

**FARMERS' AND DEALERS' SATISFACTION AND BRAND
PREFERENCE FOR SEED DRILL IN RAJKOT AND
JUNAGADH DISTRICTS OF GUJARAT**

By

ABHISHEK MALAVIYA

B.Tech.

(AGRICULTURAL ENGINEERING)



**INTERNATIONAL AGRI-BUSINESS MANAGEMENT INSTITUTE
ANAND AGRICULTURAL UNIVERSITY,**

ANAND- 388110

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**“FARMERS’ AND DEALERS’ SATISFACTION AND BRAND
PREFERENCE FOR SEED DRILL IN RAJKOT AND JUNAGADH
DISTRICTS OF GUJARAT”**

A PROJECT REPORT

SUBMITTED BY
ABHISHEK MALAVIYA
Reg. No. 04-2780-2015

***In partial fulfillment for the award of the degree
of***
**MASTER OF BUSINESS ADMINISTRATION
INTERNATIONAL AGRIBUSINESS**

**UNDER THE GUIDANCE
OF**
Dr. Ritambhara Singh
Assistant Professor
Department of Agribusiness Economics and Policies



International Agribusiness Management Institute
Anand Agricultural University
Anand-388110

JUNE 2017

Date: 03/06/2017

CERTIFICATE

This is to certify that Mr. Abhishek Malaviya (Reg. No. 04-2780-2015) pursuing MBA-IAB at International Agribusiness Management Institute, Anand has undergone a project work in our organization from 5th January to 5th May 2017 on the project entitled **"FARMERS' AND DEALERS' SATISFACTION AND BRAND PREFERENCE FOR SEED DRILL IN RAJKOT AND JUNAGADH DISTRICTS OF GUJARAT"**.

Mr. Abhishek Malaviya has successfully completed the project work he was found to be hardworking, sincere and dedicated during this period.

We wish him all the best for his future endeavours.

For Tirth Agro Technology Pvt. Ltd.



Gaurav Amin
Assistant General Manager - HR

Tirth Agro Technology Pvt. Ltd.

"SHAKTIMAN", Survey No.-108/1, Plot No. B, NH-27, Nr. Bharudi Toll Plaza, Bhunava (Village),
Taluka: Gondal, Dist.: Rajkot. State: Gujarat - INDIA, Pin - 360311
Phone: + 91 (2827) 661637 (30 Lines), + 91 (2827) 270537, Fax: + 91 (2827) 270457.
Email: info@shaktimanagro.com, Web: www.shaktimanagro.com, CIN: U72900GJ2000PTC 038435
Correspondence : Nr. Hotel Krishna Park, N.H. 27, Vavdi, Rajkot - 360 004, Gujarat, India.

INTERNATIONAL AGRIBUSINESS MANAGEMENT INSTITUTE
ANAND AGRICULTURAL UNIVERSITY
ANAND-388110

CERTIFICATE

This is to certify that this project entitled **“FARMERS’ AND DEALERS’ SATISFACTION AND BRAND PREFERENCE FOR SEED DRILL IN RAJKOT AND JUNAGADH DISTRICTS OF GUJARAT”** of M.B.A (International Agribusiness) embodies bonafide research work carried out by **ABHISHEK MALAVIYA** 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-AAU, Anand

(Ritambhara Singh)

Date:

Advisor

INTERNATIONAL AGRIBUSINESS MANAGEMENT INSTITUTE
ANAND AGRICULTURAL UNIVERSITY
ANAND-388110

DECLARATION

I hereby declare that the project entitled **“FARMERS’ AND DEALERS’ SATISFACTION AND BRAND PREFERENCE FOR SEED DRILL IN RAJKOT AND JUNAGADH DISTRICTS OF GUJARAT”** submitted for 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

Abhishek Malaviya

Date:

(04-2780-2015)

FARMERS' AND DEALERS' SATISFACTION AND BRAND PREFERENCE FOR SEED DRILL IN RAJKOT AND JUNAGADH DISTRICTS OF GUJARAT

Name of Student

Malaviya Abhishek V.

Reg. No.: 04-2780-2015

Advisor

Dr. Ritambhara Singh

Assistant Professor

INTERNATIONAL AGRI-BUSINESS MANAGEMENT INSTITUTE

ANAND AGRICULTURAL UNIVERSITY

ANAND-388 110

ABSTRACT

Mechanization has an important role to play in Indian agriculture. Given the low levels of mechanization in Indian farming, there is high scope to improve level of mechanization. The fast changing economic environment globally as well as locally, has a strong bearing on the perception of customers, dealers and other stakeholders in any industry including farm machinery industry. Scanty literature is available to understand the dynamic change in farm machinery industry with focus on market.

The study entitled “Farmers’ and dealers’ satisfaction and brand preference for seed drill in Rajkot and Junagadh districts of Gujarat” is part of a project undertaken for Tirth Agro Technology Pvt. Ltd. (SHAKTIMAN), based in Rajkot, Gujarat.

The Project was undertaken with the basic objectives of studying the farmer’s and dealer’s satisfaction level for mechanical seed drill of major companies; analysing the brand preference for mechanical seed drill and identifying the problem faced by farmers using mechanical seed drill in Junagadh and Rajkot districts. The study area consisted of 160 users and 40 non users of mechanical seed drill selected from 8 tehsils and 16 villages two selected districts. Both, primary as well as secondary data were used to achieve the stipulated objectives of the study. Primary data were collected with help of schedule while secondary data were collected from the relevant publications, apart from the records maintained by private and government organizations. Descriptive statistics, Likert scale and Garrett ranking were used to analyse the data.

In Saurashtra region, majority of respondents sowed cotton, groundnut and wheat. As per ministry of agriculture, in Gujarat, there has been steady shift from animal power to electro-mechanical power. According to survey, 82% respondents had self-

propelled farm equipments, while 80% respondents had mechanical seed drill as sowing equipment.

The major brands involved in mechanical seed drills manufacturing are: (1) Khedut agro (2) Dharti engineering (3) Mausam agro Pvt. Ltd. (4) Kranti agro engg. (5) Kisan agro industries (6) Gujarat agro. (7) Bharat agro engg. (8) Shapar agro enterprise (9) Bhumi agro industries and (10) Ramdev agro engineering.

The study revealed that before buying the mechanical seed drill, customers' major consideration was seed placement at proper depth, and it was given highest rating by all sampled customers, followed by spacing adjustment, multi crop usage, hopper capacity, spare part availability, and metering device in that order. Other major consideration were recommendation of relatives/friends/other villagers and its efficiency. Besides, there were some other factors which influenced the buying behaviour of the customer. These include: brand name, seed rate, price, and product appearance.

Likert scale was used for analysing customers' satisfaction level towards seed drill of various companies. It was found that Dharti's respondents were fully satisfied with the 'quality of material' and its 'efficiency' attribute, Khedut agro's respondents were fully satisfied with the 'hopper capacity' attribute, Mausam agro's respondents were fully satisfied with the 'metering mechanism' attribute, and Kranti agro's respondents were fully satisfied with the 'multi crop usage attribute'.

As far as dealers' satisfaction level towards the brands was concerned, for the 'profit margin', dealers were fully satisfied with the Khedut agro and for the 'Company support' dealers were fully satisfied with the Mausam agro engineering. With respect to 'efficiency' attribute, dealers were fully satisfied with the Dharti agro and for the 'Price' attribute, dealers were fully satisfied with the Kranti agro engineering.

With regard to brand preference level towards major brands of mechanical seed drill, Garrett ranking method was used. As per this method, Dharti agro got highest score for 'spare parts availability' attribute and Mausam agro got highest score for 'Sales promotional' attribute. Kranti agro and Bharat agro got highest score for 'price' and 'after sales service', while Khedut agro got highest score for 'good behaviour of dealer'.

The most commonly used promotional tool in the study area was demonstration of seed drill in villages, followed by Wall painting and distribution of pamphlets.

As per the survey, majority of farmers faced the problem of improper germination of seed, blockage of tubes due to fertilizer clods, lack of signal device at zero seed availability, less hopper capacity and improper placement of seed.

When dealers were asked about expectation from different companies, they told that general problems should be resolved and companies should apply sales promotional

tools. They also told that company should start the training program for dealers' staff and farmers for achieving better efficiency of seed drill.

Based on the findings, It was suggested that problem of blockage of tubes due to fertilizer clods should be resolved through effective agitator, which is driven through side wheel gear drive mechanism. To get an idea of 'low seed level', company should introduce "Low seed level" acoustic alarm for the problem of lack of signal device at zero seed availability. For the problem of hopper capacity, companies should increase the volume of hopper capacity and for the multi crop usage, companies should start the use of 'Internal Double run type' seed metering devices which has double faced wheel, one face has a larger openings for larger seeds and one face has smaller openings for smaller seeds. To achieve higher efficiency, company must focus on using light weight and quality fibre, That will help in covering larger area in lesser time.

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Place: IABMI, Anand
Date:

Abhishek Malaviya
(04-2780-2015)

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LIST OF ABBREVIATIONS

CAGR	Compound Annual Growth Rate
CTO	Control Tractor Organization
FAO	Food and Agriculture Organization
FICCI	Federation of Indian Chambers of Commerce and Industry
GCA	Gross Cropped Area
GDP	Gross Domestic Product
GOI	Government of India
HP	Horse Power
ICRA	Indian Credit Rating Agency
TAFE	Tractor & Farm Equipment limited
NHM	National Horticulture Mission
MoA	Ministry of Agriculture
M & M	Mahindra and Mahindra
MRP	Maximum Retail Price
NABARD	National Bank for Agriculture and Rural Development
SMAM	Sub-mission on agriculture Mechanization Scheme

1. INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The study entitled “FARMERS’ AND DEALERS’ SATISFACTION AND BRAND PREFERENCE FOR SEED DRILL IN RAJKOT AND JUNAGADH DISTRICT OF GUJARAT” is part of project of Tirth agro technology Pvt. Ltd. (SHAKTIMAN). The study has covered two district of Gujarat consisting 16 villages. SHAKTIMAN is interested to know the farmers and dealers satisfaction level across major 10 brands of seed drill.

1.2 INDIA AND AGRICULTURE

Agriculture in India is unique in its characteristics, where over 250 different crops are cultivated in its varied agro-climatic regions, unlike 25 to 30 crops grown in many of the developed nations of the world. Agriculture is one of the most important sectors of the Indian economy contributing 14% of national GDP, about 12.7% of total exports and supporting two-thirds of the work force.

After a near-stagnation or modest growth in output for several years, Indian agriculture has officially rebounded in 2014-15 with food grain production increased to 264.77 million tonnes.

India with its favorable agro-climatic conditions and rich natural resource base has become the world's largest producer across a range of commodities:

- It is the largest producer of coconuts, mango, banana, milk and dairy products, cashew nuts, pulses, ginger, turmeric and black pepper;
- It is also the second largest producer of rice, wheat, sugar, cotton, fruits and vegetables.

The early agricultural mechanization in India was greatly influenced by the technological developments in England. Horse drawn and steam-tractor-operated equipments were imported during the later part of the nineteenth century. The horse-drawn equipments imported from England were not suitable for bullocks and buffaloes being used in India. These were suitably modified to suit Indian draught animals. With the production of indigenous tractors and irrigation pumps, the use of mechanical power in agriculture, has been showing an increasing trend.

As a result of Green Revolution in the sixties, the total food grain production increased from a mere 50.8 million tonnes during 1950-51 to 264.77 million tonnes in 2014-15, and productivity increased from 522 kg/ha to more than 2,210 kg/ha.

The increase in production of food grains was possible as a result of adoption of quality seeds, higher dose of fertilizer and plant protection chemicals and machinery. Irrigation played a major role in increasing the productivity. Increased cropping intensity and higher quantity of inputs could no longer be effectively managed by animate power alone and, therefore, farmers adopted tractors, irrigation pumps, harvesters and power threshers extensively.

1.3 FARM MECHANIZATION

Mechanized agriculture is the process of using agricultural machinery to mechanize the work of agriculture, greatly increasing farm worker productivity.

Efficient machinery helps in increasing productivity by about 30% (Table 1) besides, enabling the farmers to raise a second crop making the agriculture attractive. Raising more crops with high productivity is a path for meeting the future food requirement of population. Development and introduction of high capacity, precision, reliable and energy efficient equipment is the need for judicious use inputs. For crop production human, animal and mechanical energy is extensively used. In small and marginal farms, except for tillage, other operations such as sowing/ transplanting, weeding, cotton picking harvesting and threshing (paddy) are normally manually performed.

Table 1.1 Economic Advantage of Farm Mechanization	
Increase productivity up to	12 – 34%
Seed cum fertilizer drill facilitates	
Saving in seeds	20%
Saving in fertilizer	15 – 20%
Enhancement the cropping intensity	5 – 22%
Increase in gross income of farmer	29 – 49%

(Source: Report of the Sub-Group on Agricultural Implements and Machinery for Formulation of 9th Five Year Plan, Govt. of India.)

Mechanization also imparts capacity to the farmers to carry out farm operations, with ease and freedom from drudgery, making the farming agreeable vocation for educated youth as well. It helps the farmers to achieve timeliness and precisely meter and apply costly input for better efficacy and efficiency.

Farm mechanization has been helpful to bring about a significant improvement in agricultural productivity. Thus, there is strong need for mechanization of agricultural operations. The factors that justify the strengthening of farm mechanization in the country can be numerous. The timeliness of operations has assumed greater significance in obtaining optimal yields from different crops, which has been possible by way of mechanization. For instance, the sowing of wheat in Punjab is done up to the first fortnight of November. A delay beyond this period by every one week leads to about 1.50 quintals per acre decrease in the yield (**Source: IKISAN portal**). This is also correct in the case of other crops and for other farm operations like hoeing, irrigation, harvesting, threshing and marketing which need to be performed at appropriate time otherwise the yield and farm income is affected adversely.

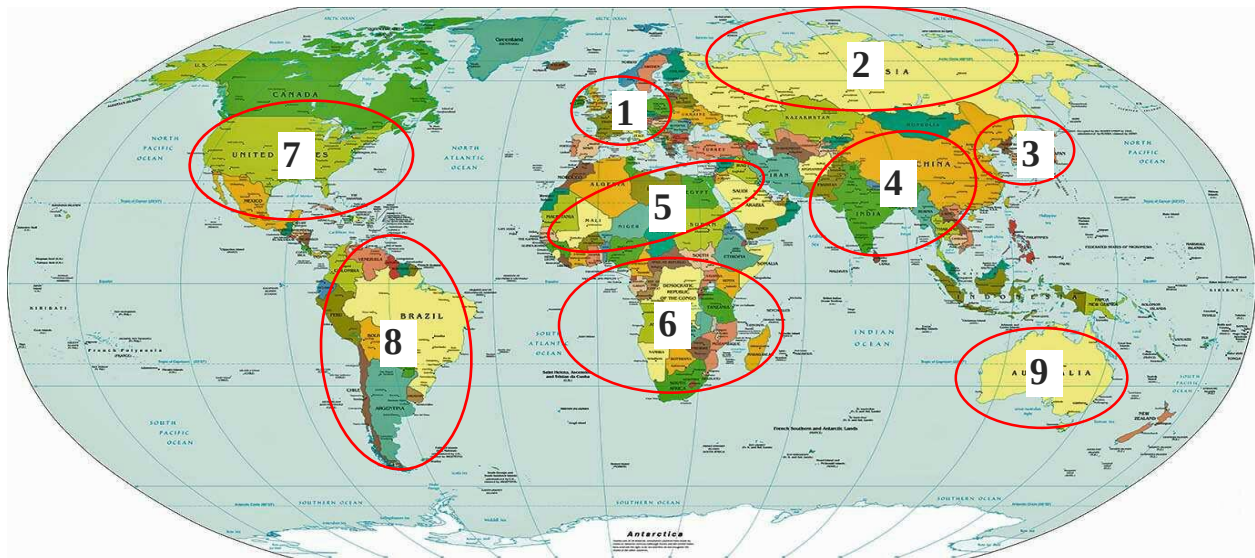
Secondly, the quality and precision of the operations are equally significant for realizing higher yields. The various operations such as land leveling, irrigation, sowing and planting, use of fertilizers, plant protection, harvesting and threshing need a high degree of precision to increase the efficiency of the inputs and reduce the losses. For example, sowing of the required quantity of seed at proper depth and uniform application of given dose of fertilizer can only be possible with the use of proper mechanical devices. However, when such operations are performed through indigenous methods, their efficiency is reduced.

Thirdly, the time taken to perform sequence of operations is a factor determining the cropping intensity. So as to ensure timeliness of various operations, it is quite inevitable to use such mechanical equipments which have higher output capacity and cut down the number of operations to be performed. This has helped in increasing area under cultivation and increase in cropping intensity. Higher productivity of land and Labour is another factor, which clearly justifies farm mechanization.

1.4 FARM MECHANIZATION – WORLD SCENARIO

Europe (EU):-

1. High numbers of machines per hectares reflecting over mechanization and a great variety of farm structures.
2. Tendency to fewer and higher powered machines
3. Strong industry with high rate of export.



United States of America:-

1. Completely mechanized farms
2. Trend towards larger and higher powered machines
3. Further technical progress tend towards automation

Japan:-

1. The agriculture sector has been diminishing in recent decades
2. Sector is highly mechanized with 461 tractor and 237 harvesters per 1000 ha.(Source: www.FAO.org)
3. Mostly small, sophisticated and specialized machines.
4. Further technical progress tends towards more automation.
5. Strong industry with export to whole Asia and other regions of the world.

India / china:-

1. Agriculture contributes large shares to the GDP and more than one third of the population gains income from agriculture.
2. Small scale farm operation are predominant.
3. Structural change with tendencies to larger farm is increasing.
4. Rapid increase in number of machines and of mech. Custom hire services.
5. Fast growing tractor production; from 2002/03 to 2007/08 the production capacity doubled to reach 364,205 units in India. (Source: www.agricoop.nic.in)

Russia:-

1. Developing market but still insufficient compensation of aging machines/ tractors.
2. Local machinery manufacturing capacity being upgraded.
3. Additional taxes limiting import of machines.

Latin America / Brazil:-

1. The numbers of tractor per 1000 ha are fairly constant over the last three decades but significant trend towards tractors of larger scale.
2. Developing machinery manufacturing sector mainly by international companies.
3. The production of bio-ethanol from sugarcane plays a very important role in brazil which in turn may be a driver for accelerating demand for agricultural machinery.

North Africa/middle east:-

1. The levels of mechanization are significantly higher than SSA. The average numbers of tractors per 1000 ha is 11.
2. Larger disparities can be observed in the region, for example:
 - In morocco the number of tractors per 1000 ha averages 6.
 - In Egypt the data observed are on average 31 tractors.

