' brand in study area

Brand	No of respondents	As % of total
Kirlosker	10	5.00%
CRI	20	10.00%
Varuna	17	8.50%
Falcon	13	6.50%
Sabar	16	8.00%
Lubi	82	42.00%
Unnati	10	5%
Doctor	2	1%
MBH	4	2%
Uneel	3	1.50%
Field Marshal	4	2%
Keroma	7	3.50%
Ashirwad	4	2.00%
KSB	5	2.50%
Pullen	2	1.00%
Girnar	1	0.50%
Total	200	100%

Table 4.1.12 shows details of the penetration of the irrigation pump brands in the study area. At the aggregate level, Lubi was the market leader in Anand

and Kheda district (accounted for around 42%) followed by CRI (10%). Varuna and Sabar also hold significant portion of the pie and accounted for around 8.5% and 8% of the market share respectively. Other brands as Falcon (6.5%), Kirlosker (5%), Unnati (5%), and Keroma (3.5%) etc. are the minor players in the region.

4.1.13 HP wise Segmentation Mix

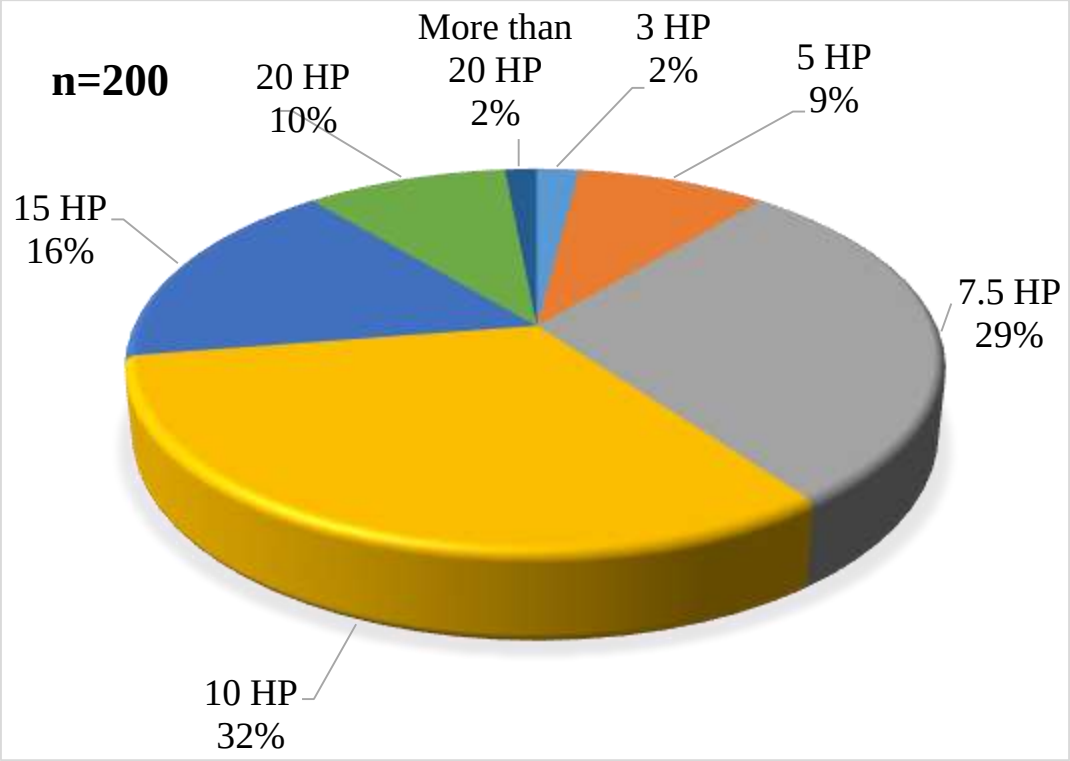


Fig. 4.1.13 HP wise segmentation mix

Fig. 4.1.13 shows the HP wise segmentation mix for the study area. Owing to the fact that tubewell is the prime source of irrigation in the region. It can be inferred from Fig. 4.1.13, the study area was market of 7.5 HP and more. Here, 7.5 to 20 HP segments accounted for around 87% of the total market. 32% of the respondents had 10 HP pump followed by 7.5 HP (29%) and 15 HP (16%).

Further, around 9%, 2% and 2% of the volumes fell into 5 HP, 3 HP and more than 20 HP categories respectively.

4.1.14 Mode of Purchase

Table 4.1.14 Mode of purchase

Mode of Purchase	No of respondents	In % of total
Cash	124	62%
Credit	72	38%

As per the Fig. 4.1.14, 64% of the farmers purchased pump set from local dealers. Only 36% of the farmers purchased big dealers in city.

4.1.15 Purchase Point of Pumps

Table 4.1.15 Purchase point of pumps

Purchase point	No of respondents	In % of total
Big dealers	72	36
Local retailor	128	64

At the time of survey it has been found that most of the farmers (62%) preferred to purchase pumps from local retail shop in village because local retailers were perceived to have better understanding of local conditions and provided quick after sales support. However, 38% farmers also preferred to purchase pumpsets from big dealers seeking better prices and high quality products.

4.1.16 Analysis of Factors Considered by Customers while Making Purchase Decision

Table 4.1.16 Factors considered by customers while making purchase decision

Factor	Sum Garrett's Score	Mean Garrett's Score	Garrett Ranking
Brand Name	7840	39.2	**VI**
Low voltage compatibility	14320	71.6	**I**
Guarantee / Warrantee	9680	48.4	**IV**
Credit facility	6600	33	**VII**
Price	9820	49.1	**III**
Quality standards such as ISI mark	8180	40.9	**V**
Higher water output	11900	59.5	**II**

Respondents were asked to rank given parameters which they consider while purchasing irrigation pump set. The ranks were converted to Garrett's score using Garrett's Ranking Techniques. It was found that low voltage compatibility of the pump was the major consideration of the

customers. It is followed by higher water output and price of pump set. Respondents were least concerned about brand name and credit facility.

4.1.17 Most Important Factor Influencing Brand Selection

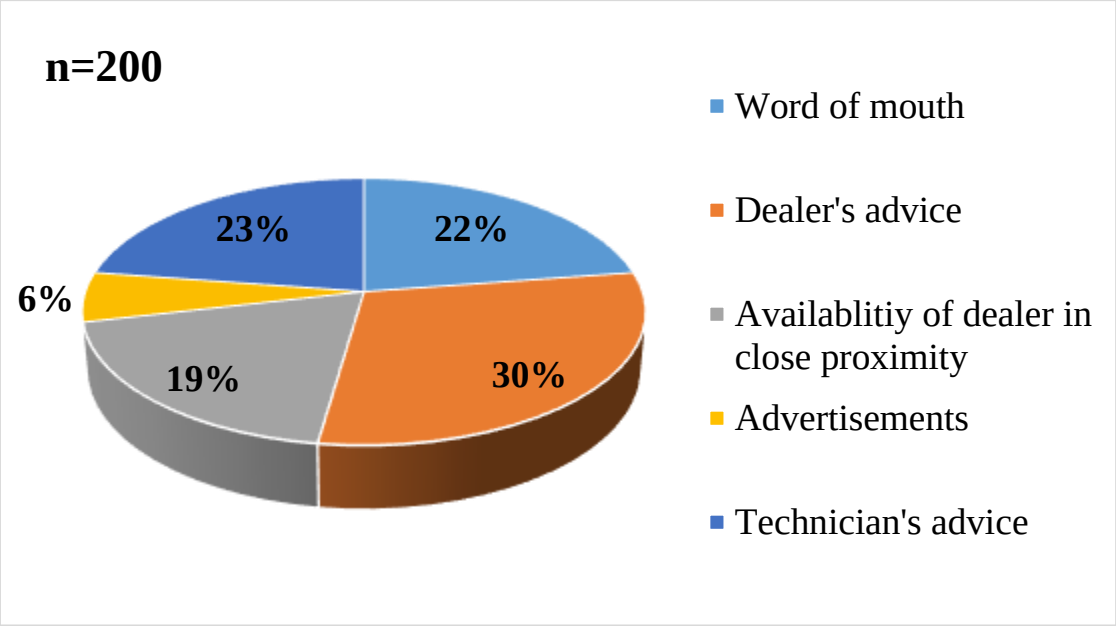


Fig. 4.1.17 Most important factor influencing brand selection

As per Fig. 4.1.17 shows the levels of factors influencing the brand selection by customers. As can be seen from the figure, dealer's advice was the most influencing factor for brand selection (30%) followed by word of mouth (23%) and technician's advice (22%). Another major factors are availability of retailor in proximity (19%) and advertisements had less influence (6%).

4.1.18 Problem Faced by Farmers

Figure 4.1.18 Problem faced by farmers with irrigation pumps (Pareto Chart)

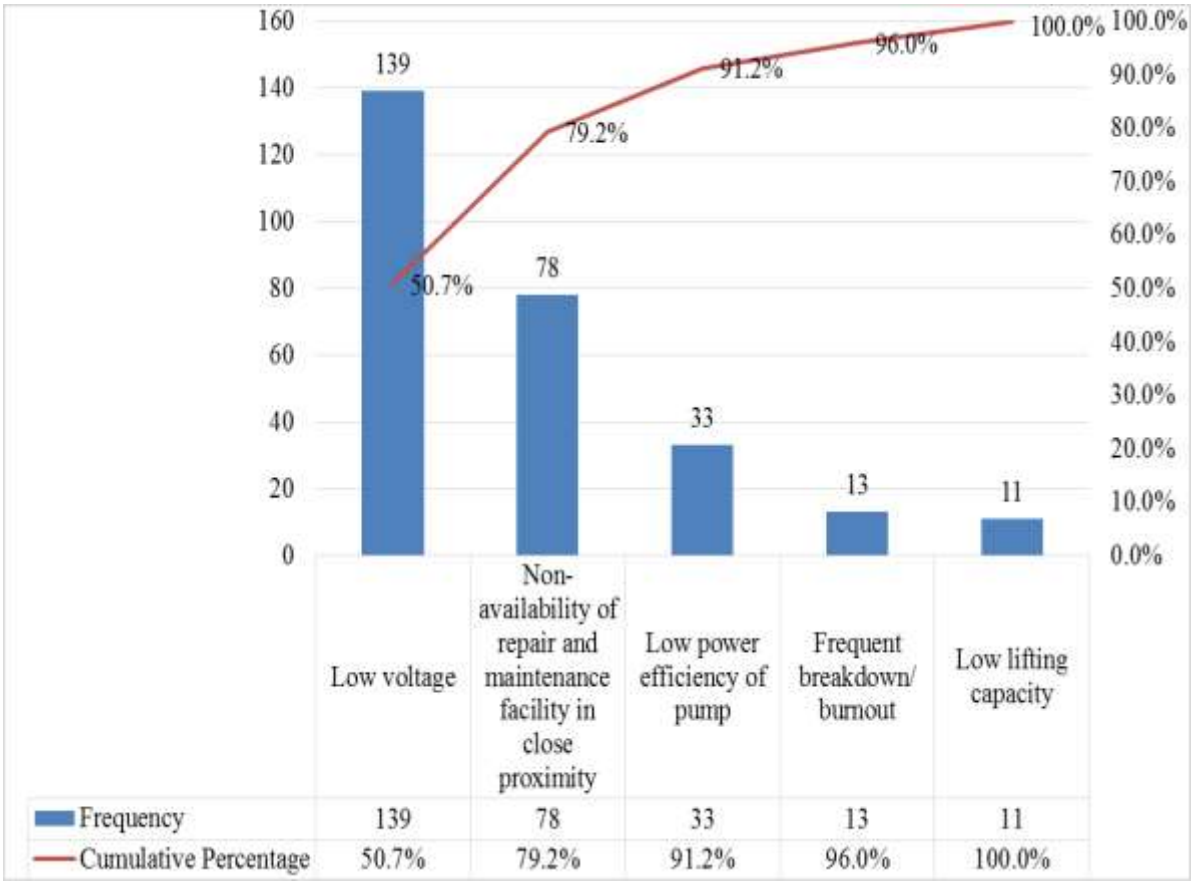


Figure 4.1.18 illustrates the major problems faced by customers after purchasing irrigation pumps. It has been found that there were two major problems which were faced by most of the customers viz. problem of low voltage and non-availability of repair and maintenance facility in close proximity. These two problems accounted for around 79% of the problems. Some customers also faced problems like low power efficiency of pump, frequent breakdown/burnout and low lifting capacity. But, organisation need to focus on major two problems which were faced by a major segment of customers.