1.5 FARM MECHANIZATION IN INDIA

India is the second most populous country in the world with an estimated population of 1.25 billion in 2014 and an annual growth rate of 1.3 per cent (**Source: NSSO**). About two-third of the population live in rural areas with about 50 per cent still dependent on agriculture for their livelihood.

The total land area of the country is 297 million hectares of which 142 million ha is classed as agricultural land. Whilst it has basically an agrarian economy the share of agriculture has now declined to 13.9 per cent from a level of 56 per cent in 1950. The manufacturing and service sectors presently constitute 27 per cent and 59 percent of the economy, respectively. The biggest challenge which the agricultural sector is facing is to meet the growing demand for food to feed the ever growing population of the country. (Source: Agriculture mechanization development India – ageconsearch)

Since Independence in 1947, there has been more than a five-fold increase in grain production due to the introduction of improved technologies and practices. However, the population has increased at a similar pace and there are still challenges to attaining full food and nutritional security. The country has a very diverse form of agriculture particularly due to varying soil and climatic conditions. Its climate is full of extremities; the temperature conditions vary from arctic cold to equatorial hot and rainfall from extreme aridity with less than 100 mm in the Thar Desert of Western India to the site of the world's maximum rainfall of 11200 mm at Mawsinram in the northeast.

The available rainfall has large spatial and temporal variations. Although there has been a significant increase in the area under irrigation, still about 65 per cent is devoid of assured irrigation and the agricultural productivity in the rain fed areas is low.

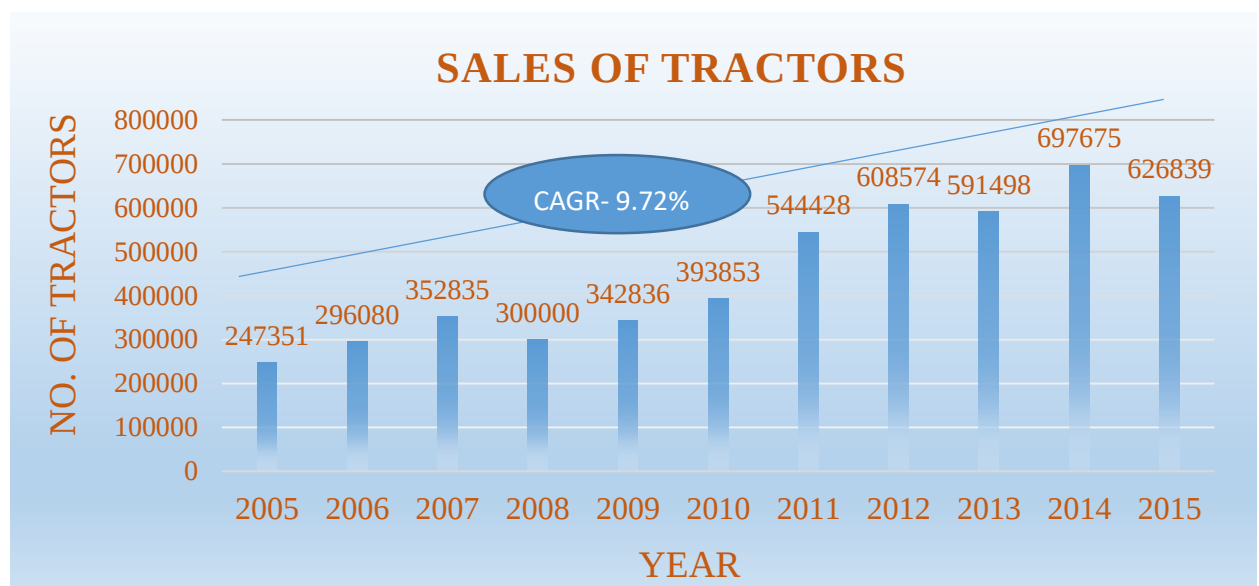
Mechanization in Indian agriculture started with the establishment of the Central Tractor Organization (CTO) mainly for land reclamation and development, mechanical cultivation and reduction of sancharum spontanium (Kans). The production of irrigation pumps and diesel engines started during 1930s. The manufacture of tractors and power tillers started in 1960. Since then by the virtue of its inherent edge over the conventional means of farming.

Agricultural mechanization has been gaining popularity. The increased use of farm machines has found expression in the phenomenal expansion of cropped area and cropping intensity and the country's agricultural production on all fronts. The shift has also helped in diversification of agriculture from conventional crops to commercial crops. The programs of farm mechanization have resulted in adoption of farm machinery such as

tractors, power tillers, combine harvesters, irrigation equipment, plant protection equipment, threshers, improved implements and hand tools.

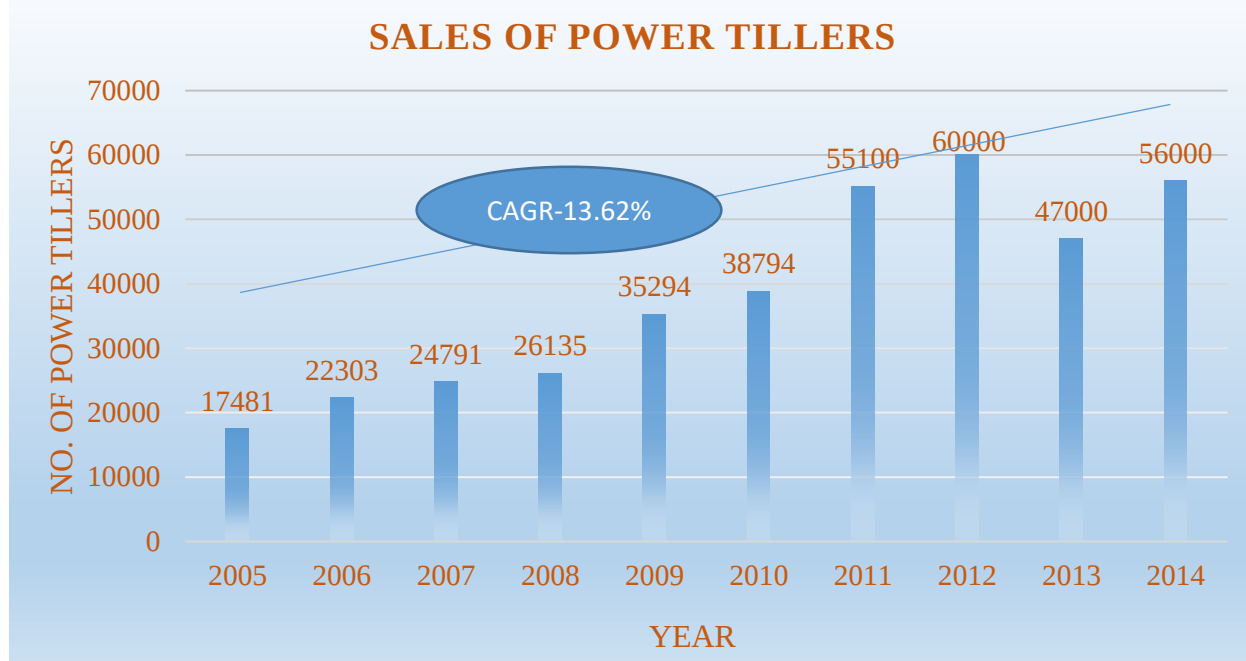
From 1986–87 to 1999–2000, there had been in general a rising trend in production and sale of different types of agricultural machinery especially tractors, power tillers, pump sets, threshers, plant protection equipment, seed drills etc. After which, there has been a slightly decreasing trend of tractors and power tillers mainly due to unfavorable weather conditions, e.g. drought conditions in many parts of the country, which is evident from figure.

However the country still lags behind in terms of the available number of tractors per thousand hectares. In terms of density of tractors per thousand hectares, India not only lags behind the developed countries but also some of the developing countries of the world, especially a few of the neighboring ones. The trend of sale of tractors over the years indicates a rising acceptance of agricultural machines and equipment with the Indian farmers. The use of different types of farm machinery including hand tools, animal-drawn implements, threshers, plant protection equipment, diesel/electric pump sets etc. has been accelerating over the past several years; as a result of which the total power available per unit area on farms has also increased.



(Source: www.ibef.org, August 2015)

(Fig No. 1.1:- Tractor Sales in India, 2015)



(Source: www.ibef.org, August 2015)

(Fig No. 1.2:- Power Tiller Sales in India, 2015)

Farm mechanization has seen a rather slow progress over the years. The demand of important agricultural equipment like tractors, power tillers, combine harvesters, irrigation pump sets, diesel engines, has shown an increasing trend. The progress of farm mechanization in terms of demand of agricultural equipment is estimated at about 1 to 1.5% per annum. According to the Indian livestock census, the population of Agricultural Implements and Machinery during 1977 was 109.66 million. This went up to 126.85 million in 1982 and further to 154.38 million in 1987 and then decreased to 141.93 million in 1992. Again during 1997, it increased to 180.57 million and further to 223.84 million during 2003. Introduction and adoption of agricultural machinery in the recent past has mainly been confined to the northern States of India. However, with the increase in the irrigation facilities and modernization of the cropping practices, the demand for agricultural machinery has shown an increasing trend in the southern and western Parts of the country. The eastern and the north-eastern States have been less responsive to adoption of agricultural machinery.

Farm Power is an essential input in agriculture for timely field operations for operating different types of farm equipment and for stationary jobs like operating irrigation equipment, threshers/shellers/cleaners/graders and other post-harvest equipment. During the last 50 years, the average farm power availability in India has increased from about 0.25 kW/ha in 1951 to about 2.02 kW/ha in 2015. Over the years, the shift has been towards the use of mechanical and electrical sources of power. While in 1951, about 97.4% farm power was coming from animate sources, in 2015 the contribution of animate sources of power reduced to about 11.80% and that of mechanical and electrical sources of power increased from 2.6% in 1951 to about 92.30% in 2015. **(Source: Farm power availability on Indian farms by surendra singh and R S singh)**

The power productivity relationship shows that those States having higher farm power availability/ha have higher productivity. The State of Punjab which is highly mechanized, uses about 30% electrical power and about 48% diesel engine power. It is visualized that the additional requirement of food grains in future will be met, to a great extent, from Indo-Gangetic plains where the demand of tractors, power tillers and other machinery will continue to increase in future also. For increasing productivity of dry land agriculture which constitute about 66% of the cultivated area in India, timeliness in farm operations is essential especially for seedbed preparation and sowing operations for establishing good crop stand in deficient/receding soil moisture condition. In these areas also the demand of tractors/power tillers, seed drills/planters and other farm machinery on custom service will increase in future.

Those States where farm power availability is less than 0.90 kW/ha will continue to use animate source of power for tractive purposes for quite some time before they shift to mechanical traction on a larger scale. States in NEH Region, Himachal Pradesh, Jammu & Kashmir and Chhattisgarh because of their hilly terrain will continue to use animate sources of power for a long time.

In dry land agriculture, to take the best advantage of available soil moisture, it is necessary to complete tillage operation as quickly as possible. For this, we require high HP and high

capacity equipment to complete the tillage and sowing operations quickly, preferably in a single pass. High capacity Machines/Equipment are required for the following reasons:

- (i) Tillage and Sowing operations have to be completed quickly, often in a single pass,
- (ii) To make the best use of the available soil moisture to sub-soiling and use of basin lister may be required to improve moisture intake of the soil.
- (iii) Deep tillage after harvest in dry soil conditions is recommended to prevent run-off from the first rain,
- (iv) Seeding in deep furrows may be required if the soil moisture recedes beyond the normal seeding depth.
- (v) Dry land agriculture, often associated with poor productivity and use of animal draft power and Conventional tools, can be modernized, provided relatively large tractors and matching equipment are promoted in these areas. It is anticipated that in course of time, the use of draft animals in rain fed areas will decrease and mechanical power will be a common feature of dry land agriculture.
- (vi) Usage of high power tractors will facilitate land forming for water harvesting and conservation.

Seeing the present trend and considering the future demand of additional power sources, it is visualized that by 2020, the average farm power need in India will be about 2.7 kW/ha of which the share of animate source will be only about 5% and that of mechanical and electrical power will be about 70% and 25% respectively.

1.6 LEVEL OF FARM MECHANIZATION IN INDIA

The level of farm mechanization in India requires more to be done in terms of introduction of better equipment for each farming operation in order to reduce drudgery, to improve efficiency by saving on time and Labour, improve productivity, minimize wastage and reduce Labour costs for each operation. With shortage of Labour for agricultural operations owing to rural urban migration, shift from agriculture to services and rise in demand for Labour in nonfarm activities, there is need to use Labour for agricultural operations judiciously, which makes a strong case for mechanization of farming.

Another notable aspect of Indian agriculture is the high proportion of female workforce in both the cultivation and processing stages of farming. Therefore, ergonomically designed tools and equipment for reducing drudgery, enhancing safety and comfort and also to suit the needs of women workers would help in better adoption of technologies in agriculture.

Table shows the level of mechanization in Indian agriculture. The overall level of mechanization in farming is below 50 per cent in the case of majority of the farming operations in India.

Table 1.2. Level of Farm Mechanization in India	
Operation in farming	Percentage of farm mechanization
Soil working and seed bed preparation	40%
Seeding and planting	29%
Plant protection	34%
Irrigation	37%
Harvesting and threshing	60-70% for wheat and rice and less than 5% for other crops

(Source: NABARD REPORT 2015.)

According to the Agricultural Machinery and Manufacturers Association in India, tractor penetration is 38 per cent for large farmers (with more than 20 acres), 18 per cent for medium farmers (5-20 acres) and just around 1 per cent for marginal farmers. With increase in fragmentation of landholdings and low rates of tractor penetration among small farmers, there is need for a market in tractor rentals, akin to cars and road construction equipment, driven by private participation. With suitable mobile and internet applications, manufacturers of tractors along with other stakeholders need to deliberate on this, since it will also increase demand for tractors. **(Source: Tractor industry report, 2015)**

1.7 FARM MECHINERIES INDUSTRY IN INDIA

The four major segments of equipment, tractors, threshers, tillers and Rotavator have shown steady growth over the past five years. Tractor is, by far, the largest segment in the

equipment category with an annual sale of 600,000-700,000 units. FY'14 witnessed sales of 697,675 (including exports) tractor units. Despite a sales slowdown in FY'15 (to 626,839 including exports), the tractor market (including exports) is expected to grow at a CAGR of 8-9 percent⁷ in the next five years as long term industry drivers remain favorable.

(Source: Agrimach ficci report, 2016)

Within the tractor market, the 41-50 HP segment is the largest selling unit, registering about 44 percent of the total tractor sales (domestic + exports) in FY'15. Next largest segment is the 31-40 HP segment, which has gained 2.2 share points in share of volume, which has been sourced mainly from the > 50 HP segment. **(Source: Agrimach ficci report, 2016)**

Table 1.3. Annual Production of Farm Machinery		
Equipment	Annual Market size (units)	Estimate year
Tractor	600000 – 700000	2014
Thresher	100000	2014
Rotavator	60000 – 80000	2014
Power tiller	50000 – 60000	2014
Automatic seed drill	25000 – 30000	2014
Power weeder	25000	2014
Combine harvester	4000 – 5000	2014
Vertical conveyer Reaper	4000 – 5000	2014
Laser land leveler	3000 – 4000	2014
Rice transplanter	1500 – 1600	2013
Multi crop planter	1000 – 2000	2014

(Source: Agrimach ficci report, 2016)

The tractor market has grown at a CAGR of 15.2 percent till FY'14. However, there was a sharp downturn seen in FY'15. This has been attributed to a reduction in farm incomes due to the decline in production of major crops as well as softening commodity prices with lower procurements by the government on account of adequate buffer reserves. In the same time period, the tiller market grew at 10 percent. Between FY'08 and FY'13, the thresher and rotavator markets grew at 2.0 and 21.0 percent respectively.

1.8 SEED SOWING OPERATION

In older methods of planting, a field is initially prepared with a plough to a series of linear cuts known as *furrows*. The field is then seeded by throwing the seeds over the field, a method known as *manual broadcasting*. In this method there will be a right depth nor proper distance. Seeds that landed in the furrows had better protection from the elements, and natural erosion or manual raking would preferentially cover them while leaving some exposed. The result was a field planted roughly in rows, but having a large number of plants outside the furrow lanes.

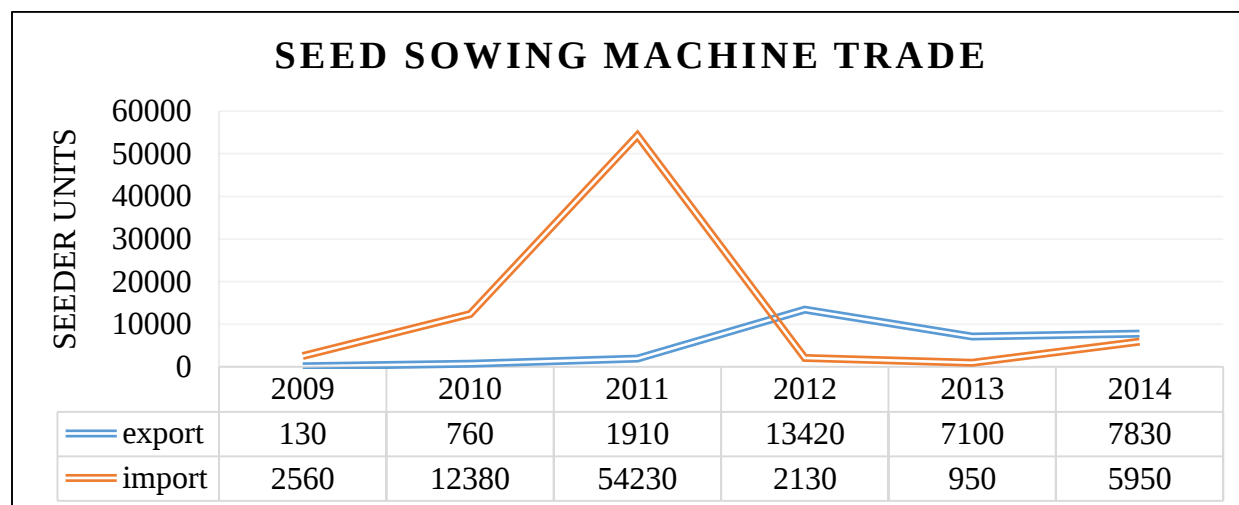
There are several downsides to this approach. The most obvious is that seeds that land outside the furrows will not have the growth shown by the plants sown in the furrow, since they are too shallow on the soil. Because of this, they are lost to the elements. Much of the seed remained on the surface where it never germinated or germinated prematurely, only to be killed by frost. On the surface, it was also vulnerable to being eaten by birds or carried away on the wind.