4.1.19 Awareness of the BEE star rating

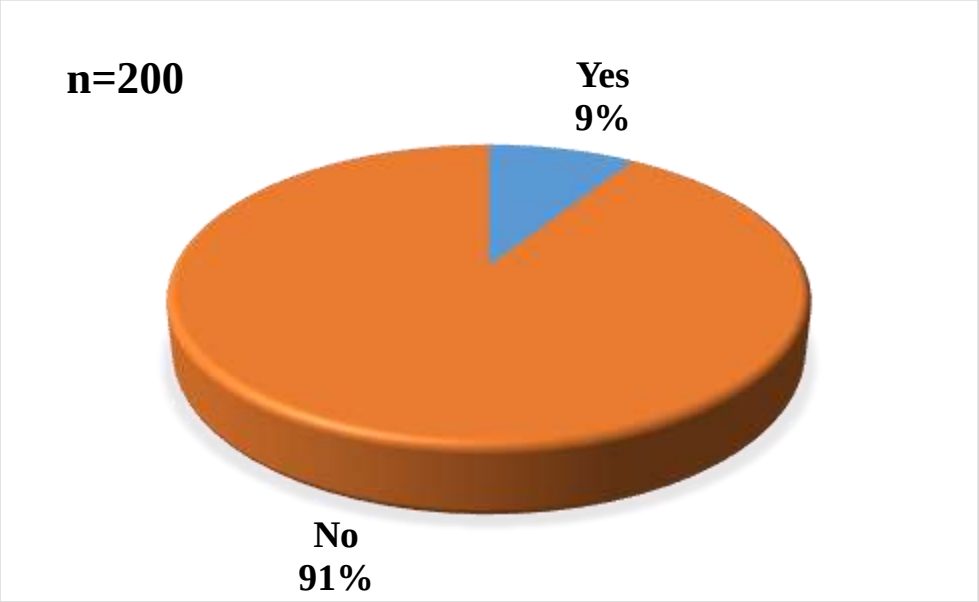


Fig. 4.1.19 Awareness of the BEE star rating

As per the Fig. 4.1.19, only 9% of the respondents were aware of BEE star rating. This scene indicates low level of awareness of BEE star rating in the study area. Among the respondents who were aware of star rating, as per table 4.1.19; around 67% of respondents reported that BEE rating affects their purchase decision.

Table 4.1.19 Effect of BEE rating on purchase decision

Does BEE rating affects purchase	No of Respondents	In %
Yes	12	66.67%
No	6	33.33%

4.1.20: Awareness level about TSAE and its Products

Table 4.1.20 Awareness level about TSAE and its products

Aware about SAE	No. of respondents	In % of Total
Yes	35	17.5
No	165	82.5

Table 4.1.20 shows low level of awareness about TSAE and its products was very low in the study area. As per the table, only 17.5% of the respondents were aware of TSAE.

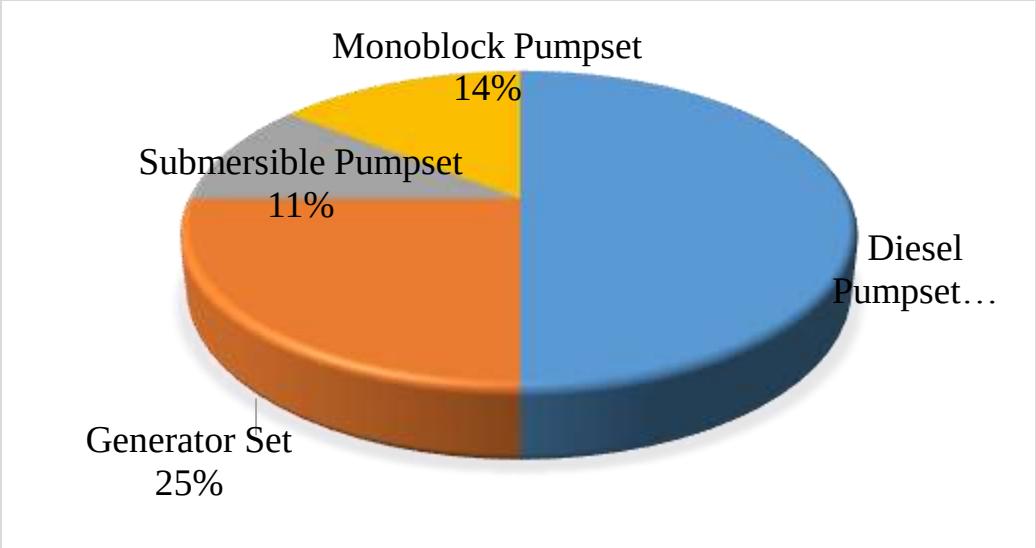


Fig. 4.1.20. Product wise awareness about TSAE

As per the Fig., among the farmers who were aware of TSAE, 50% of the respondents were aware of diesel engine pump set manufactured by TSAE followed by Generator sets (25%). 14% were aware of monoblock pumpsets and only 11% were aware of submersible pumpsets.

4.2 Dealers' Survey

4.2.1 Location of Dealers

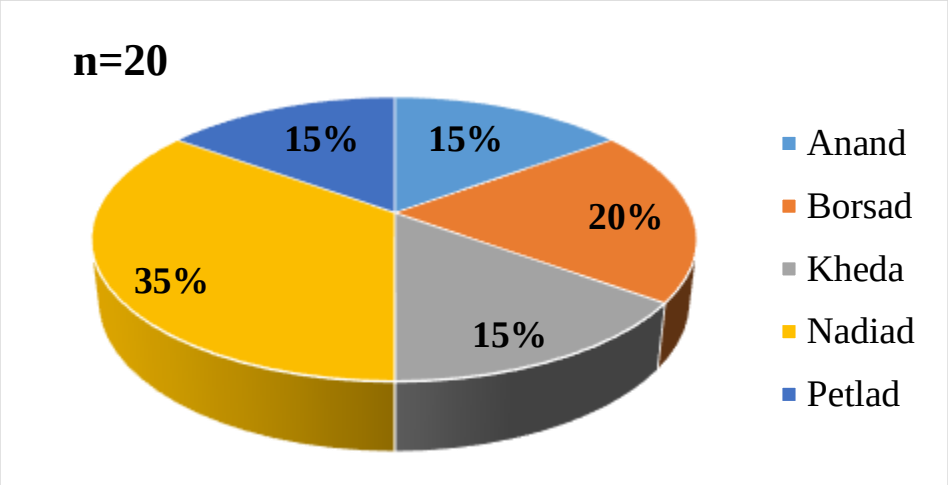


Fig. 4.2.1 Location of dealers

Fig. 4.2.1 shows location of various dealers surveyed in the study. 35% of the respondents were dealers from Nadiad followed by dealers from Borsad (20%). Other dealers were from Anand (15%), Kheda (15%), and Petlad (15%).