Since the furrows represent only a portion of the field's area, and broadcasting distributes seeds fairly evenly, this results in considerable wastage of seeds. Less obvious are the effects of over seeding; all crops grow best at a certain density, which varies depending on the soil and weather conditions. Additional seeding above this limit will actually reduce crop yields, in spite of more plants being sown, as there will be competition among the plants for the minerals, water and the soil available. Another reason is that the mineral resources of the soil will also deplete at a much faster rate, thereby directly affecting the growth of the plants.

The invention of the seed drill dramatically improved germination. The seed drill employed a series of runners spaced at the same distance as the ploughed furrows. These runners, or drills, opened the furrow to a uniform depth before the seed was dropped. Behind the drills were a series of presses, metal discs which cut down the sides of the trench into which the seeds had been planted, covering them over.

This innovation permitted farmers to have precise control over the depth at which seeds were planted. This greater measure of control meant that fewer seeds germinated early or

late, and that seeds were able to take optimum advantage of available soil moisture in a prepared seed bed. The result was that farmers were able to use less seed, and at the same time experience larger yields than under the broadcast methods.



(Fig No. 3:- Seed Sowing Machine Trade in India, 2015)

1.9 SEEDERS, PLANTERS AND TRANSPLANTERS TRADE

India majorly relies on imported machinery in this segment. Imports of the machinery grew at impressive CAGR 18.4 percent whereas; the exports saw a growth of CAGR of over 100 percent over the period from FY'09 to FY'14.

1.10 SEED DRILL INDUSTRY IN INDIA

India is home to 387 companies dealing with seed drills. A wide array of seed drills are offered in the market viz. animal operated seed drills, tractor operated seed drills, automatic seed drills, seed cum fertilizer drills and zero till drills. As far as Saurashtra region is concerned there are 10 companies who are involved in seed drills manufacturing:

1. Khedut agro engineering
2. Dharti engineering
3. Mausam agro Pvt. Ltd.
4. Kranti agro.
5. Kisan agro industries
6. Gujarat agro engineering
7. Bharat agro engineering
8. Shapar agro enterprise

9. Bhumi agro industries

10. Ramdev agro engineering

1.11 AREA OF STUDY

1.11.1 Junagadh District Overview

Junagadh District is located on Kathiyawad peninsula in western Gujarat. It is surrounded by Rajkot district (North), Porbandar district (North West), Amreli district (East) and to the south and west is Arabian Sea.

Porbandar, Mahatma Gandhi's birth place was earlier part of this district before the Porbandar district was carved out of Junagadh district. Junagadh has mountain range called Girnar which is place of pilgrimage for Hindus and Jains.

According to the 2011 census Junagadh district has a population of 2,743,082 roughly equal to the nation of Jamaica or the US state of Utah. This gives it a ranking of 142nd in India (out of a total of 640). The district has a population density of 310 inhabitants per square kilometer (800/sq. mi). Its population growth rate over the decade 2001–2011 was 12.01%. Junagadh has a sex ratio of 953 females for every 1000 males. It had a literacy rate of 75.8% in 2011.

Economy of Junagadh District is dependent chiefly on agriculture which is the backbone of the district economy. Seventy percent of the total population is occupied in primary sector, 22 percent in secondary sector and 8 percent in tertiary sector.

Fish processing industry is a major sector in Junagadh. Most important crops produced in the district are wheat, oilseeds, mango, banana, cotton, onion and brinjal. There are over forty medium and large scale industries present in Junagadh district, involved in sectors such as, Cement plants, edible oil, refinery plants and fish processing units. Most of the medium and large scale industries are concentrated in Veraval, Junagadh, Manavadar and Kodinar Talukas of the district.

There are more than seven thousand Small Scale Industries operating in Junagadh district in sectors which includes food products, chemicals, electrical equipments, textiles and repairing and servicing. The economy of Junagadh is primarily based on agriculture. With

the new Government policy of biotechnology, Junagadh has been identified as one of the agriculture biotechnology zone. Some statistics of Junagadh district are shown in the table.

Table No. 1.4 Statistics of Junagadh District	
Taluka	9
Gram Panchayat	490
Area	8831 sq/km.
Population	1527292
Rural Residents	958928
Literacy	75.8%

(Source: Data collected from AO, Junagadh.)

1.11.2 Rajkot District Overview

Introduction: Rajkot is located in the south-west region of Gujarat. The district headquarter is Rajkot city – Largest city in Saurashtra and fourth largest in Gujarat stat. The district has 10 talukas of which the major talukas are Rajkot, Jetpur, Upleta and Dhoraji. Rajkot city is considered the economic, industrial and educational hub of the region. The district boasts of a stock exchange which is linked with exchanges in Mumbai, Kolkata & New Delhi. Apparels is also an emerging sector.

Geographical Location and Area: Rajkot District is located 21o -40 to 22o -50 North Latitude and 70o -10 to 71o east longitude. It is surrounded on the north by Gulf and some part of desert of Kutch, on the South by Junagadh and Amreli districts on the east by Surendranagar and Bhavnagar districts, on the west by Jamnagar and Rajkot districts. It is centrally located in Saurashtra Peninsula. The district has an area of 11203 sq. kms which is roughly 5.72% of the total area of the State.

Administrative set up: Rajkot District is the nerve center of Saurashtra region. The district comprises of 10 talukas viz. Rajkot, Paddhari, Lodhika, Kotdasangani, Jasdan, Gondal, Jetpur, Dhoraji, Upleta and Jamkandorna. The Headquarter of the district is Rajkot. The district has 10 towns and 856 inhabited villages. The District Collector is the overall administrative head. Down below there are various district level officers of the State Government to perform/execute the various regulatory/development functions assigned to

them. The DIC is one of such district level office headed by an official of the State Govt. designated as General Manager with whom a number of functional managers work for the promotion and development of industrial and commercial enterprises in the district.

Climate and Rainfall: The maximum temperature in summer is 42 to 44 degree centigrade whereas the minimum temperature in the winter is between 8 to 10 degree centigrade. The climate is usually moderate in all seasons. The net irrigated area in Rajkot is 1, 73,060 hectares which forms about 32.90% of the total net sown area of 5, 26,037 hectares. There are 16 small and medium rivers flowing in the district. Out of which Bhadar, Macchu and Aaji are 3 main rivers. The average rainfall of the district is between 540 mm to 600 mm in comparison of last year, this year rainfall arrived timely and adequate. Last year average rainfall was 738 mm but this year average rainfall arrived only 588 mm in the district. Minimum rainfall 344 mm arrived at Tankara and maximum rainfall 746 mm arrived at Jetpur and thus average rainfall in the district is 558 mm which is 180 mm less than last year.

Rivers and Soil: There are three major rivers in the district. The river Bhadar, which emerges from Jasdan taluka and flows across the southern part of the district is the biggest of all. Other two major rivers Macchu and Aji, flow toward north. In addition to these, there are 14 rivulets which have swift and short run to the sea. The types of soil found in the district are sandy light brown rocky and rich black. The rich black soil possesses high fertility.

Economy and Industry Profile: The occupational pattern in Rajkot is primarily based on manufacturing and service sector. About 42% of workers are engaged in service activities and 34% in manufacturing activities. Manufacturing activities are concentrated in two main industrial estates – Aji and Bhaktinagar. In the past, Rajkot concentrated around the establishment of cloth mills. The current trend of industrial growth is towards the Engineering and Auto ancillary sector. In this sector, diesel engine is the leading business with around 105 manufacturing units operational in the district. The district also has various manufacturing units for machine tools, industrial equipments, lathe machines, metallurgical industries, electronics, engineering and auto ancillary sector. Small and medium industries are dominated by foundries, engineering & automobile works, textile

related units gold & silver jewelry, handicrafts, spices, medicines, wall clocks and Jetpur taluka of the district is famous for dyeing and printing business and Paddhari taluka for ginning and pressing business in the entire State.

1.12 COMPANY PROFILE

Tirth Agro Technology Pvt. Ltd. is a leading Indian agricultural implements manufacturer company with a history of over a decade. Founded by a progressive farmer late Shri Ladhubhai S. Gohil as A.G. Agro Industries in 1997 at Rajkot, Gujarat, the company envisioned to mechanize Indian agriculture completely. Initially, the company focused on the production of spare parts, but soon a complete production line of agricultural implements with the brand name of “SHAKTIMAN” began.

The Company has effectively fulfilled the needs of customers with the support of vast dealership network having more than 625 dealers and 46 distributors across the country. With our pursuit to perfection in all the spheres of the business, we have made a strong presence in domestic as well as overseas market by capturing more than 50% of the domestic market share.

Our state-of-the-art manufacturing unit is equipped with advanced machinery capable of executing bulk orders with precision. We use best quality of raw material and sustainable engineering designs for manufacturing innovative implements of International standards.

As the market leader in India, Shaktiman has helped bring Farm Tech Prosperity to the Indian farmer with technologically superior affordable solutions. Shaktiman has achieved the distinction of being the largest rotary tiller manufacturer in the world.

VISION

The business value cannot be achieved through technology alone. It starts with people: experts working together to get to the heart of your individual business objectives and develop the most adapted solutions to fit these requirements. We believe this human-centric approach to technology is what makes the difference for our business. Our vision for Tirth Agro Technology Pvt. Ltd. is to be recognized as a global, leading farm mechanization

solution provider for making agriculture more economical and creating sustainable value for all its stakeholders in a responsible manner.

MISSION

Our mission is to manufacture and supply the technically advance agricultural implements worldwide, with acknowledged reliability, outstanding quality, supported with excellent service.

1.13 COMPANY CORE VALUES

INTEGRITY

We conduct our business in accordance with the highest standards of professional behavior and ethics. We are transparent, honest and ethical in all our interactions with employees, clients, consumers, vendors and the public.

QUALITY

We take pride in providing high value products and services that we stand behind, which ensures customer satisfaction, profitability and the future of our employees and our growth.

COMMITMENT

Commitment comes to life through being passionate about solving complex business problems and helping shape the next generation of financial services. We are intensely focused on serving our customers and helping them achieve their objectives. We do what we say we are going to do. As individuals and as an organization, we create value.

INNOVATION

We foster a work environment where creative thinking is encouraged and rewarded in order to create opportunities for process improvement and more cost-effective sustainable products and services, providing value to the Company and our customers.

CUSTOMER CARE

We strive to provide exceptional customer service through flexible scheduling, quality products, efficient services, and innovative solutions resulting in value to the customer and company.

1.14 COMPANY GLOBAL PRESENCE

Our comprehensive geographic presence enables us to provide our customers with a unique combination of extensive global resources, world recognized technical expertise and deep local knowledge.

Shaktiman is a trusted brand by the farmers of more than 70 countries globally. Confirming our global acceptance and compatibility, we are also involved in consistent business across the globe. In order to cater to the ever-expanding demands of our global customers, our dedicated team works passionately to deliver superior quality products for our global audience.

Shaktiman made a humble beginning in 1997 and there has been no looking back since. The year 2003 saw the first large scale expansion of manufacturing facilities which bore its results in 2004 with our first export consignment. Years 2009 and 2011 witnessed further expansion to suit the growing needs of our products globally.

Today the name Shaktiman has become a synonym to exceptional and impeccable manufacturer of agriculture machinery all over the world. Shaktiman has always focused on customers and is committed to provide dedicated post sales services through its extensive network of competent & experienced after sales service team. Going forward, Shaktiman continues with the spirit to explore uncharted territories and has aggressive plans to capture new avenues globally.

1.15 QUALITY MANAGEMENT – TOTAL PRODUCTIVE MAINTENANCE

Total productive maintenance is a particular approach to productivity improvement that aims to bring together an organizational culture with a range of tools and techniques operating at a variety of levels to ensure that there is harmony from overall company strategy through product design, process design and onto the production floor. Explains the fundamental concepts from diagnosis of strengths and weaknesses (using a simple points-scoring technique) to implementation in simple, diagrammatic form providing, in effect, a series of checklists.

1.16 SHAKTIMAN PRODUCTION CAPACITY

Since its inception, Shaktiman has maintained a strong industrial culture. We regularly invest in latest technologies to get our know-how to evolve and align with growing demands of superior quality products. Industrial excellence, gained through experience and continuous improvement of production processes, gives Shaktiman an ability to adapt to wider target audience. To increase our industrial expertise (quality requirements and meeting deadlines), we endeavor to learn through our past experiences and match up to our commitment towards providing quality products and services. Today, our production tool is diversified and flexible to ensure the responsiveness markets require.

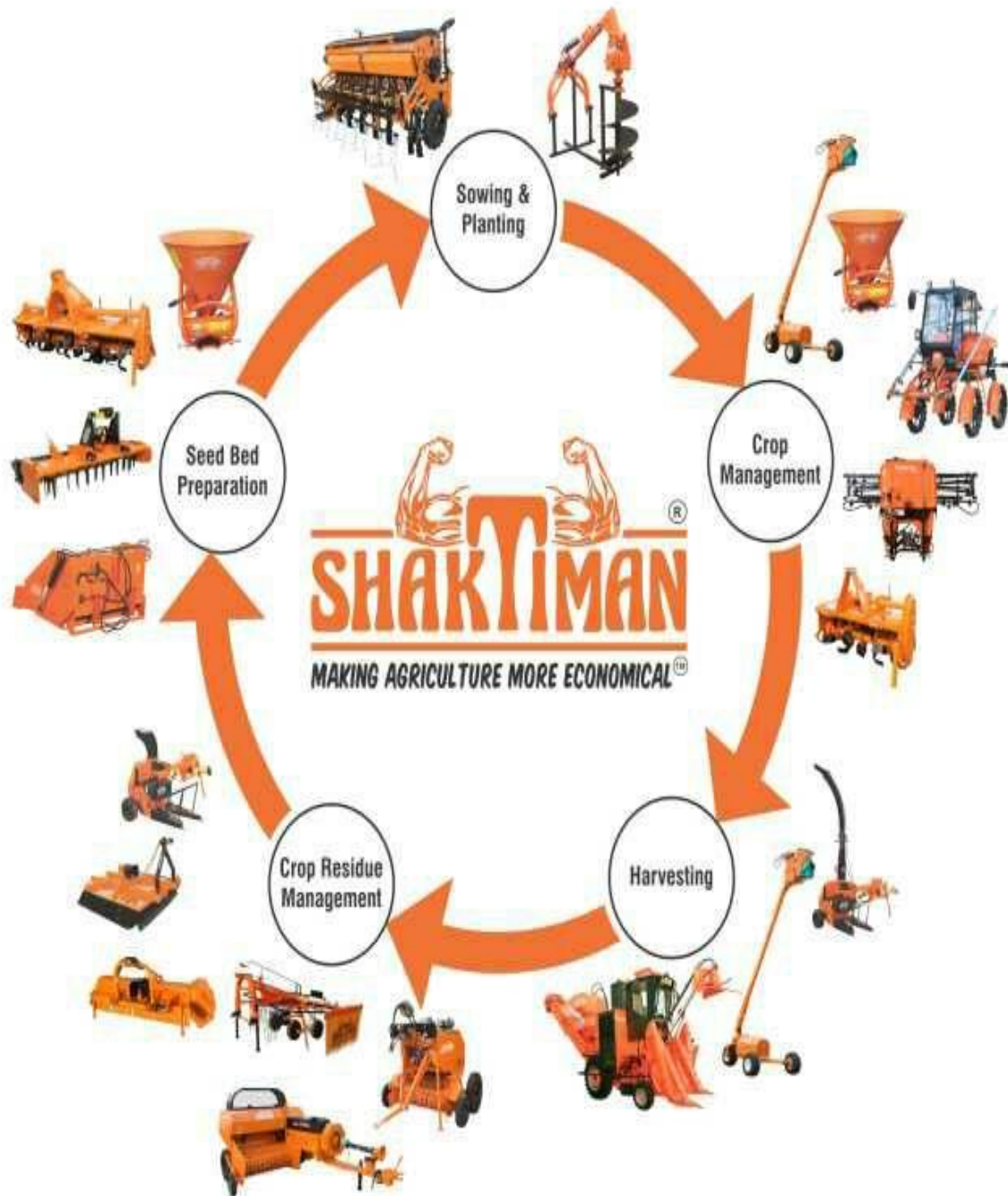
Shaktiman boast of state-of-the-art manufacturing plant located in Rajkot, Gujarat, spread across 27.5 acres. The plant has a production capacity of around 1 lakh machinery. The world class integrated manufacturing plant offers all facilities from engine to assembly, under one roof.

Our facility is equipped with VMC, CNC, HMC while Laser and plasma cutting ensures precision and quality of highest standard. In order to withstand a greater arc on-time and speedy production, we have commissioned robotic blade manufacturing system. Keeping in mind of defined industrial norms of quality, we have In-house heat treatment facility. Finest quality of Powder Coating for all products is done to withstand all weather conditions. We endure to produce durable products with quality finish, thereby resonating our brand strength. Shaktiman is the name to trust upon as our R&D facility is Government recognized.

1.17 OBJECTIVES

- To study the farmers' and dealers' satisfaction level for mechanical seed drill.
- To study the brand preference of mechanical seed drill by farmers and dealers.
- To study the problems in the mechanical seed drill during sowing operation.

1.18 SHAKTIMAN PRODUCT RANGE



(Fig No. 4:- Shaktiman Product Range)

- 1.19 SEED BED PREPARATION**
 - 1. SHAKTIMAN ROTARY TILLER**
 - 2. COMPOST SPREADER**
 - 3. POWER HARROW**
 - 4. FERTILIZER BROADCASTER**
 - 5. CULTISOL**
- 1.20 SOWING AND PLANTING**
 - 1. MECHANICAL SEED DRILL 300**
 - 2. POST HOLE DIGGER**
- 1.21 CROP MANAGEMENT**
 - 1. SELF PROPELLED PLATFORM**
 - 2. SQUARE FERTILIZER BROADCASTER**
 - 3. CONICAL FERTILIZER BROADCASTER**
 - 4. PROTEKTOR 600 – SELF PROPELLED BOOM SPRAYER**
 - 5. RAKSHAK 400 – TRACTOR MOUNTED BOOM SPRAYER**
- 1.22 HARVESTING**
 - 1. SUGARCANE HARVESTER**
 - 2. SHAKTIMAN MOBILE SHREDDER**
- 1.23 CROP RESIDUE MANAGEMENT**
 - 1. MOBILE SHREDDER**
 - 2. ROTARY SLASHER**
 - 3. FLAIL MOWER**
 - 4. HAY RAKE**
 - 5. PTO RAKE**
 - 6. SQUARE BALER**
 - 7. ROUND BALER**
- 1.24 DAIRY EQUIPMENT**
 - 1. TMR WAGON**
 - 2. FODDER HARVESTER**

1.25 JUSTIFICATION OF STUDY

Having called back the 'Roto-seed Drill' from the market after development of technical snags in the machinery, the company has felt the need of launching a new mechanical seed drill that fits well in the market and at the same time is affordable for the semi-medium and medium farmers. This study has been undertaken in accordance with the company's market research needs regarding the new product launch.

2. REVIEW OF LITERATURE

Review literature has been done under three headings viz. as follows:

1. Dealers and customers satisfaction
2. Brand preference and purchase decision
3. Technical specification

2.1 DEALERS' AND CUSTOMERS' SATISFACTION

Singh (2006) “satisfaction is an overall attitude towards a product provider or an emotional reaction to the difference between what customers expect and what they actually receive regarding the fulfilment of a need”.

Lessiter (2015) surveyed that Farm equipment dealers rated the companies whose products they represent on categories of efficiency operations and company support. “Dealers have used the results to evaluate potential new product lines, for competitive comparisons with the brands they have and to communicate areas of strength and needs for improvement of their represented manufacturers”. In total, the survey was distributed to 12,769 dealers and data was collected anonymously by a third-party. A total of 2,321 individual dealers participated in the survey for a total response rate of 18%, an increase from 15% last year. On a scale of 1 (extremely dissatisfied) to 7 (extremely satisfied), the average for all manufacturers was 5.39, vs. 5.33 in 2015. Of the agro-oriented manufacturers, the short line equipment suppliers scored best at 5.41, followed by tractor manufacturers at 5.10 and then full-line manufacturers at 4.67.

2.2 BRAND PREFERENCE AND PURCHASE DECISION

Kohls (1956, 1959) was one of the first to study how farmers purchase capital equipment and he interviewed 201 farmers in Central Indiana in June 1955. He found that although capital purchases tend to be relatively large, farmers do not shop around much and most of their purchasing activity is done within five miles of their home (Kohls, 1956). Before making their purchase decision, farmers discuss it with the dealers, consult neighbors, relatives, and friends, have read some form of literature about the product, and have usually seen a similar item in operation on friends' or neighbors farms (Kohls, 1956). Kohls (1956) also indicated that a favorable price and having the desired item are the two main reasons that explain the farmer's decision to choose a specific dealer. Kohls (1956) also studied dealer and brand loyalty and found

that no socioeconomic characteristics significantly explained dealer loyalty. Although only significant at the 20 percent level, brand preference tended to be negatively related with income, age, and farm experience; and positively related with farmer's exposure to radio, television, and printed publications. Farmers who believed there were greater differences among available dealers tended to have higher brand preferences as well.

Grisso and Morgan (1987) concluded the study on "what Information Helps a Farmer Purchase a Tractor?" the result of this survey indicate that nearly all the farmers and ranchers(97%) used two or more sources as an aid in their tractor purchase decision ; most used several sources to gather information. As illustrated in Fig. 1, the four sources used by over half the farmers/ranches were: (a) talking with equipment dealers, (b) neighbours, friends or relatives, and (c) advertising literature. Almost 40% of those who used one or more sources also used the power rating information to match or select implements for their tractor. Other sources used by a smaller percentage of farmers were the implement and tractor magazine.

Gandhi and Patel (1997) observed that there is both a replacement as well new demand for tractor. The demand for tractors in India is dictated by several factors like, monsoons, availability of irrigation and credit, farmers' disposable incomes, cropping patterns, and the minimum support price for farm produce. The major factors in the demand for tractors in India have been found to be gross irrigated area (cropping intensity), real price of tractor and demand for tractors in the previous year, and area under high yielding varieties (Gandhi and Patel, 1997) besides land holding and credit availability.

Kool et al. (1997) studied Dutch farmers' purchasing decision processes for agriculture machines. They found that the more familiar the farmer was with the product and the smaller the purchase, the quicker the farmer makes a purchase decision. In this case, farmers mainly focus on prices, the availability of alternatives, and special bargains. Thus, suppliers should emphasize price level, distribution (availability), and brand knowledge. In contrast, for infrequent decisions, farmers spend a considerable amount of time on the decision and suppliers in those cases should focus on product performance, price in relation to product performance, and personal selling. The authors also found that a personal relationship between the farmer and the vendor decreased the evaluation of other alternatives by the farmers, which suggests that suppliers should

spend time investing in their relationship with the farmer. The Kool et al.'s (1997) study highlights that both price and relationship appear to play a role in farm buyer preferences for equipment.

Sharma and Grover (1998) in his study revealed that In Punjab demand for tractor is guided by the cropping intensity, cultivated area, and credit availability along with demand for tractors in the previous year and social consideration which determine demand for tractors. Most of these are agronomic and agro-economic factors.

Gloy and Akridge (1999) used cluster analysis to segment the commercial producer market for agricultural equipment. Their work was based on data from the 1998 Purdue Large Commercial Producer Survey and they identified four market segments: Balance, Price, Performance, and Convenience. Their four market segments refine the traditional three segments of Business, Economic, and Price (Downey, Holschuh, and Jackson, 1999) where members of the Balance and Performance segments are Business buyers, members of the Price segment are Economic buyers and members of the Convenience segment are Relationship buyers.

Walley et al. (2007) used data from a survey of farmers and farm contractors to examine the importance of brand in the industrial purchase decision, and more specifically in the United Kingdom (UK) tractor market. They found that brand name was the most important purchase decision factor with a 38.95% weight in the decision and ranked above price, dealer proximity, and quality of dealer service. The dealer is also an influential part of the decision through their location and their quality of service. Since the respondents award the highest brand utility scores to the brands they own, with the exception of one tractor brand, the authors concluded that tractor owners are very brand loyal.

Harbor et al. (2008) used data from the 2003 Purdue Large Commercial Producer Survey to assess the nature of brand loyalty for capital items among commercial agricultural producers in the United States. They found that over half of the respondents consider themselves loyal to brands of capital items. The data show that attending but not completing high school and producing corn or soybeans increased the likelihood of being brand loyal to capital items. Other variables that positively influenced capital brand loyalty included the reported use of media to obtain information useful for

making input decisions, and the perception that substantial differences in performance exist across branded capital items.

Boehlje and Roucan-Kane (2009) presented a case study of Deere's market segmentation. Deere had historically focused on and had a strong market position in power, implement and combine equipment with traditional commercial producers in Midwest corn/soybean agriculture. However, a customer segmentation analysis indicated that there are eight different and important customer segments in the farm machinery and equipment market (not-for-profit public companies, not-for-profit property owner, part-time producers, traditional producers, large producers, extra-large producers, agricultural service providers, and commercial companies) with different attitudes, goals, behaviors, and needs. By starting from the customer's standpoint, Deere realized that some of these segments were growing exponentially — particularly the large/mega farm, the agricultural service provider/custom contractor, and some of the not-for-profit (state and federal government, etc.) segments – and could be Deere's future source of growth. However, these “new” customers needed machinery and equipment with different features convincing Deere to invest in electronic technology as long as it was simple to use and reliable.

2.3 TECHNICAL SPECIFICATION

Singh (1971) revealed that by using a ferti-seed drill for wheat crop there was an increase in yield by 13.025 percent when compared with the conventional method.

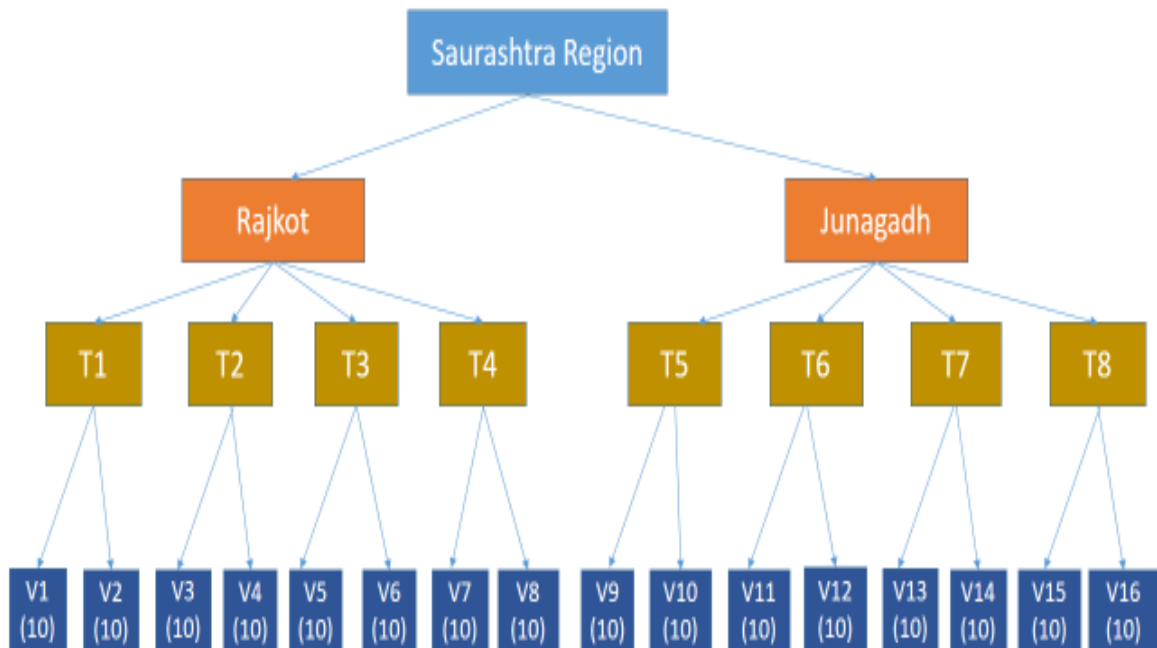
Senapathi et al. (1988) observed that manually operated Implement Factory Seed Drill has caused 98 per cent higher yield of paddy when compared with broadcasting.

Senapathi et al. (1992) reported that Gujarat State Fertilizer Corporation Seed cum Fertilizer Drill had the best performance on the field for sowing finger millet as it: had the highest performance index value of 0.613 when compared with other seeding devices.

3. RESEARCH METHODOLOGY

3.1 AREA OF STUDY

Two district of Gujarat state i.e., Junagadh and Rajkot were selected purposely for the study. In these two district, four tehsils were selected from each district according to higher geographical area. Further, out of each tehsil, 2 villages were selected purposively; villages where farming population was higher, 10 farmers were selected who are seed drill owners. Further, dealers were also selected from Junagadh and Rajkot district. Together, a total of 200 farmers were selected, in which 160 were seed drill owners and 40 were non-users. Out of these two districts, all dealers of seed drill companies were selected.



Samples:- 10 farmers from each villages who have used seed drill (purposely)

Besides, 40 such farmers who have never used seed drill will also be selected for the study

(Fig No. 3.1:- Area of Study)

TABLE 3.1: Area of Survey

Sr. No.	District	Tehsil	Villages	Total
1	Rajkot	Rajkot	Sardhar , Kuvadava	10 customers from each villages; i.e. 20 customers
		Jashdan	Atkot, Vinchiya	10 customers from each villages; i.e. 20 customers
		Gondal	Derdi, Moviya	10 customers from each villages; i.e. 20 customers
		Upleta	Moti paneli, Dhank	10 customers from each villages; i.e. 20 customers
2	Junagadh	Junagadh	Bilkha, Vadal	10 customers from each villages; i.e. 20 customers
		Vishavadar	Kalsari, Moti Monapari	10 customers from each villages; i.e. 20 customers
		Mangrol	Shil, Juthal	10 customers from each villages; i.e. 20 customers
		Keshod	Meswan, Ajab	10 customers from each villages; i.e. 20 customers
		Total → 20*8 = 160 users, 40 non users		

3.2 SOURCE OF THE DATA

Primary as well as secondary data was collected to meet the stipulated objectives of the study.

3.2.1 Primary Data: Primary data was collected from the customers and dealers with the help of semi structured schedule.

3.2.2 Secondary Data: Secondary data was collected from company records, officials, magazines, books, Private and Government publications and Websites.

3.3 SAMPLING PLAN

3.3.1 Sampling Method

The sampling method was Non-probability sampling under which multi stage sampling technique was used.

3.3.2 Sampling Unit

To study the given objectives, farmers and dealers were selected as the sampling unit.

3.3.3 Sample Size

A sample of 200 customers and all dealers were selected.

3.4 RESEARCH DESIGN

(Table No. 3.4:- Research Design)

Type of research	Descriptive research
Sampling method	Non-Probability method
Sampling technique	Multi stage sampling
Sample unit	Farmers and dealers
Sample size	200 farmers (160 users, 40 non users) and all dealers operating in the area
Sample area	Selected villages of Rajkot and Junagadh district
Timing of survey	75 days
Research instrument	Considering the nature of the study as well as for obtaining authentic information from the respondents, information was collected through schedule.
Analytical tools	Likert scale, Garrett ranking, tabular analysis, charts and graphical presentation

3.5 LIKERT SCALE

After gathering all the completed schedules from the respondents, total responses for each item will be gathered and tabulated. In order to use the Likert-scale for interpretation, weighted mean to represent each question will be computed. To compute for the weighted mean, each value must be multiplied by its weight. Products should then be added to obtain the total value. The total weight should also be computed by adding all the weights. The total value is then divided by the total weight. Statistically, the weighted mean is calculated using the formula below:

$$\text{Weighted Average Mean (X)} = (F_1X_1 + F_2X_2 + F_3X_3 + F_4X_4 + F_5X_5) / X_t$$

Where: - F = Weight given to each response

X = Number of responses

X_t = Total number of responses

3.6 GARRETTE RANKING

To find out the most significant factor which influences the respondent, Garrett's ranking technique was used. As per this method, respondents have been asked to assign the rank for all factors and the outcome of such ranking have been converted into score value with the help of the following formula:

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

N_j

Where: - R_{ij} = Rank given for the ith variable by jth respondents

N_j = Number of variable ranked by jth respondents

With the help of Garrett's Table, the percent position estimated is converted into scores. Then for each factor, the scores of each individual are added and then total value of scores and mean values of score is calculated. The factors having highest mean value is considered to be the most important factor.

3.7 SCOPE OF STUDY

The findings of the study will be used in long way for organization to take strategic decisions for expanding the business and evaluating the current situation. Further, it will be useful in understanding the brand preference of customers according to various attributes so that company can develop the suitable machineries. Customer and dealer level analysis is carried out to know the perception towards domestic brands and their products in junagadh and Rajkot districts; it will help organization to develop the suitable promotional activities to promote brand by analysing the customers' preference and competitive strategies.

3.8 LIMITATION OF THE STUDY

- Selected sample may not represent actual population.
- Analysis is purely based on the response of the respondents.
- Respondents may have given biased responses
- The study is confirmed to Rajkot and Junagadh districts of Gujarat; hence result may not be generalized.

3.9 MAP OF JUNAGADH DISTRICT

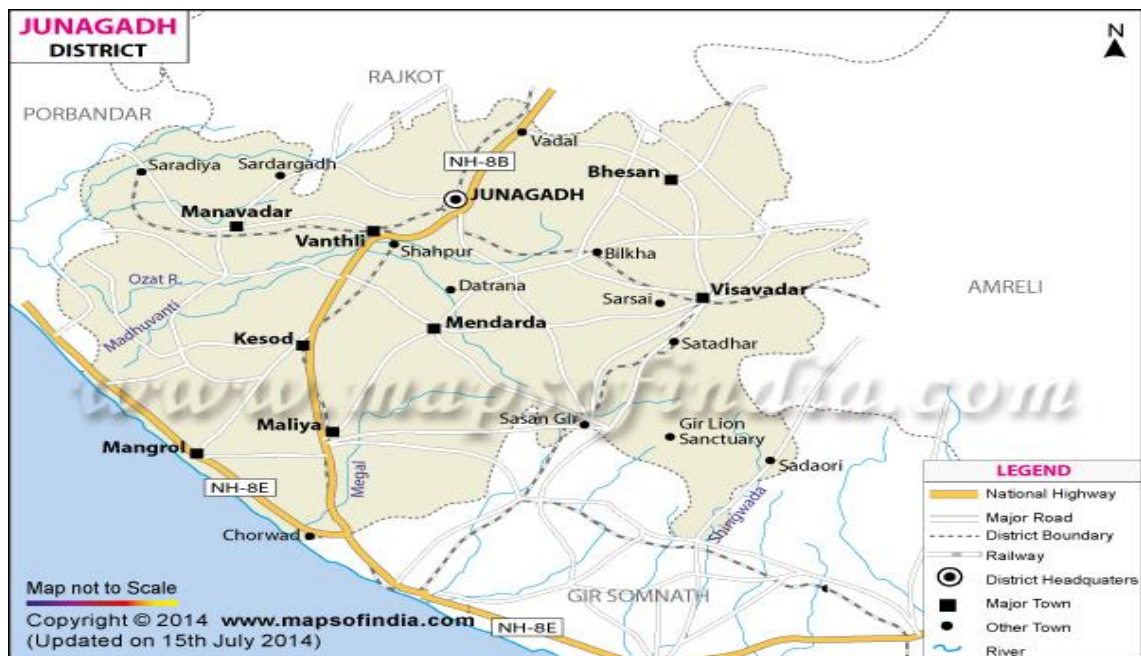


Fig. 3.9:- Map of Junagadh District

3.10 MAP OF RAJKOT DISTRICT

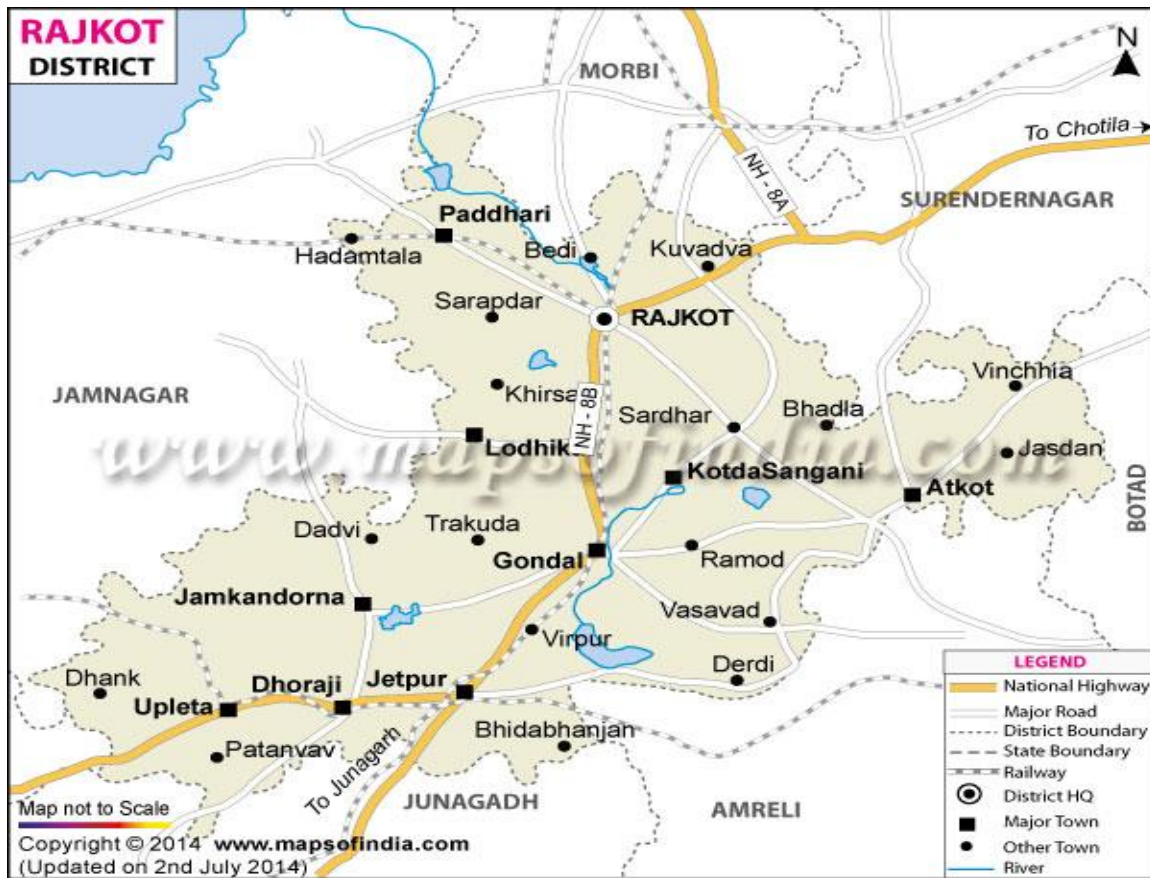


Fig. 3.10:- Map of Rajkot District

4. RESULTS AND DISCUSSION

The study work was completely area specific. The results were analysed mainly with respect to the response of the respondents. The response of the respondents were observed and noted down. The results so observed were incorporated in this chapter and are discussed.