4.2.2 Education level of Dealers

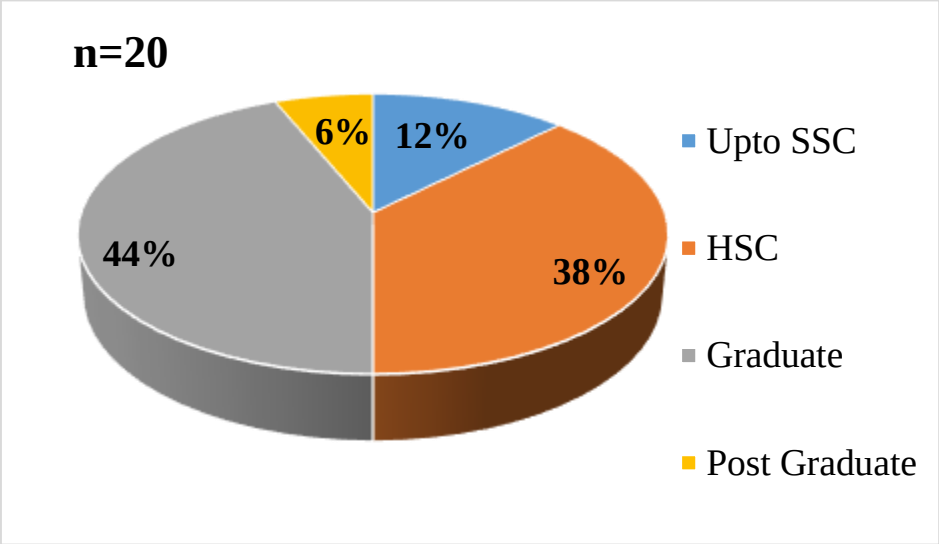


Fig. 4.2.2 Education level of dealers

Fig. 4.2.2 shows the education profile of various dealers surveyed in the study. Majority of the dealers were graduate (44%) followed by HSC (38%). 6% of the dealers were post graduate and 12% were studied upto SSC.

4.2.3 Other Source of Income of Dealers

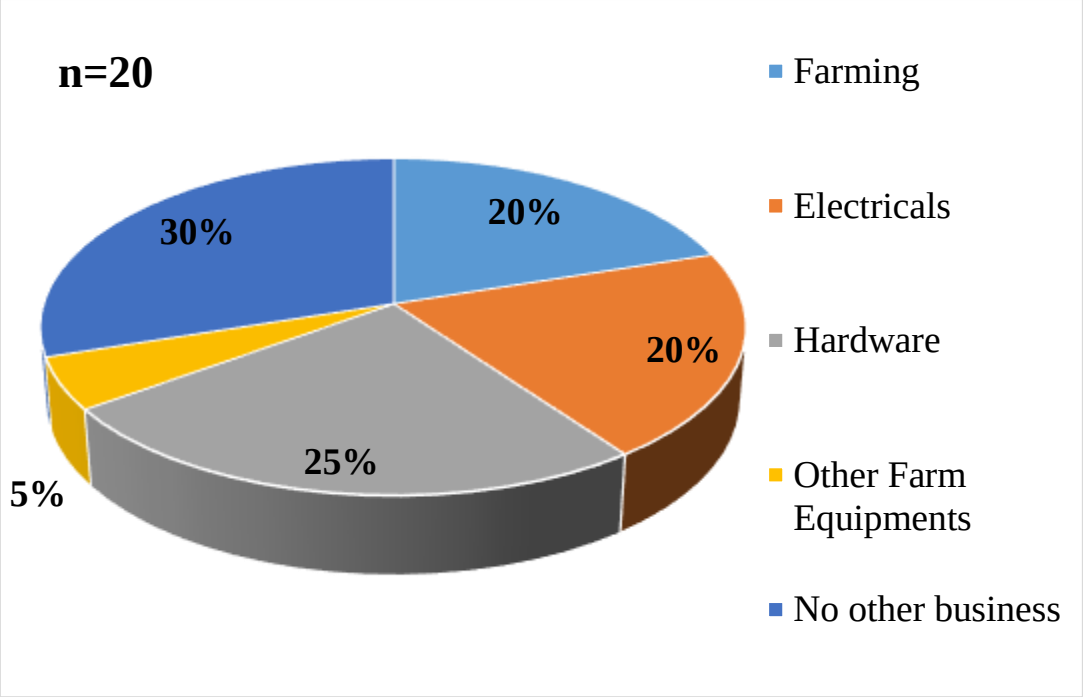


Fig. 4.2.3 Other source of income of dealers

In the study area, it was observed that about 30% of the dealers had present dealership as the only source of income. About 25% of dealers were engaged in hardware business followed by dealers engaged in electricals business (20%). 20% dealers had farming as other source of income and only one dealer was engaged in drip irrigation.

4.2.4 Experience of Dealers in Pump Business

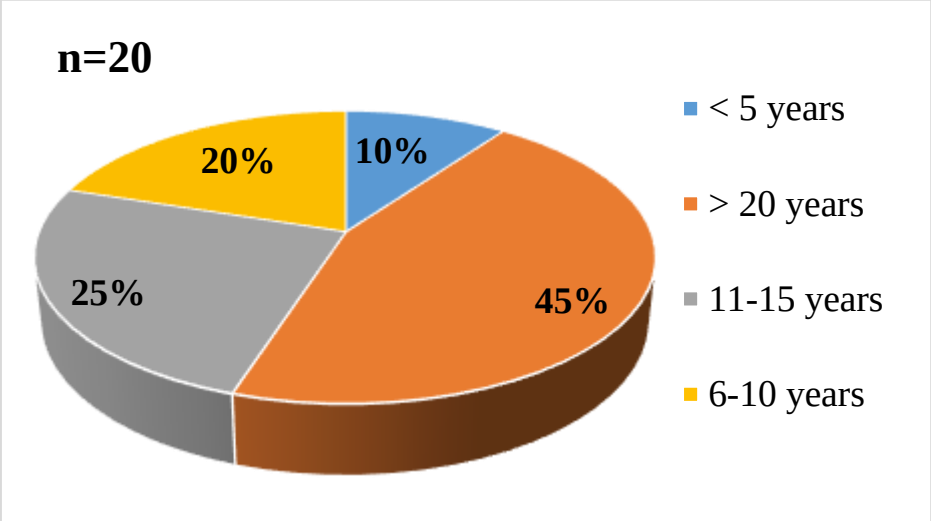


Fig. 4.2.4 Experience of dealers in pump business

As can be seen from Fig. 4.2.4, about 45% of the dealers had more than 20 years' experience in pump business. 25% of dealers had 11-15 years' experience followed by dealers with 6-10 years' experience (20%). Only 10% of dealers had less than 5 years' experience.

4.2.5 Annual Turnover from Pump Business

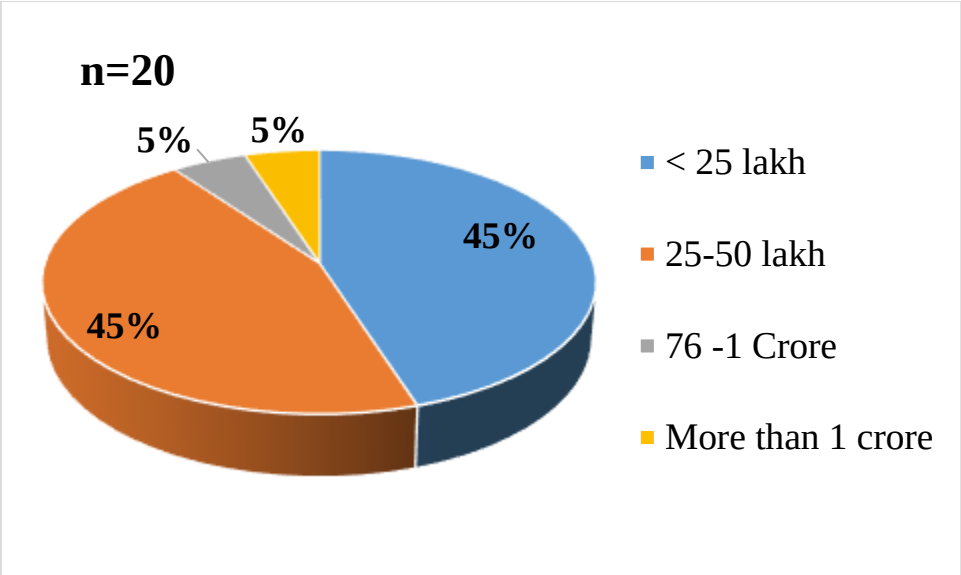


Fig. 4.2.5 Annual turnover from pump business

Fig. 4.2.5 shows the annual turnover of dealers from pump business in Indian rupees. As per the Fig., majority of the dealers had annual turnover of upto 50 lakh rupees (90%). 45% dealers had turnover of less than 25 lakh and 5% had more than 1 crore turnover.

4.2.6 Status of Credit Sales by Dealers

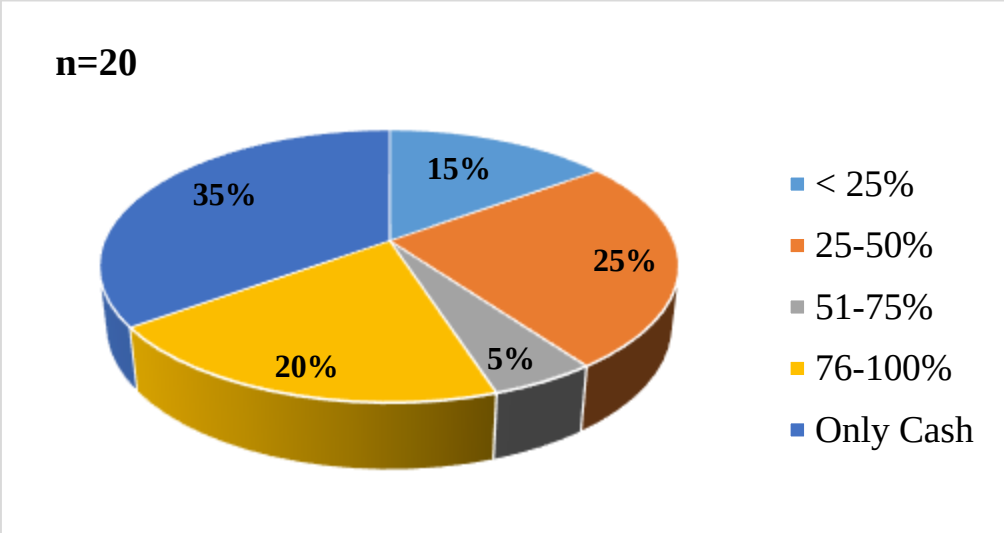


Fig. 4.2.6 Status of credit sales by dealers

Fig. 4.2.6 show the extent of credit sales by dealers. Majority of the dealers sold irrigation pumps on credit basis and only 35% of the dealers sold in cash only.

4.2.7 Credit Period Offered by Dealers

Table 4.2.7 Credit period offered by dealers

Credit period offered	No of respondents	In % of total
Upto 1 month	3	23%
1-3 moths	2	15%
3-6 months	8	62%
More than 6 months	0	0%
Total	13	100%

As seen in above table 4.2.7, 65% of the dealers sold irrigation pumps on credit basis. Among them, 62% of the dealers offered a credit period of 3-6 months to their customers. 23% of dealers had given less than 1 month credit period and only 15% dealers offered 1-3 months credit period.