4.1 CLASSIFICATION OF FARMERS ON THE BASIS OF LAND HOLDING

Table 4.1: Classification of Farmers on the Basis of Land Holding

Classification	Land holding(ha)	Percentage (%)
Marginal	29	14
Small	37	18
semi medium	58	29
Medium	71	36
Large	5	3

At the aggregate level, data from the surveyed region indicated that 36% of total farmers were medium farmers, 29% were semi-medium farmers and around 14% and 18% farmers were marginal and small farmers, respectively. Only 3% were large farmers. Figure 4.1 shows that even small and marginal farmers are also having farm machinery and the survey revealed that they were hiring out too. It is also economically viable for them.

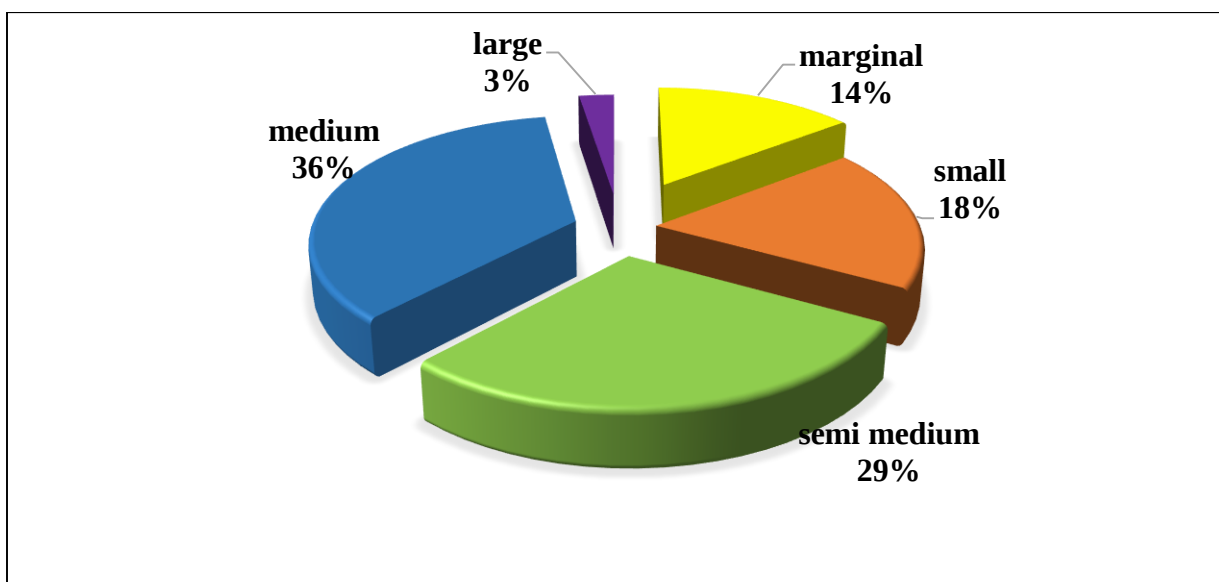


Fig 4.1: Classification of Farmers on the Basis of Land Holding

4.2 AGE GROUP OF THE RESPONDENTS

Table 4.2: Age Group of the Respondents

Age group	No. of Respondents	Percentage
<21 years	10	5
22 to 35 years	51	25.5
36 to 45 years	78	39
46 to 65 years	47	23.5
>65 years	14	7

In the surveyed region of Junagadh and Rajkot district, nearly 39% of the farmers were found in the age group of 36 to 45 years (table 4.2) and 26% of the farmers were in the bracket of 22 to 35 years. Further about 24% of the farmers were found in the age group of 46 to 65 years, About 5% and 7% farmers belonged to age group of less than 21 years and greater than 65 years respectively. (Table 4.2).

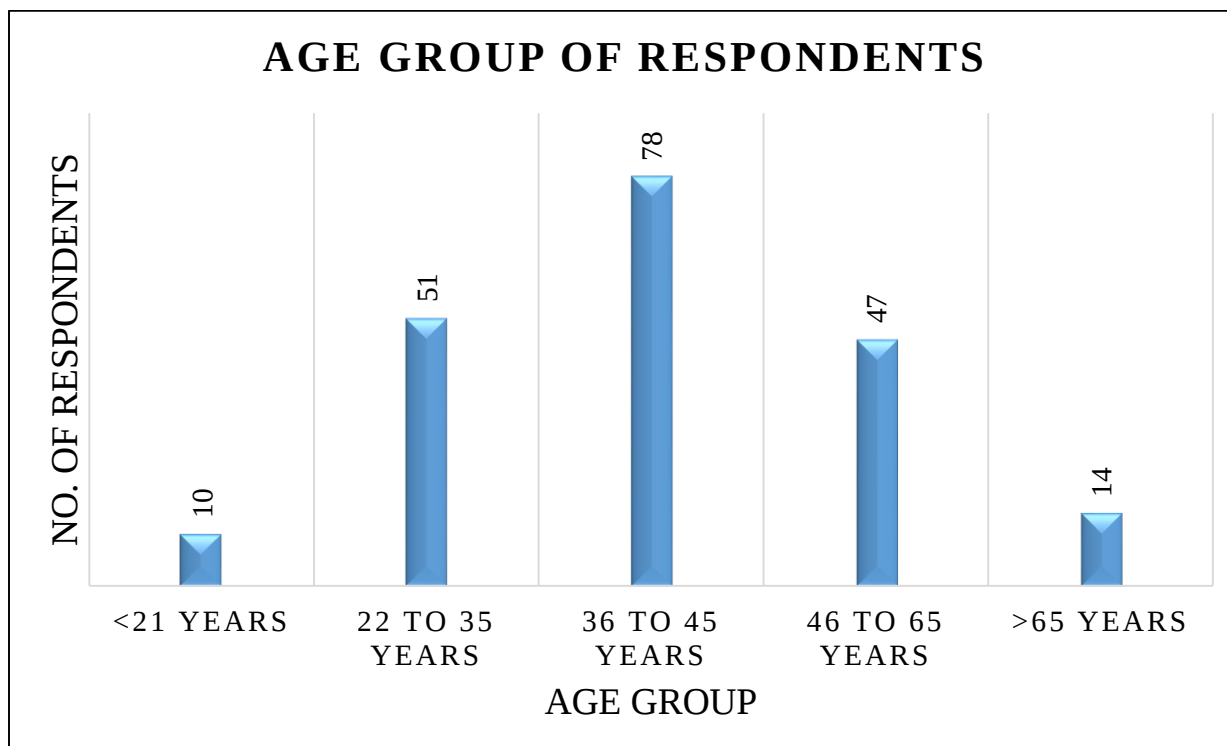


Fig 4.2: Age Group of the Respondents

4.3 EDUCATIONAL LEVEL OF RESPONDENTS

Table 4.3: Educational Level of Respondents

Educational level	No. of Respondents	Percentage
Illiterate	26	13
Below metric	83	41.5
Metric	38	19
H.S.C.	30	15
Graduation	13	6.5
Post-graduation	4	2
Diploma	6	3

Out of total respondents, about 41.5% of the customers attained below metric level education, 19% and 15% of the customers attained the metric level and higher secondary level education respectively. 6.5% customers were graduates and 2% and 3% customers attained post-graduation and technical education respectively. About 13% of the customers did not had any formal education.

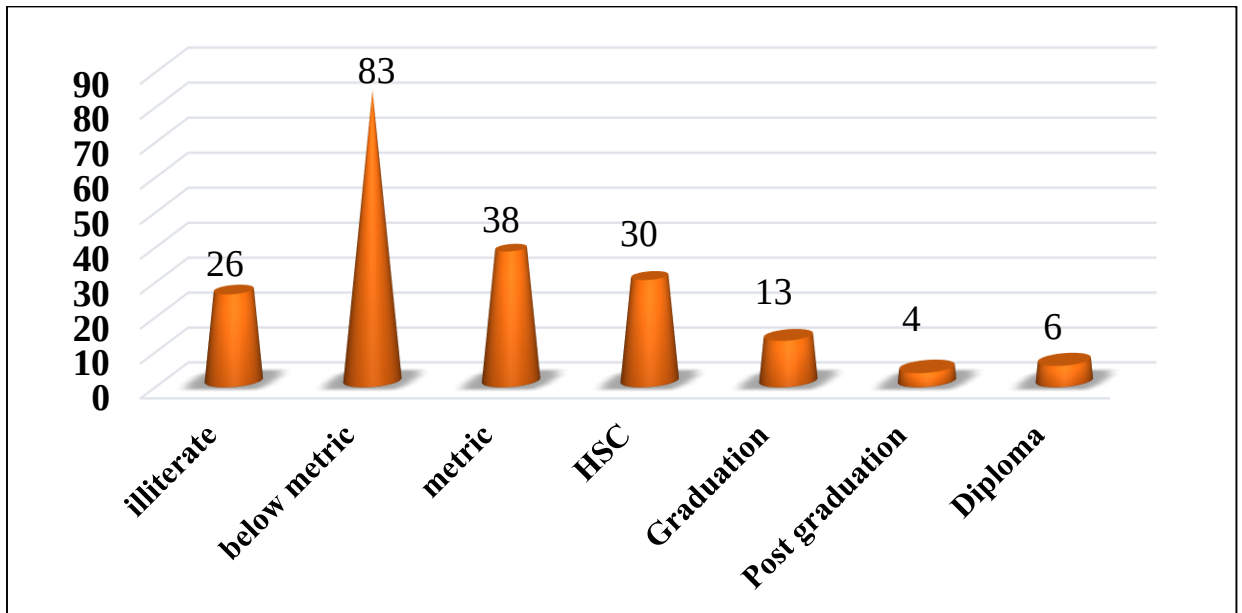


Fig 4.3: Educational Level of Respondents

4.4 INCOME LEVEL OF RESPONDENTS

Table 4.4: Income Level of Respondents

Income level	No. of Respondents	Percentage
1 to 2 lakhs	26	13
2 to 4 lakhs	83	41.5
4 to 5 lakhs	38	19
More than 5 lakhs	30	15

Income level of the customers in the area surveyed was more than 2 lakh per annum. The several sources were taken into consideration to determine the income level of the farmers. These were agriculture, allied fields i.e. dairy, services. Then income in Rabi season, kharif season and annual income were asked to the farmers. Accordingly, the annual income of the farmers was determined. From figure 4.4, it can be seen that about 13% of the respondents had income in the slab of 1 to 2 lakh, 42 % of the respondents' income fell into slab of 2 to 4 lakh. Out of total customers, 19% of the respondents had income 4 to 5 lakhs per annum and 15% of the respondents had income about more than 5 lakhs.

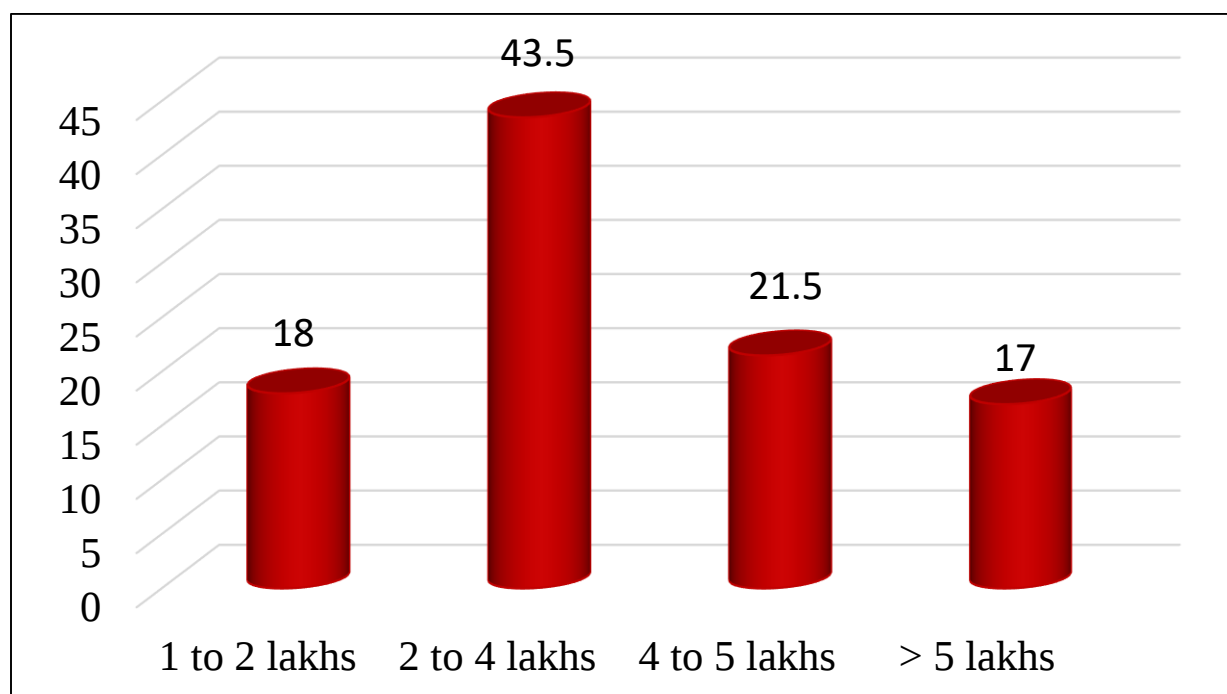


Fig 4.4: Income Level of Respondents

4.5 NUMBER OF CROPS GROWN PER YEAR

Table 4.5: Number of Crops Grown Per Year

No. of crops	No. of Respondents	Percentage
One	38	19
Two	135	67.5
Three	27	13.5

The number of crops grown per year indicate the crop intensity of the region. According to the survey, About 67.5% of farmer respondents were cultivating two crops in a year, whereas 13.5% of farmers were cultivating three crops per year. In this region, major crops grown cotton, groundnut, cumin, wheat, Til. Cotton crop requires 6 to 8 months to grow. So, majority of farmers were cultivating two crops per year.

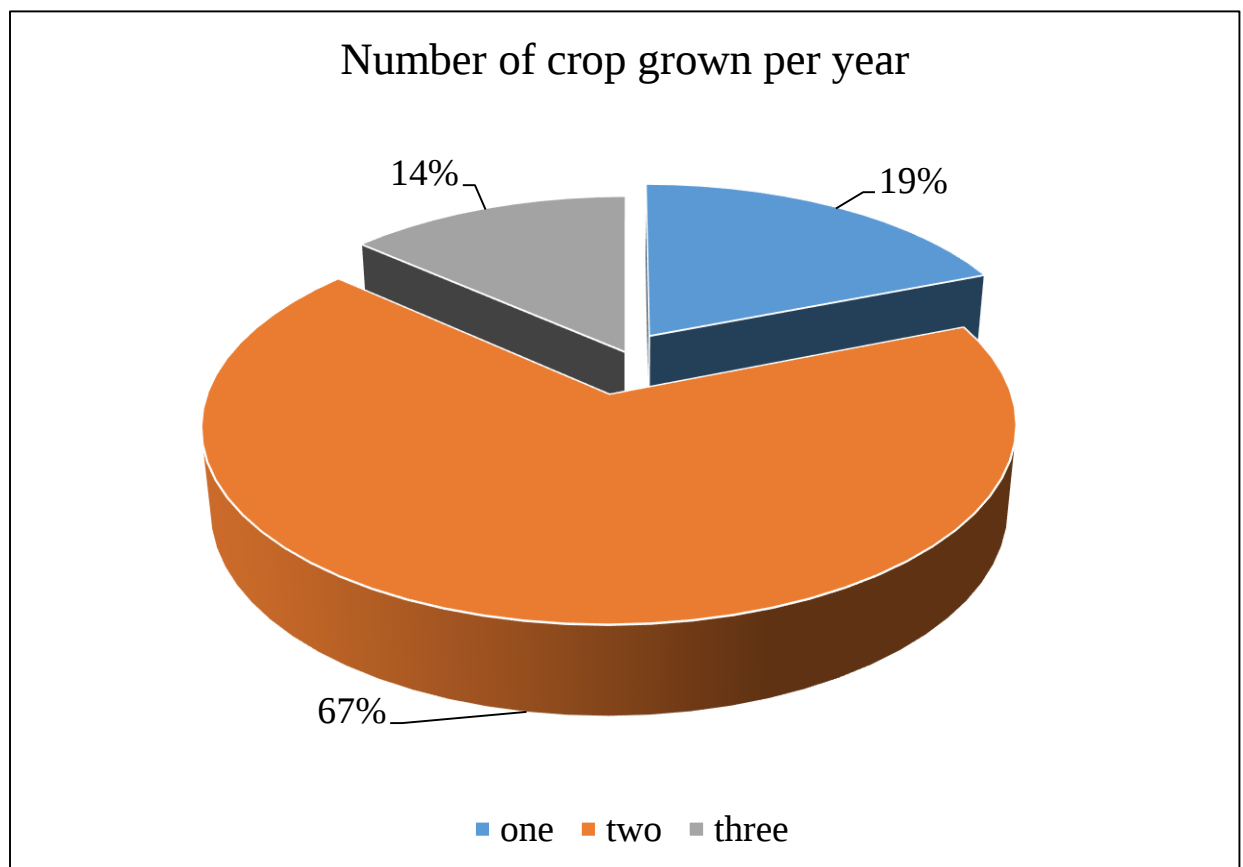


Figure 4.5 Number of Crops Grown Per Year

4.6 FARMING EXPERIENCE OF RESPONDENTS

Table 4.6: Farming Experience of Respondents

No. of years	No. of Respondents	Percentage
5 to 10 years	37	18.5
10 to 15 years	73	36.5
More than 15 years	78	39

The farming experience of respondents indicates decision power of farmers like which type of crop should be grown, how much area should be allocate to crop, which types of farm inputs should use for precision farming. The experience actually helps in farm management, sometimes reducing the cost of cultivation especially labour cost. So, Farming experience directly impacts the annual income of farmers.