4.2.8 Dealership of Brands by Respondents

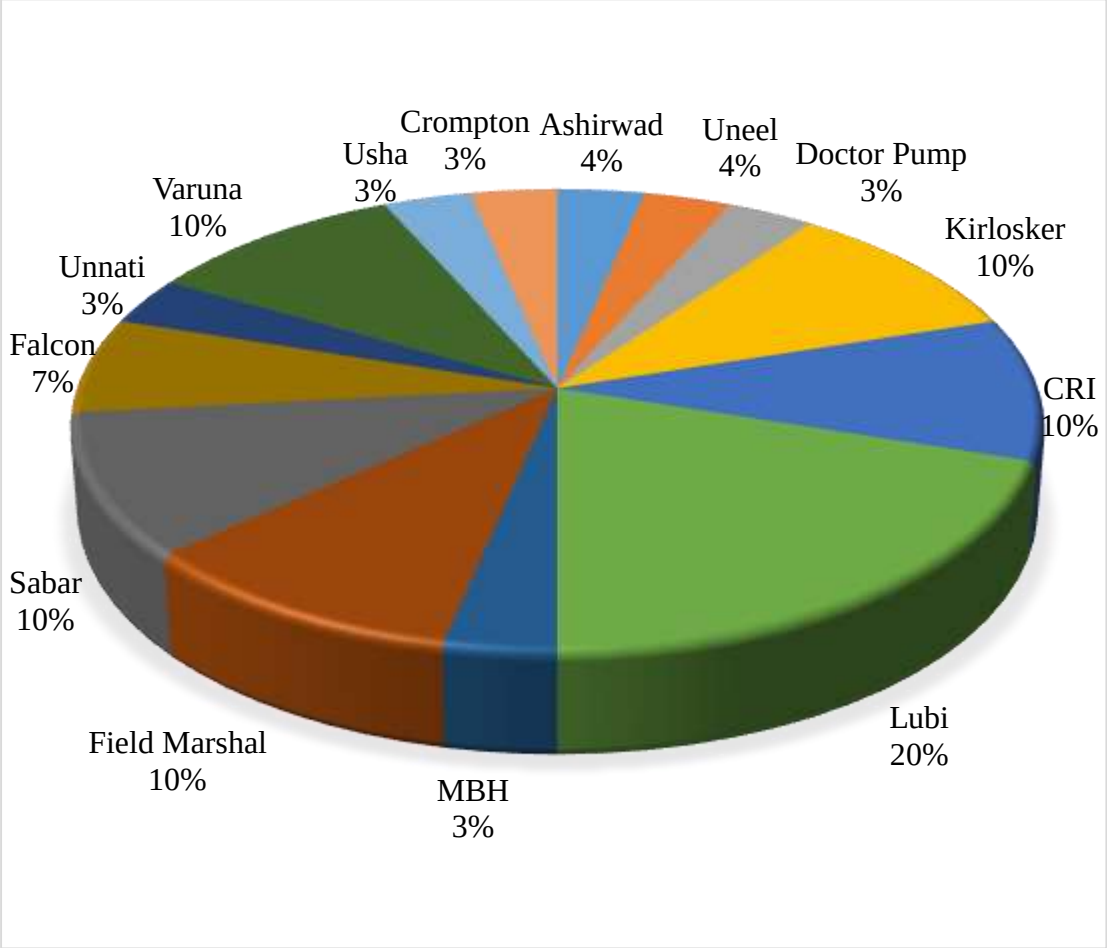


Fig. 4.2.8 Dealership of brands by respondents

As per field survey, it has been observed that most of irrigation pump dealers had non-exclusive dealerships i.e. they had dealership of many companies. Highest number of dealership were of Lubi (20%) followed by dealership of Field Marshal (10%), CRI (10%), Kirlosker (10%), Sabar (10%), Varuna (10%) and Falcon (7%). Other dealerships were of Ashirwad (4%), Uneel (4%), MBH (3%), Unnati (3%), Crompton (3%) and Doctor pump (3%).

4.2.9 Factors Considered by Dealers while Dealing with Particular Company

Table 4.2.9 Factors considered by dealers while dealing with particular company

Factor	Sum Garrett's Score	Mean Garrett's Score	Garrett Ranking
Price	835	41.75	**IV**
Credit Facility	965	48.25	**III**
Timely supply	830	41.5	**V**
Brand image	1130	56.5	**II**
Good margin	1240	62	**I**

Dealers were asked to rank given parameters which they consider while taking dealership of particular company. The ranks were converted to Garrett's score using Garrett's Ranking Techniques. It was found that good margin was the most important factor behind taking dealership of a company. It is followed by brand image of the company and credit facility provide by company. Price came out be forth position while timely supply was least considered by dealers.

4.2.10 Promotional Activities Followed Companies

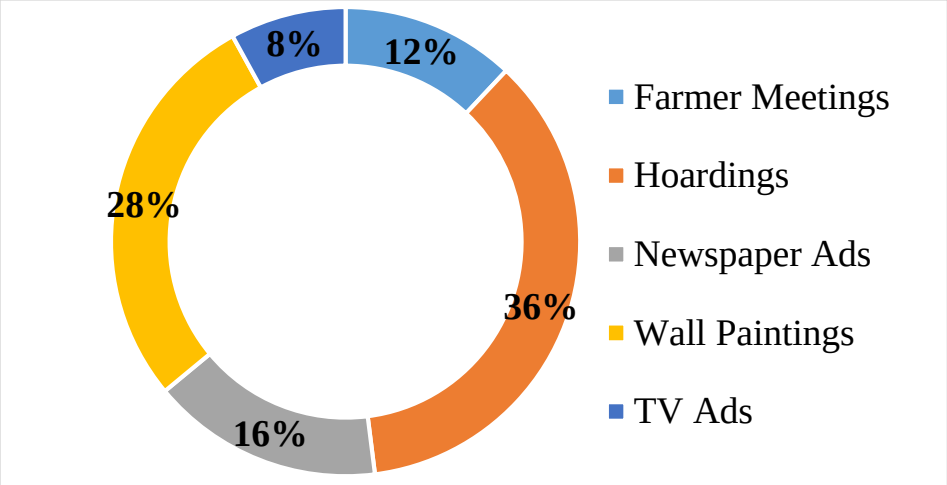


Fig. 4.2.10 Promotional Activities Followed Companies

As per Fig. 4.2.10, the most popular promotion tool followed by companies was Hoardings followed by wall paintings. 16% of the companies followed newspapers ads, 12% followed farmer meetings and only 8% followed TV ads.

4.2.11 Incentive Given by Companies

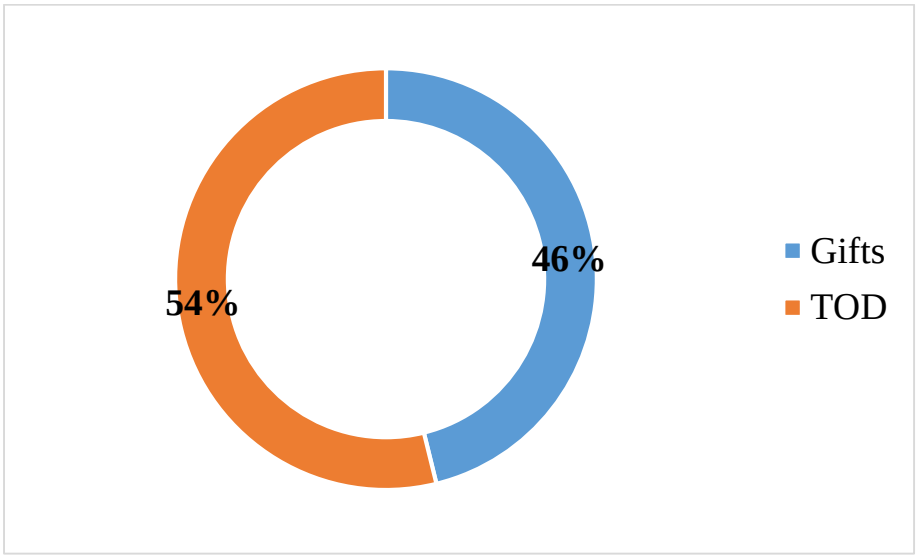


Fig. 4.2.11 Incentive Given by Companies

As per the Fig. 4.2.11, there were two kinds of incentives given to dealers viz. turn over discounts and free gifts. Majority of the companies gave TOD (54%) and 46% of companies given gifts to incentivize their dealers.

4.2.12 Dealer Satisfaction with the Incentives and Support

Table 4.2.12 Dealer satisfaction with the incentives and support

Satisfied with the incentives and support provided by company	No of respondents	In % of total
Satisfied	8	40%
Not satisfied	12	60%

Table 4.2.12 presents level of satisfaction of the dealers with respect to incentives and support provided by the companies. The majority of the dealers (60%) were not satisfied with the support and incentive provided by companies.

4.2.13 Awareness level about TSAE and its Products

Table 4.2.13 Awareness level about TSAE and its Products

Aware of TSAE company	No of respondents	In %
Aware	17	85%
Unaware	3	15%

Table 4.2.13 shows awareness level of dealers about TSAE. As per table, majority of the dealers (85%) were aware about SAE and its products. shows reverse scenario than that of farmers.

4.2.14 Dealer's Response to Different Attributes of Competitor

Table 4.2.14 Dealer's response to different attributes of competitor

Brand	Price of 10 HP pump	Profit margin	Distribution Channel#	BEE rating	Dealership in local areas
Varuna	33,000	12-14%	Type II	Yes	No
Falcon	35,000	10-12%	Type II	Yes	Yes
Field Marshal	32,000	12-14%	Type I	Yes	Yes
MBH	29,000	15-18%	Type III	Yes	No
CRI	35,000	12-15%	Type III	Yes	No
Uneel	31,000	15-20%	Type III	Yes	Yes
Lubi	35,000	10-12%	Type II	Yes	Yes
Sabar	31,000	15-18%	Type I	Yes	Yes
Doctor Pump	26,500	18-20%	Type III	No	Yes
Kirlosker	32,000	12-14%	Type II	Yes	No
Standard*	29,400	15-18%	Types III	No	Yes

* With reference to the market served by TSAE in Gujarat.
#Type I- Manufacturer -> Distributor -> Dealer -> Sub-dealer/Retailer -> Farmer
Type II – Manufacturer -> Distributor -> Retailer -> Farmer
Type III – Manufacturer -> Retailer -> Farmer

Table 4.2. Compares the different attributes of competitors of TSAE. For price comparison, price of 10 HP submersible pump was taken as reference. As per the table, among the all brands, price of Lubi, Falcon and CRI brand pumps were the highest. Price of TSAE's 10 HP pump were less compared to the competitors except Doctor pumps and MBH.

National level marketer offered less margin to the dealers as compared to regional companies. Higher profit margin offered by MBH, Standard, Doctor pumps and Sabar.

MBH, CRI, Varuna and Kirlosker does not have dealership in local areas. Among all the competitors only Doctor pumps and Standard do not have BEE rating.

As Far as distribution channels were concerned, all the regional companies adoped one level channel. Two level channel followed by majority of national players except CRI that has squeezed its distribution network by eliminating the distributors in order to save distribution margins.

V. SUMMARY AND CONCLUSION

5.1 Summary

Among all the agricultural inputs, irrigation is a critical requirement for the favourable crop yields. Indian agriculture sector is the largest consumer of pumps. The sinking groundwater levels across the country, increase in division of land, increase in cropping intensity and heavily subsidised electricity are the major drivers for the agricultural pumps market in India. Demand for irrigation pumps in the country is proliferating due to concurrent growth in agriculture. The agriculture pump market in India was valued at about INR 8600 cr. in 2014-15, and is expected to reach INR 19,020 cr. by 2019, growing at a CAGR of 17.5%. India has a strong pump manufacturing base with both Indian and international players involved in the market.

This study entitled “Market Analysis of Irrigation Pumps in Anand and Kheda Districts of Gujarat” was conducted for The Standard Agro Engineers, with the following objectives; to analyze the factors which influence the buying decision of farmers, to examine the problems faced by farmers with the irrigation pumps and to conduct competitor analysis for Standard Agro Engineers. The study covered 200 farmers and 20 dealers from two districts of Gujarat.

The study revealed that tubewells were the major source of irrigation in the study area (72%). Owing to the result that tubewells were more than 150 ft. deep; study area is market of submersible pumps of more than 7.5 HP. HP wise segmentation mix shown that 7.5 to 20 HP segments those accounted for 87% of the total market.

Among all farmer categories, marginal and small farmers preferred to sell irrigation water in order to take advantage of maximum capacity utilization of the investment.

Out of the surveyed farmers, it was found that before buying the irrigation pump, customers' major consideration was low voltage compatibility of the pump followed by higher water output, price and warranty. Brand name and credit facility were less influencing factors for purchase. For brand selection, dealer's advice was the most influencing factor followed by word of mouth and technician's advice. Advertisements had very less influence in brand selection.

Most of the farmers in the study area (62%) preferred to purchase pumps from local retail shop in village because local retailers were perceived to have better understanding of local conditions and provided quick after sales support. Farmers who preferred to purchase pumpsets from big dealers seek for better prices and high quality products.

Awareness level of BEE rating shown that majority of the farmers in the study area were unaware of BEE rating. The awareness level was only 9%. Among them 66.67% of farmers reported that BEE rating affects their purchase decision. Farmers considered ISI marks as sole quality standard for pumps.

As far as problems faced by farmer were concerned, problem of low voltage and non-availability of repair and maintenance facility in close proximity were the major problems faced by farmers. Two of these

accounted for about 79% of problems. With the fixed hours for electricity farmers preferred low voltage compatible pumps.

Competitor analysis for The Standard Agro Engineers shows that majority of the market share was captured by Lubi (42%) followed by CRI (10%) and Varuna (8.5%). In case of dealers, good margin was the most important factor behind taking dealership of a company followed by brand image of the company and credit facility provided by company. Dealers were least concerned about price and timely of pumps. There were two kinds of incentives given by companies to dealers viz. turn over discount and free gifts. However, majority of the dealers were not satisfied with the incentives and support provided by companies.

For brand promotion, majority of the companies follow hoarding advertisements as a promotion tool followed by wall paintings, newspapers ads and farmer meetings in that order. Among the farmers awareness level of TSAE brand pumps was very low.

Among the major competitors in the study area, TSAE's pumps has advantage over other due its low price, good profit margin to dealers and dealership in local areas.

5.2 Suggestions

- The awareness of TSAE brand irrigation pumps is very low among the farmers. The company should undertake an awareness campaign to inform the dealers and farmers about its pumps.

- Submersible pumps have more sales in this market according to survey. Current fluctuation is the major problem faced by farmers and farmers look pump those are compatible with low voltage. So company should concentrate on submersible pumps and try to improve the quality and performance.