According to the survey, About 39% of farmers had experience of more than 15 years. 37% and 18% of farmers had experience between 10 to 15 years and 5 to 10 years respectively.

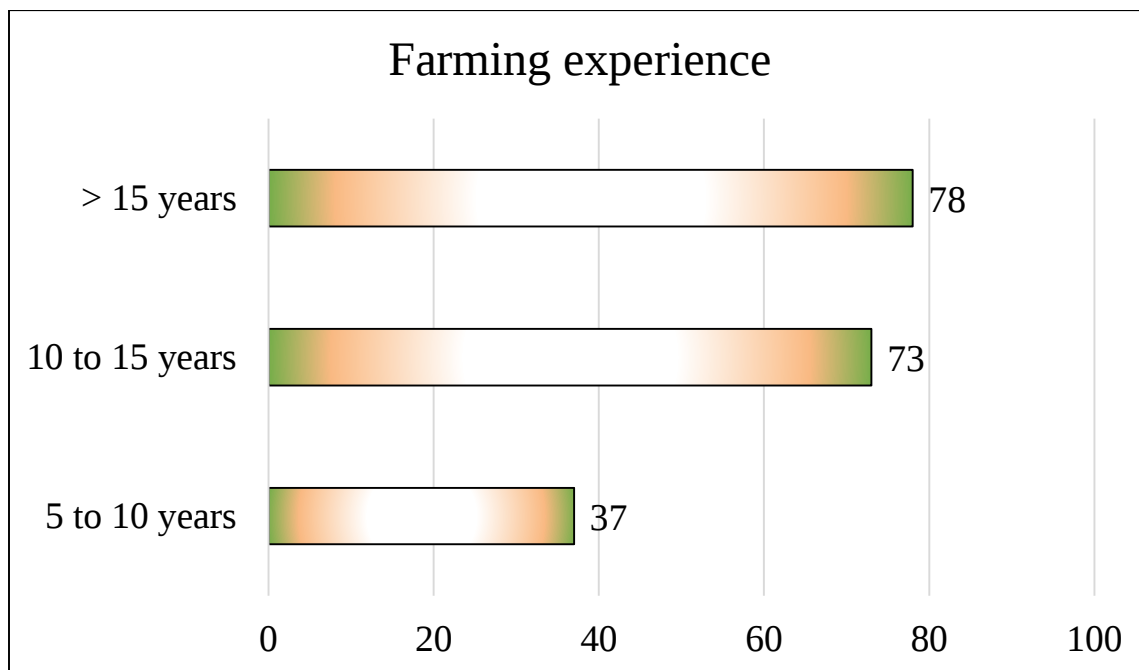


Figure 4.6 Farming Experience of Respondents

4.7 CROPPING PATTERN OF RESPONDENTS

Table 4.7: Cropping Pattern of Respondents

Crops	Hectares	Percentage
Cotton	387	46.51
Groundnut	264	31.73
Wheat	46	5.53
Cumin	74	8.89
Coriander seed	41	4.93
Other crops	20	2.40

In saurashtra region, it was found that 50% of total reporting area is bought under cultivation (**Source: - National horticulture mission**). The leading crops of saurashtra are cotton, groundnut, wheat, Oil seeds, cumin, coriander seed and vegetable crops respectively. According to the survey, 46.51% of total area fall under cotton crop and it is followed by groundnut crop which is having 31.73% of total cultivation. Other crops constituted 21% area under cultivation.

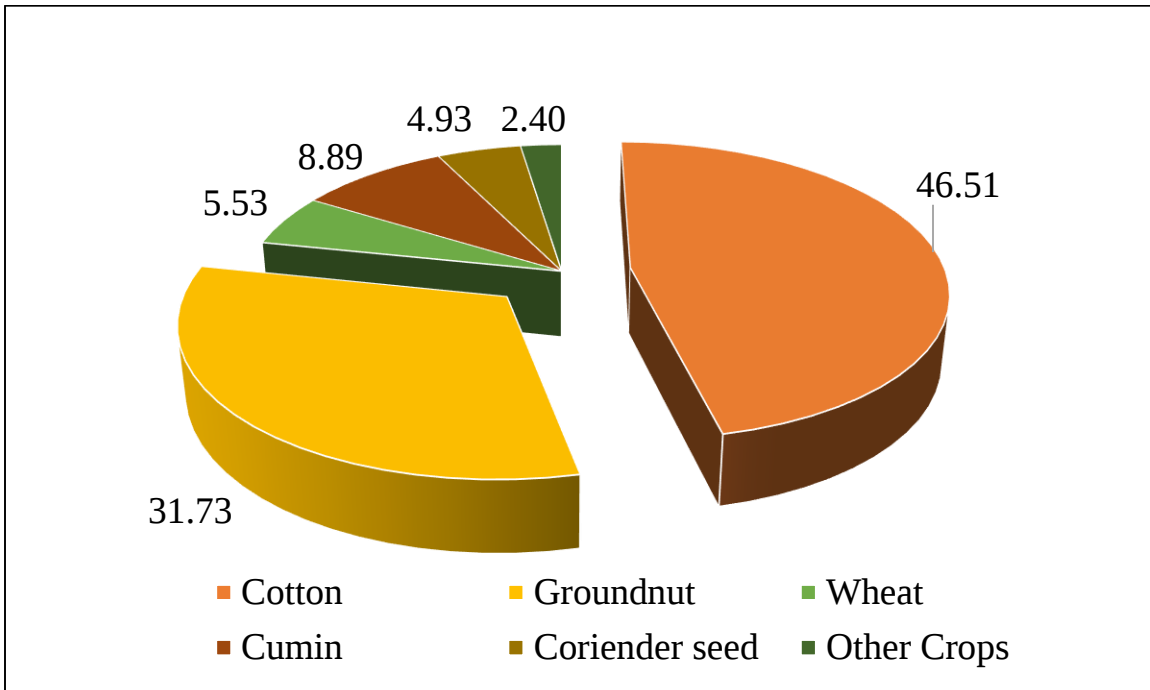


Figure 4.7 Cropping Pattern of Respondents

4.8 Irrigation Methods Used By Respondents

Table 4.8: Irrigation Methods Used By Respondents

Irrigation methods	Frequency	Percentage
Surface	168	84
Drip irrigation	19	9.5
Sprinkler	13	6.5
Sub surface	0	0

Surface irrigation is referred to as flood irrigation, implying that the water distribution is uncontrolled and inefficient, about 80% farmers in India use this irrigation method while Drip irrigation saves water and fertilizer by allowing water to drip slowly to the roots of plants.

According to **NETAFIM** company report, out of total irrigated area only 8% area covered under drip irrigation. About 84% respondents used surface irrigation while only 9.5% respondents used drip irrigation.

Sprinkler irrigation mainly used in hilly areas, while saurashtra region having a less area under hilly region. As per survey, out of total irrigated area 6.5% area covered under sprinkler irrigation.

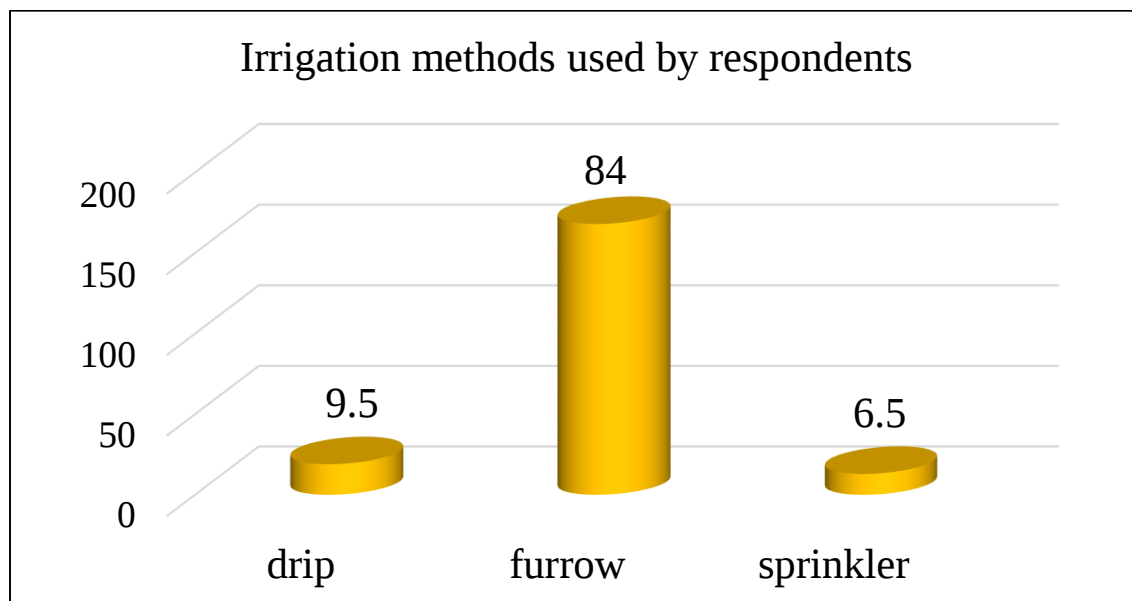


Figure 4.8 Irrigation Methods Used By Respondents

4.9 SELF-PROPELLED FARM EQUIPMENT'S OWNED BY RESPONDENTS

Table 4.9: Self-Propelled Farm Equipment's Owned by Respondents

Farm equipment	Frequency	Percentage
Tractor	123	61.5
Mini tractor	42	21
Power tiller	6	3
No equipments	29	14.5

In Gujarat, there has been a steady shift from animal power to electro- mechanical power sources although the rate of change has been slower than leading agricultural states. The availability of power is estimated at 1.20 kW/ ha which is less than average power availability in the country. According to ministry of agriculture 90% of power comes from tractor, engines and motors (**Source: Department of agriculture and cooperation, mechanization & technology division**). According to the survey, 61.5% respondents have tractor as self-propelled farm equipment. Now a days the trend of mini tractor is increasing, 21% of respondents had mini tractor which is in 15 to 22 hp segment and 3% of respondents had power tiller as main farm equipment.

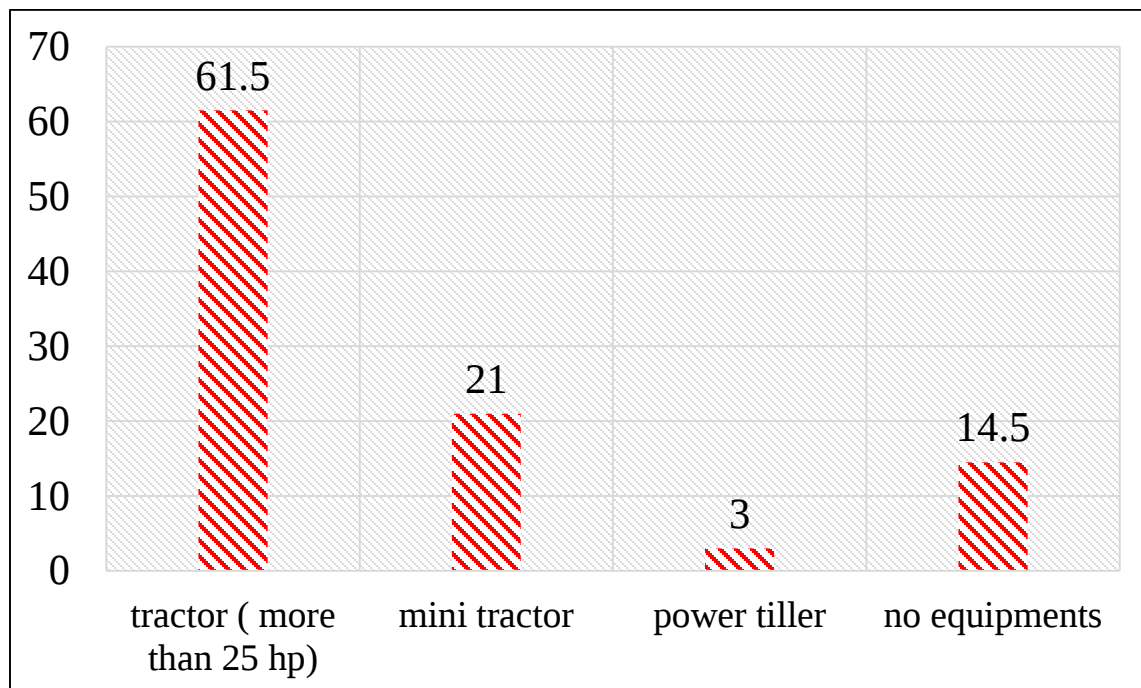


Figure 4.9 Self- Propelled Farm Equipment Owned by Respondent

4.10 BRAND NAME WISE SEGMENTATION OF TRACTOR OWNERS

Table 4.10: Brand Name Wise Segmentation of Tractor Owners

<i>Brand and model name</i>	Tractor owned by respondents
<i>New Holland 42hp 3230</i>	6
<i>New Holland 35hp 3032</i>	11
<i>New Holland 50hp 3600</i>	2
<i>Massey Ferguson 1035</i>	9
<i>Massey Ferguson 241</i>	5
<i>Massey Ferguson 245</i>	1
<i>Mahindra 275</i>	8
<i>Mahindra 475</i>	6
<i>Mahindra 265</i>	1
<i>Mahindra 575</i>	1
<i>Swaraj 735</i>	15
<i>Swaraj 744</i>	2
<i>Sonalika DI 35</i>	16
<i>Sonalika 740</i>	9
<i>Sonalika 745</i>	5
<i>Eicher 368</i>	8
<i>Eicher 480</i>	3
<i>Escort powertrac EURO 37</i>	11
<i>Escort Powertrac 434 and 434 DS</i>	4

Tractor penetration in India is having increasing trend. Average tractor penetration per 1000 hectare in India is 36 tractors. Some states like Punjab and Haryana where tractor penetration is 45 to 50 per 1000 hectares while other states having tractor penetration is below 20. **(Source: Department of agriculture and cooperation, mechanization & technology division)**

In Gujarat, tractor sales increased after 2009-10, total sales of that year was 24,291 tractors. Out of all major players, higher market share was achieved by Mahindra in Gujarat. In India 80% of tractors is in 35 to 45 hp segment. Escort having second highest market share in Gujarat which is 8 to 10% after the Mahindra brand. **(Source: - ICRA report, Tractor industry in India, 2016)**

In my survey I found that, 24% of respondents were having Sonalika brand tractors and 16% of respondents were having New Holland brand tractors while it is followed by Swaraj, Mahindra by 14 and 13% respectively. Here, Massey Ferguson and Escort is

having same position in the share of respondents. 11% respondents were having Eicher brand tractors.

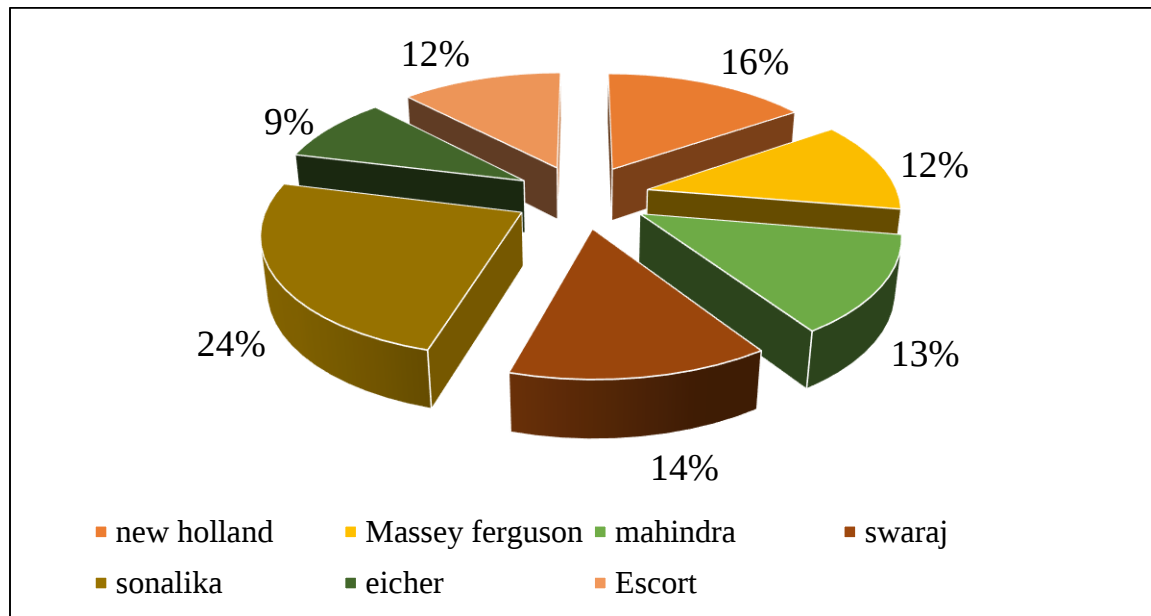


Figure 4.10 Brand Name Wise Segmentation of Tractor Owners

4.11 SEED DRILL USED BY RESPONDENTS

Table 4.11: Seed Drill Used By Respondents

Responses	Respondents	Percentage
Yes	186	93
No	14	7

According to the survey, 93% of respondents were used seed drill while 7% of respondents did not used seed drill due to various reasons like small farm holding owners used a manual broadcasting method for sowing process.