- Owing to the result that dealer's advice is the major factor that influence brand selection and the product being new, company should identify potential dealers and approach them to promote their product and provide all the required support.

- Advice of local technician had significant influence on brand selection. The company should arrange meetings with local technicians to inform, educate and win their support by offering commission.

- Company can offer generator set to operate pumps as the problem of low voltage is more in the area.

REFERENCES

- **Badiani, R. and Jessoe, K.K. (2011)**, "Electricity Subsidies for Agriculture: Evaluating the Impact and Persistence of These Subsidies in India", Working Paper, University of California, San Diego.
- **Ganapathi, R. *et al* (2010),** "Users' preference of Motor Pumps in rural Area with reference to Coimbatore District", Management Prudence, Vol. 1. No. 1, pp.7-14.
- **Moniruzzaman, M (2015),** "A Study on Dealer's Preference towards Water Pumps with Special Reference to Beacon Pump in Chennai City", *Global Journal of Management and Business Research*, Vol. 15, No. 1.
- **Rajasekaran, R. and Krupa, M.E. (2013),** "Global Marketing- A Study with Reference To Motor Pumps in Coimbatore", *Global Journal of Management and Business Studies*, Vol. 3, No.6, pp. 565-572.
- **Shakti Sustainable Energy Foundation (2012),** "Market Research of Agriculture Pump-sets Industry of India", Retrieved from: http://shaktifoundation.in/report/market-research-of-agriculture-pump-sets-industry-of-india/
- **Suresh, K. (2000),** "A study on Dealer perception towards the performance of different pumps-a survey", *Thesis, Bharathiar University, Coimbatore*.

Web references

- www.fao.org. (Last Accessed on 02/03/2016)
- www.ciae.nic.in (Last Accessed on 30/04/2016)
- http://pib.nic.in/ (Last Accessed on 02/02/2016)
- http://www.fao.org/ (Last Accessed on 22/03/2016)
- http://www.standardagro.com/ (Last Accessed on 02/05/2016)
- www.indianpump.org.in (Last Accessed on 20/05/2016)
- http://agcensus.nic.in (Last Accessed on 03/05/2016)
- www.cgwb.gov.in (Last Accessed on 02/06/2016)

ANNEXURE I

Schedule for Farmers

1. Personal details of farmer

Name		Age	
Education		Taluka	
Village		Contact no.	
Occupation	A) Farming	B) Farming & Business	C) Farming & Service

2. Operational land holding details

Total operational land holding……..Acre (Category:- Marginal / Small / Semi-medium /Medium / Large)		
Out of which	Own land……...Acre	Leased-in…...Acre
	Irrigated……..…Acre	Unirrigated……Acre

3. Cropping pattern on operational land holding (2015-16)

Sr. No.	Season	Crops	Area under cultivation (in Acre)	
			Irrigated	Unirrigated
1.	Kharif	1.		
		2.		
2.	Rabi	1.		
		2.		
3.	Zaid	1.		
		2.		

4. **Method of irrigation-** A) Drip B) Flood C) Sprinkler
5. **What is the source of irrigation in your field-**

   A) River B) Tube Well C) Open well E) Canal F) Tank
6. **If tubewell then depth of tubewell (*applicable if response of question 5 is B)-**

   A) Upto 200ft B) 201-300ft. C) 301-400ft. D) 401-500ft. E) More than 500ft.
7. **Do you sell irrigation water- A)Yes B)No**
8. **If yes, then annual income you earn from that in a year-**

   A) Upto 5,000 B) 5,000 to 10,000 C) 10,001 to 20,000 D) more than 20,000

9. Details of pump (Not applicable if response of question 1 is C)-

Type	A) Submersible B) Mono-block
Brand	A) Kirloskar B) KSB C) Shakti D) Texmo E) CRI F) Varuna G) Sabar H) Falcon G) Lubi H) Unnati F) SAE I) Other, specify…
Motor HP	A) 5 HP B) 7.5 HP C) 10 HP D) 15HP E) 20HP F) More than 20 HP
Mode of Purchase	A) Cash B) Credit
Point of purchase	A) Local retailor B) Big retailors or dealers in town

10. Rank the following factors which you consider in making purchase decision-

1. Brand name	
2. Low voltage compatibility	
3. Guarantee / Warrantee	
4. Credit facility	
5. Price	
6. Quality standards such as ISI mark	
7. Higher water output	

8. What influence brand selection most? (Mark Tick)

Word of mouth	
Retailer's advice	
Availability of dealer in close proximity	
Advertisement	
Technician's advice	

13. Problems faced by farmers (mark tick)-

Frequent breakdown/ burnout	
Low voltage	
Low power efficiency of pump	
Non-availability of repair and maintenance facility in close proximity	
Low lifting capacity	

14. Are you aware of BEE star rating..? – A)Yes B) No

15. If yes, then does the BEE star rating of pump affect your purchase decision?- A)Yes B) No

16. Electricity tariffs- A) Flat rate based to HP B) Based on actual consumption

17. Do you know about TSAE and its products? – A) Yes B) No

If Yes, then what are the products you know-

1…….. 2…… 3……..4…….

ANNEXURE II

Schedule for Dealers

1. Name:

2. Educational Background

3. Address:

Taluka: **District:** **Contact No:**

4. No. of years in this business -

5. Other Business you are dealing with:

A) Seed B) Fertilizers C) Agrochemicals D) Drip Irrigation systems E) Tractor

F) Other farm machinery and equipments G) Hardware H) Electricals F) Other, Specify……

6. Annual sales of pumps-

Annual sale	Mode of Payment	
	Cash - ……..…%	Credit - …….%
Credit period given to farmers	A) Upto 1 month B) 1-3 months C) 3-6 months D) more than 6 months	

7. How many companies dealership you have-

A) Kirloskar B) KSB C) Shakti D) Texmo E) CRI F) Varuna

G) V-guard H) Falcon G) Lubi H) Unnati F) SAE I) Others,

specify**……**

8. Rank the following factors you consider while dealing with particular company?

Factors	**Rank**
1. Price	
2. Credit Facility	
3. Timely supply	
4. Brand image	
5. Good margin	

9. What are the promotional activities followed by those companies?

……..……

……..…

10. Which irrigation pump brand sold maximum from your shop- ……

12. What kind of incentives given by company?

……

13. Are you satisfied with the incentives and support provide by company? .....

14. Fill the following details with regard to the companies you deal with-

Brand	Price of 10 HP pump	Profit margin	Credit period	Distribution Channel	BEE rating	Dealership in local areas

15. Do you know about products of TSAE? A) Yes B) No

16. If Yes, then what are the products you know-……