In my survey, when I asked to non-users for not using mechanized seed drill, they said that there gave certain reason:-

1. Man power is easily available.
2. Seed drill price is high
3. Seed viability is less.

4. Small farm holding

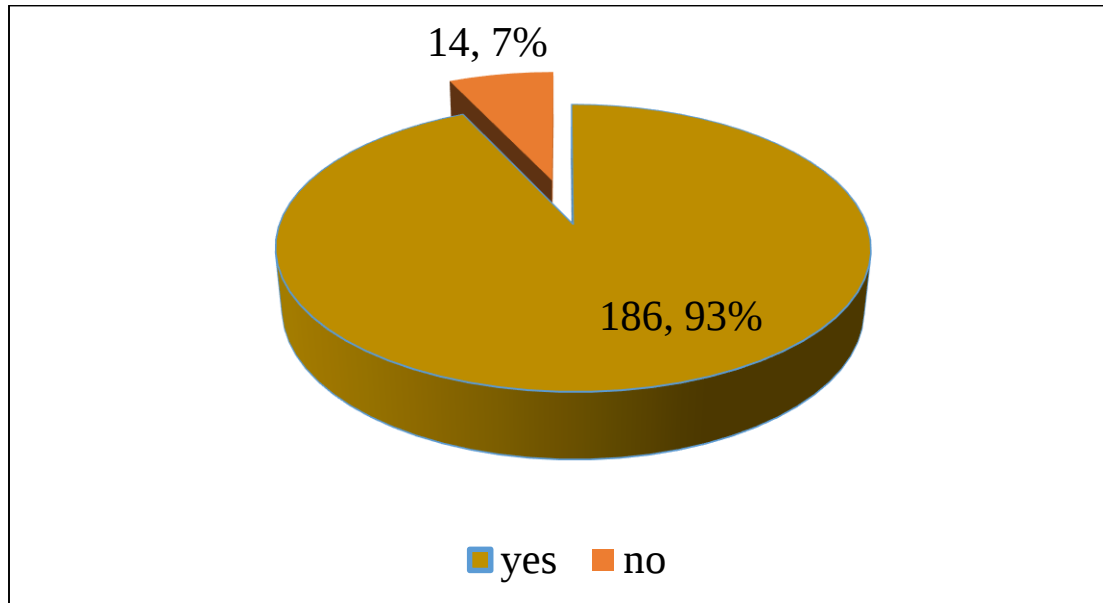


Figure 4.11 Seed Drill Used By Respondents

4.12 FARM EQUIPMENTS OWNED BY RESPONDENTS

Table No. 4.12: Farm Equipments Owned by Respondents

Farm equipments	Respondents	Percentage
Mechanical seed drill	160	80
Thresher	21	11.5
Cultivator	141	70.5
Rotavator	18	9
Mobile shredder	4	2

As per FICCI report, Agriculture and allied sector contributes 14% to India's total GDP. Agriculture Farm machinery market is estimated to grow at a CAGR of 10% in 2013-18. It shows increasing trend in recent years. The size of Farm machinery sector estimated approximately 6.5 billion dollars.

Annual sales of thresher 100,000 units and of Rotavator is 60000-80000 units respectively while annual sales of mechanical seed drill is 25000 to 30000 units respectively. According

to the survey, 80% of respondents had a mechanical seed drill those farmers selected purposively. Majority of farmers have tillage equipments like cultivator.

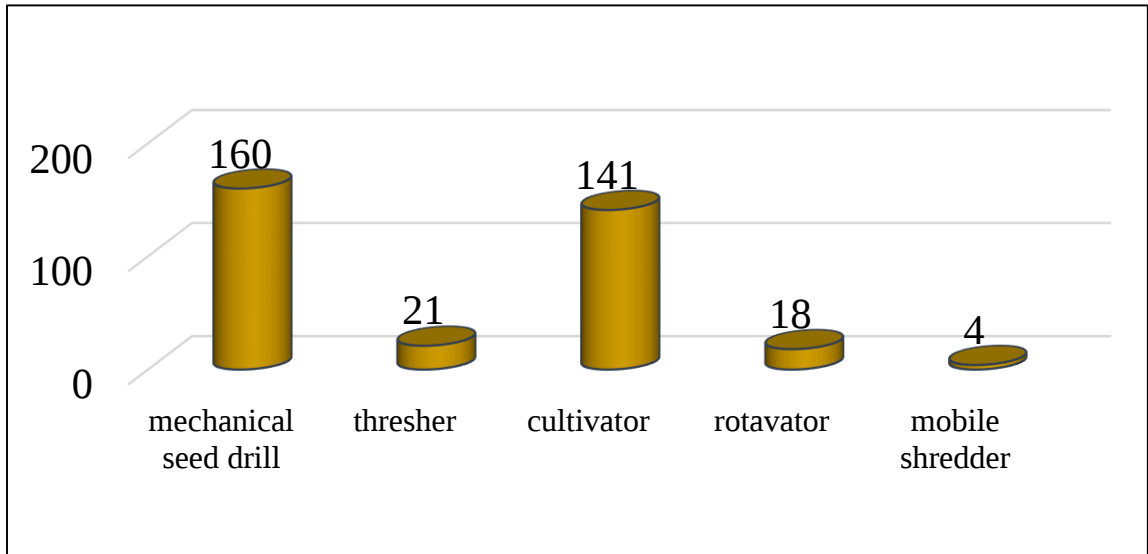


Figure 4.12 Farm Equipments Owned by Respondents

4.13 BRAND WISE SEED DRILL OWNED BY RESPONDENTS

Table No.4.13: Brand Wise Seed Drill Owned by Respondents

Company name	Respondents	Percentage
Khedut	22	13.75
Dharti	26	16.25
Mausam	31	19.375
Kranti	20	12.5
Kisan	16	10
Gujarat	13	8.125
Bharat	11	6.875
Bhumi	10	6.25
Shapar	8	5
Ramdev	3	1.875

In Rajkot region, 15 to 20 players operate in seed drill industry. These are the major players of this industry. According to the survey, 31 respondents used Mausam Company's seed drill and then it is followed by 26 and 22 respondents who had used seed drill of Dharti and Khedut Company respectively. First player of this industry is Kranti agro which was established in 1970. Out of total respondents 12.5% respondents fall in this segment. Then

after remaining 38.5% respondents have seed drill of Kisan, Gujarat, Bharat, Bhumi, Shapar and Ramdev Company.

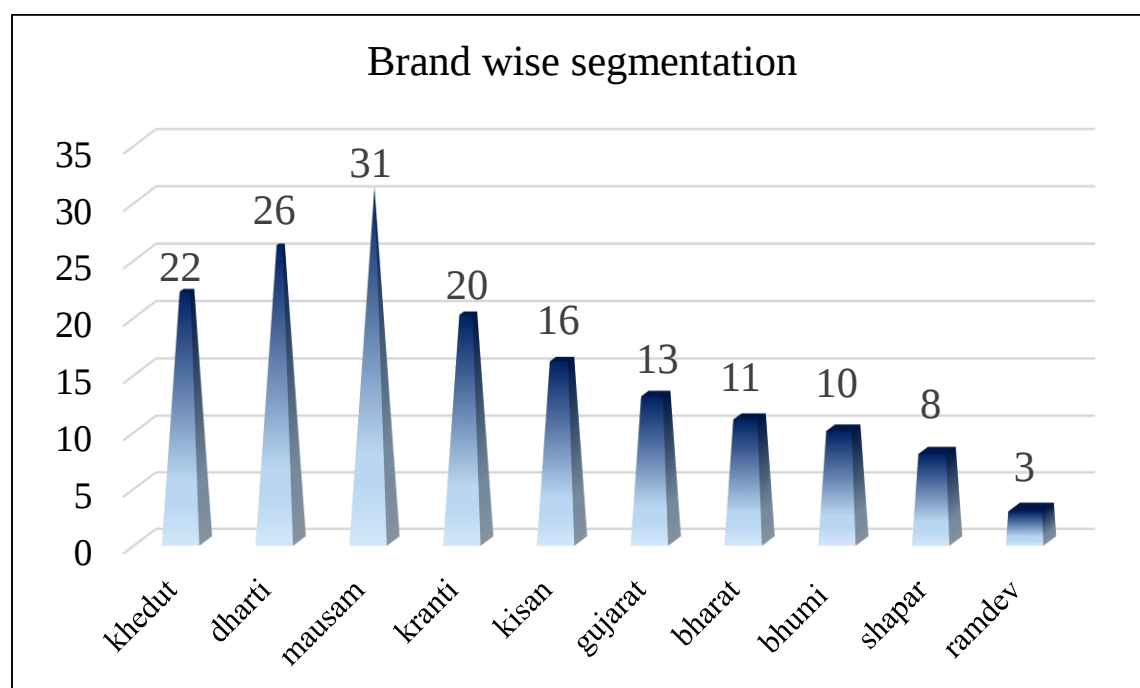


Figure 4.13 Brand Wise Seed Drill Owned by Respondents

4.14 MODE OF PURCHASE CASE- CASE OR CREDIT

Table 4.14: Mode of Purchase Case- Case or Credit

Mode of purchase	Respondents	Percentage
Cash	117	73.12
Credit	43	26.87

As it can be seen from table, about 73.12 % of respondents made cash payment for seed drill purchase because price of mechanical seed drill is not high and subsidies are available for farm machinery purchase.

According to sub-mission on agricultural mechanization scheme (**SMAM**), 25 to 50% subsidy is available on purchase of farm machinery. Therefore, the farmers demand for farm machinery is realised largely due to subsidy facility. Here, 26.87% respondents made credit payment for seed drill purchase because of social reason.

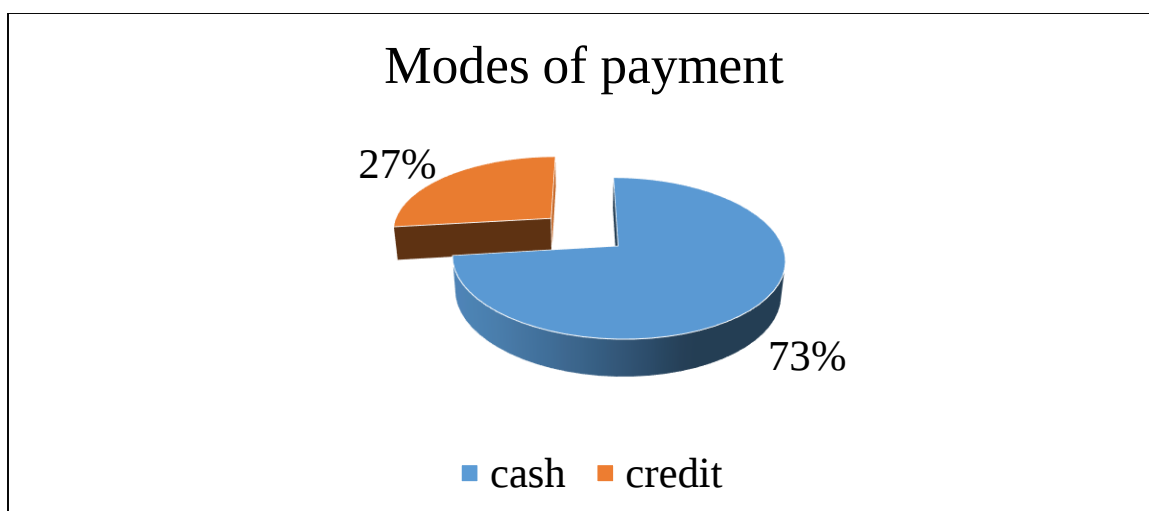


Figure 4.14 Mode of Purchase Case- Case or Credit

4.15 PROBLEM FACED BY MECHANICAL SEED DRILL OWNERS

Table 4.15: Problem Faced by Mechanical Seed Drill Owners

Problems	Respondents	Percentage
Seed germination not proper	39	24.37
Proper seed is not placed	51	31.87
Blockage of tubes due to fertilizer clods	116	72.5
Lack of signal devices at zero seed availability	158	98.75
Hopper capacity	21	13.125
Dispense of seed in wet soil	76	47.5
Other problems	43	26.87

As per the survey, I found that most of farmers faced these problems in every seed drill. Here we can see that 58% respondents said that they have blockage of tubes problem due to fertilizer clods and 98.75% respondents were faced the problem of lack of signal device at zero seed availability. Large farmers generally faced the problem of less hopper capacity. So, 13.12% respondents face the problem of less hopper capacity. Other problems faced by respondents were metering mechanism problem, Quality of tubes and metering devices is not good. As we can see from the table 25% respondents have a problem of not proper seed germination and 47.5% respondents have faced the problem of no dispense of seed in wet soil due to soil clod form at seed opener gate.

4.16 OVERALL RATING AND LEVEL OF PURCHASE DRIVERS

Table 4.16: Overall Rating and Level of Purchase Drivers

Parameters	Number of Respondents						Overall rating	Level
	1	2	3	4	5	No. of response		
Seed placement at proper depth	0	3	8	21	128	160	4.7125	1
Spacing adjustment	3	5	19	57	76	160	4.2375	1
Multi crop usage	7	12	16	39	86	160	4.15625	1
spare parts availability	5	13	29	37	76	160	4.0375	1
metering devices	4	6	36	49	65	160	4.03125	1
Seed rate	8	11	26	38	77	160	4.03125	1
hopper capacity	3	6	39	52	60	160	4	1
financial facility	8	12	37	42	61	160	3.85	2
dealers behavior	4	17	24	72	43	160	3.83125	2
output	11	18	26	42	63	160	3.8	2
after sales service	6	14	42	58	40	160	3.7	2
brand name	13	19	37	32	59	160	3.65625	2
Recommendation of friends	8	23	34	49	46	160	3.6375	2
Quality of material	12	29	41	53	25	160	3.3125	2
price	0	21	93	32	14	160	3.24375	2
product look and appearance	0	34	100	18	6	160	2.93	3

1. Note: Rating on scale of 1 to 5 (1- Not at all important, 2- Not important, 3- Neutral, 4- Important, 5- Very important)

2. Note: (level 1- Good rating (4 to 5), level 2- Average rating (3 to 3.99), level 3- Poor rating (1 to 2.99))

As it can be seen from the above table, seed placement at proper depth was the major consideration and was given highest rating (4.71) by all the sampled customers, followed by spacing adjustment (4.23), Multi crop usage(4.15), Spare part availability (4.03), metering devices(4.03) ,seed rate (4.03) and hopper capacity(4) in that order.

In order to help maximize crop yield potential, planting should occur at uniform seed spacing and seeding depth. Seeds need good soil contact to ensure adequate moisture transfer to begin germination. Planting speed can also affect the seed placement because higher speed does not achieve proper depth.

Spacing adjustment is also necessary because right row spacing can vary with soil type and planting crop. Sometimes narrow row is required because narrow rows capture more sunlight and have ability to produce more grains.

In my survey, majority of farmers require better efficiency in terms of more numbers of land covered in less time. Out of total respondents some of larger farmers also preferred hopper capacity as major brands gives hopper capacity of 30 kg while they requires more than 60 kg capacity.

Besides the level 1 factors, these are level 2 factors which were given average rating (3 to 4) by the customers. These include output (3.8), Brand name (3.65) and one of the factor was also recommendation of relatives/friends/other villagers (3.63).

It was found that recommendation from relatives and friends is having significant influence over the customers as most of the sampled farmers revealed that they were making purchase decision, past experiences of others helped them as they were thinking about other brands previously but after having discussion with other relatives, they purchase the other brands seed drill.

Among other level 2 purchase drivers, price was also rated on the average scale as these all companies have perfect competition and less difference in price.

Out of all parameters, product look appearance was also rated on poor scale because according to famers it does not affect very much on buying behaviour. So, product look appearance was rated at 1 level factor and rating given to it was (2.93).

4.17 CUSTOMER SATISFACTION LEVEL OF MAJOR SEED DRILL COMPANIES ON THE BASIS OF DIFFERENT ATTRIBUTES

1. Khedut Agro (22 respondents)

Table 4.17.1: Customer Satisfaction Level of Khedut Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	0	2	6	7	7	22	3.86
Efficiency	2	5	7	5	3	22	3.00
capacity hopper	0	1	5	6	10	22	4.14
metering mechanism	1	3	6	5	7	22	3.59
less blockage	2	1	10	5	4	22	3.27
quality of material	1	2	4	7	8	22	3.82
uniform spacing	2	4	8	5	3	22	3.05
multi crop usage	1	3	7	6	5	22	3.45
Seed germination	0	2	11	3	6	22	3.59
seed placed proper depth	2	4	4	6	6	22	3.36
seed rate	1	3	6	7	5	22	3.50
dispense of seed	0	5	7	4	6	22	3.50

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Khedut agro were fully satisfied with the hopper capacity (4.14), followed by low maintenance cost (3.86) and quality of material (3.82). As it was noted that Khedut agro 9 tine seed drill contain 100 kg seed capacity and 100 kg fertilizer capacity which is higher than other competitors.

As per survey, it was noted that the price of Khedut agro seed cum fertilizer seed drill was higher but its maintenance cost was low and quality of material was good. Most of respondents gave average score to the ‘efficiency’ attribute because the weight of seed drill was high.

Most of respondents gave average score to the ‘uniform spacing’, ‘less blockage’, ‘multi crop usage’ and ‘seed germination growth’ parameters.

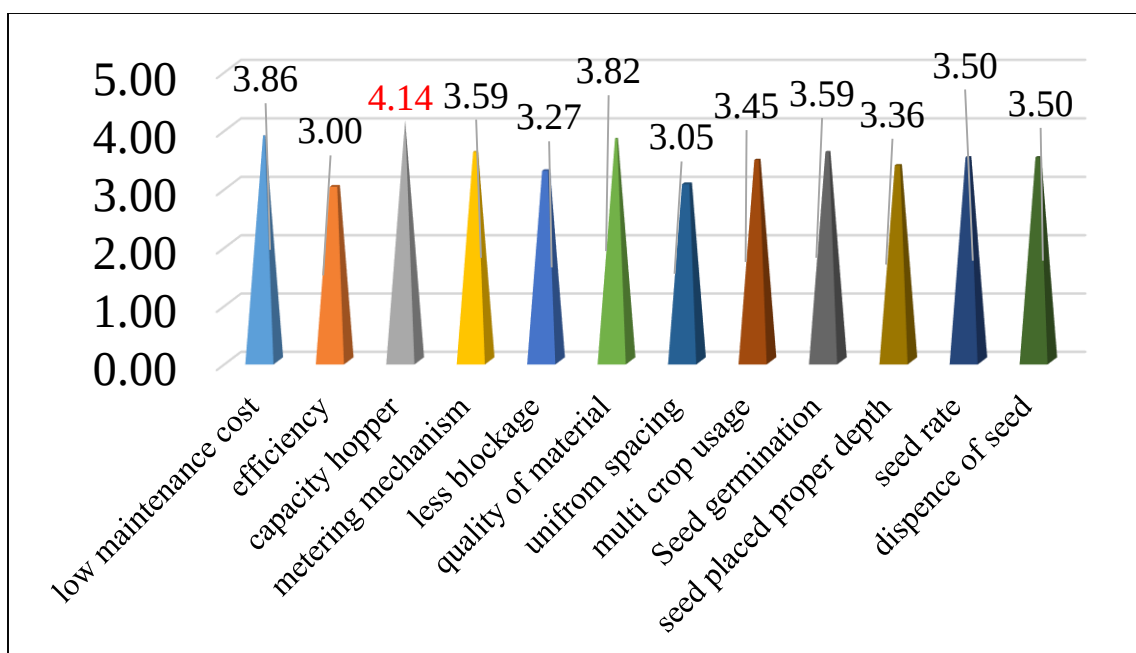


Figure 4.17.1 Customer Satisfaction Level of Khedut Agro Seed Drill on the Basis of Technical Attributes

2. Dharti Engg. (26 respondents)

Table 4.17.2: Customer Satisfaction Level of Dharti Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	0	2	6	8	10	26	4.00
Efficiency	0	1	5	9	11	26	4.15
capacity hopper	4	6	8	6	2	26	2.69
metering mechanism	2	4	8	9	3	26	3.19
less blockage	3	4	8	7	4	26	3.08
quality of material	0	3	6	8	9	26	3.88
uniform spacing	1	3	8	8	6	26	3.54
multi crop usage	1	1	8	7	9	26	3.81
Seed germination	0	4	11	5	6	26	3.50
seed placed proper depth	2	4	8	7	5	26	3.27
seed rate	1	7	5	9	4	26	3.27
dispense of seed	2	4	12	6	2	26	3.00

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Dharti agro were fully satisfied with the efficiency attribute (4.15), Followed by low maintenance cost (4.00), Quality of material (3.88) and multi crop usage (3.81). It was noted that Dharti agro 9 tine seed had 2 acre area coverage per hour which quite greater than other competitors.

Majority of respondents gave average score to ‘hopper capacity’ attribute because its seed compartment contain 35 kg capacity while its fertilizer compartment contain 40 kg capacity and multi crop usage attribute got higher score because Dharti gave 7 type of different rollers for different crops.

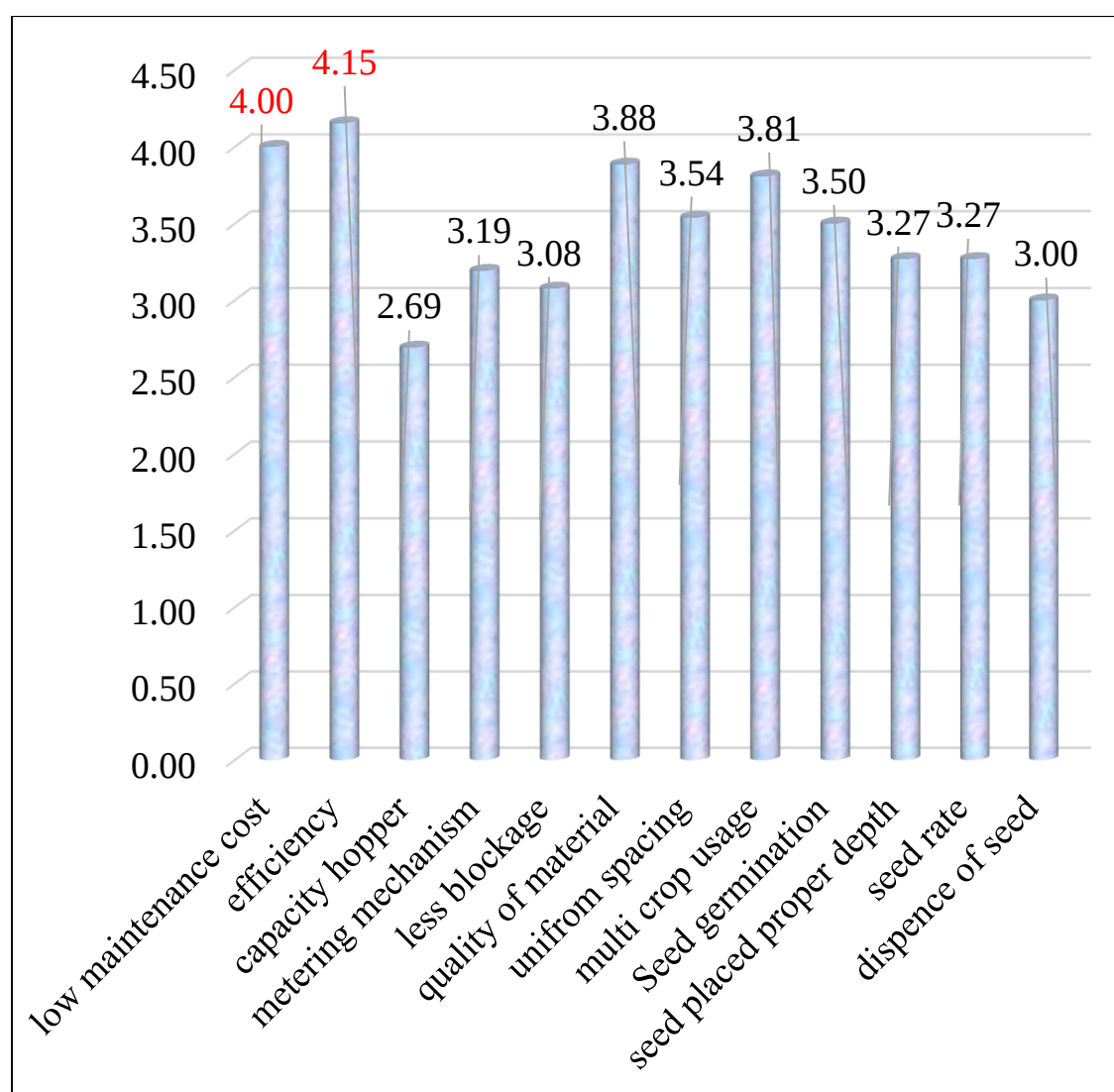


Figure 4.17.2 Customer Satisfaction Level of Dharti Agro Seed Drill on the Basis of Technical Attributes

3. Mausam Agro Engg. (31 respondents)

Table 4.17.3: Customer Satisfaction Level of Mausam Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	1	5	5	11	9	31	3.68
efficiency	1	6	9	6	9	31	3.48
capacity hopper	2	3	11	8	7	31	3.42
metering mechanism	0	1	4	10	16	31	4.32
less blockage	2	2	11	7	9	31	3.55
quality of material	0	2	8	11	10	31	3.94
uniform spacing	2	5	10	8	6	31	3.29
multi crop usage	1	3	12	8	7	31	3.52
Seed germination	0	4	12	9	6	31	3.55
seed placed proper depth	2	3	14	5	7	31	3.32
seed rate	0	1	6	8	16	31	4.26
dispense of seed	1	4	11	6	9	31	3.55

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Mausam agro were fully satisfied with the metering mechanism attribute (4.32), followed by seed rate (4.26) and quality of material (3.94). It was noted that Mausam agro Seed Drill was implemented with two speeds by the changes of 12 and 18 teeth sprocket chain gears in the main ground wheel. So, its metering mechanism was effective as compared to competitors.

Mausam agro gave speed change metering mechanism so, we can control seed rate very precisely as per crop requirement. Here, majority of respondents were of Mausam agro (31 respondents) because its sales promotional activity and brand awareness was more as compared to other competitors.

Most of respondents gave neutral score to the ‘uniform spacing’, ‘less blockage’ and ‘seed germination growth’ parameters while respondents were more satisfied with the ‘multi crop usage’ parameter because Mausam agro gave 7 type of rollers which is used for different crops.

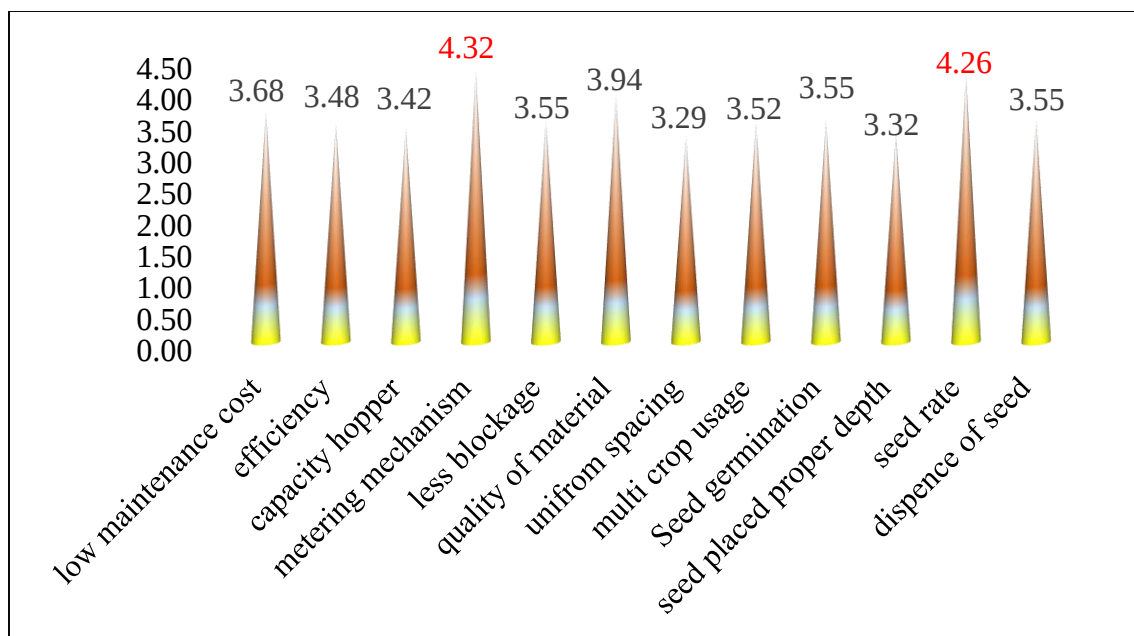


Figure 4.17.3 Customer Satisfaction Level of Mausam Agro Seed Drill on the Basis of Technical Attributes

4. Kranti Agro (20 respondents)

Table 4.17.4: Customer Satisfaction Level of Kranti Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	5	4	6	3	2	20	2.40
Efficiency	0	5	8	3	4	20	3.30
capacity hopper	0	2	4	6	8	20	4.00
metering mechanism	0	2	5	7	6	20	3.85
less blockage	1	6	8	2	3	20	2.95
quality of material	3	4	6	6	1	20	2.75
uniform spacing	1	3	7	5	4	20	3.35
multi crop usage	1	0	2	8	9	20	4.15
Seed germination	0	6	10	3	1	20	2.95
seed placed proper depth	3	3	5	6	3	20	3.00
seed rate	3	4	8	5	0	20	2.60
dispense of seed	1	4	6	7	2	20	3.20

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Kranti agro were fully satisfied with the multi crop usage attribute (4.15), followed by capacity of hopper (4.00) and metering mechanism (3.85). It was noted that Kranti agro Seed Drill was implemented with internal double run type rollers in which it had double faced wheel, one face had a larger opening for larger seeds and other face had smaller openings for smaller seeds. There is no need to change the roller as crop is change. So, Kranti agro seed drill respondents were fully satisfied with the multi crop usage attribute.

As per survey data revealed that seed rate was not properly maintained in this type of mechanism.

Majority of respondents were fully satisfied with the hopper capacity of Kranti agro seed drill because they were provide 60 kg seed compartment and 60 kg fertilizer compartment which is sufficient for medium and semi medium farmers.

Kranti agro was first comer in this industry and they modified their product year by year but their quality of material was deteriorated so, customers gave 2.75 score to quality of material attribute respectively.

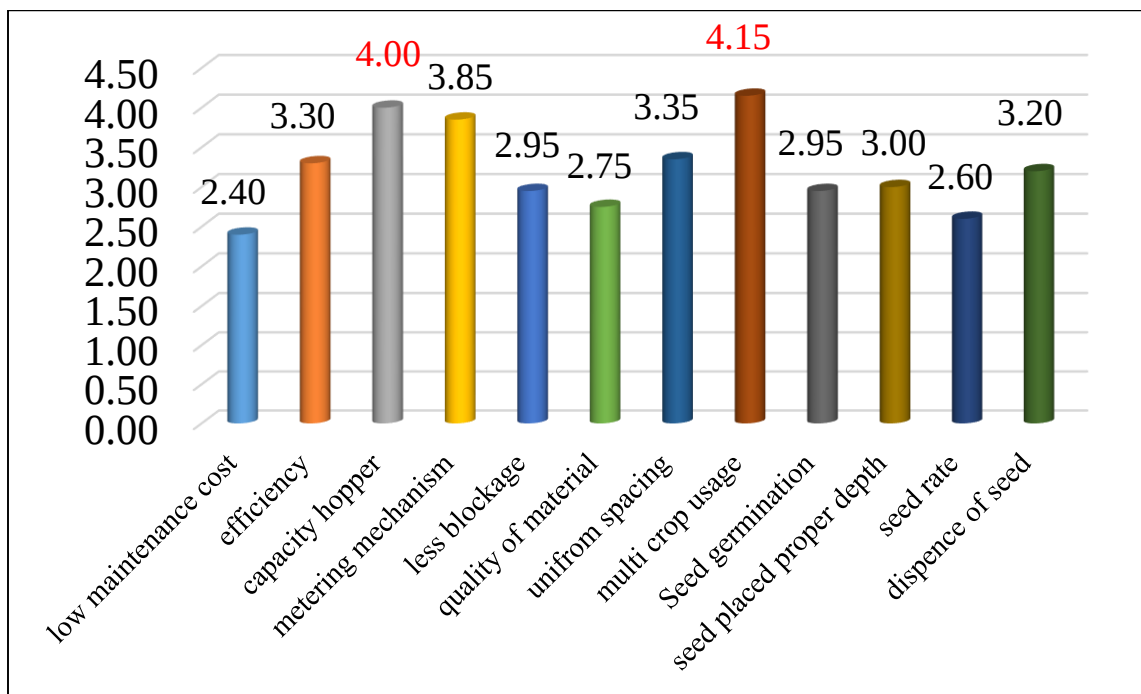


Figure 4.17.4 Customer Satisfaction Level of Kranti Agro Seed Drill on the Basis of Technical Attributes

5. Kisan Agro (16 respondents)

Table 4.17.5: Customer Satisfaction Level of Kisan Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	1	3	5	4	3	16	3.25
Efficiency	1	1	7	5	2	16	3.31
capacity hopper	0	7	5	2	2	16	2.94
metering mechanism	2	2	8	3	1	16	2.81
less blockage	1	6	4	2	3	16	2.94
quality of material	1	5	2	5	3	16	3.19
uniform spacing	2	6	7	0	1	16	2.38
multi crop usage	2	3	8	1	2	16	2.75
Seed germination	0	6	6	3	1	16	2.94
seed placed proper depth	2	2	4	3	5	16	3.31
seed rate	1	4	4	5	2	16	3.13
dispense of seed	2	2	7	2	3	16	3.00

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Kisan agro were satisfied with the seed placed at proper depth attribute (3.31), followed by efficiency (3.31), low maintenance cost (3.25) and quality of material (3.19). Respondents gave average score to the efficiency because seed sowing area per hour is 1 acre.

It was noted that Kisan agro Seed Drill users gave average score to the technical attributes. Kisan Agro Company majorly focused on other farm equipments like tillage Implements, loaders and earth movers and they also gave more discount on purchase of equipment with the seed drill.

So, overall performance of the product was an average according to 16 respondents of Kisan Agro Company.

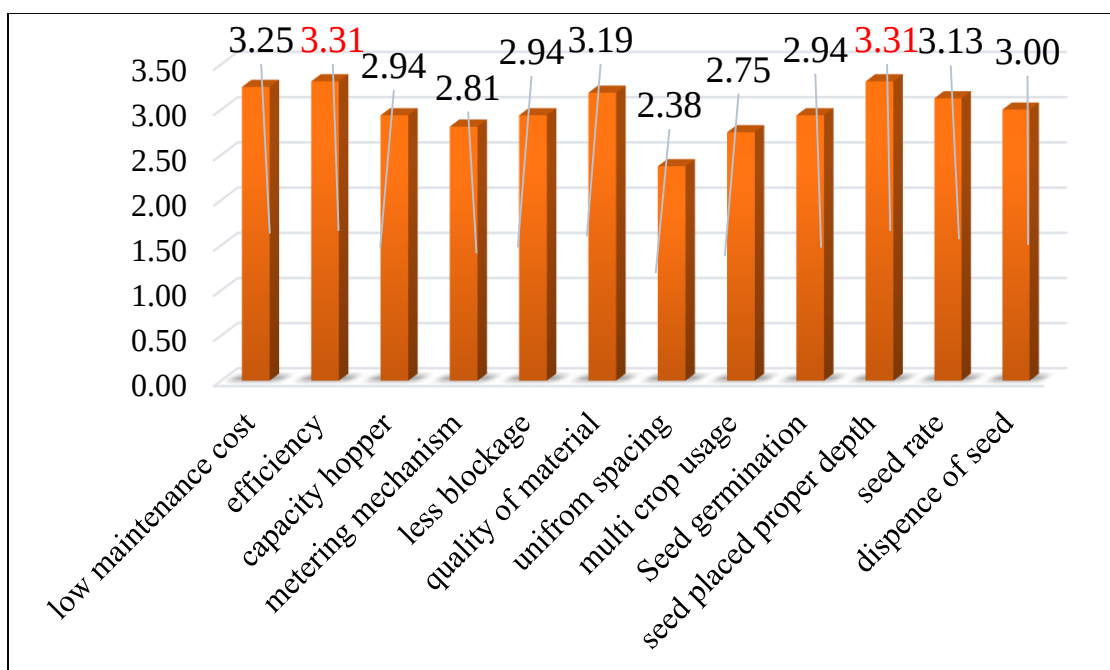


Figure 4.17.5 Customer Satisfaction Level of Kisan Agro Seed Drill on the Basis of Technical Attributes

6. Gujarat Agro (13 respondents)

Table 4.15.6: Customer Satisfaction Level of Gujarat Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	1	3	3	5	1	13	3.08
Efficiency	0	1	2	5	5	13	4.08
capacity hopper	0	2	4	4	3	13	3.62
metering mechanism	1	1	5	4	2	13	3.31
less blockage	0	3	5	4	1	13	3.23
quality of material	0	2	5	3	3	13	3.54
uniform spacing	0	3	4	5	1	13	3.31
multi crop usage	1	2	2	3	5	13	3.62
Seed germination	0	1	3	5	4	13	3.92
seed placed proper depth	0	0	4	4	5	13	4.08
seed rate	3	3	4	1	2	13	2.46
dispense of seed	2	2	2	3	4	13	3.23

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Gujarat agro were fully satisfied with the seed placed at proper depth attribute (4.08) and its efficiency (4.08), followed by capacity of hopper (3.62) respectively.

Respondents were fully satisfied with the efficiency attribute because seed sowing area per hour is 1.5 acres which is comparatively higher than competitors seed drill. One of major reason of higher efficiency was its weight because its weight was 325 kg respectively.

It was noted in the survey, majority of respondents were satisfied with seed placed at proper depth attribute. So, seed germination was good as compared to other company's seed cum fertilizer seed drill.

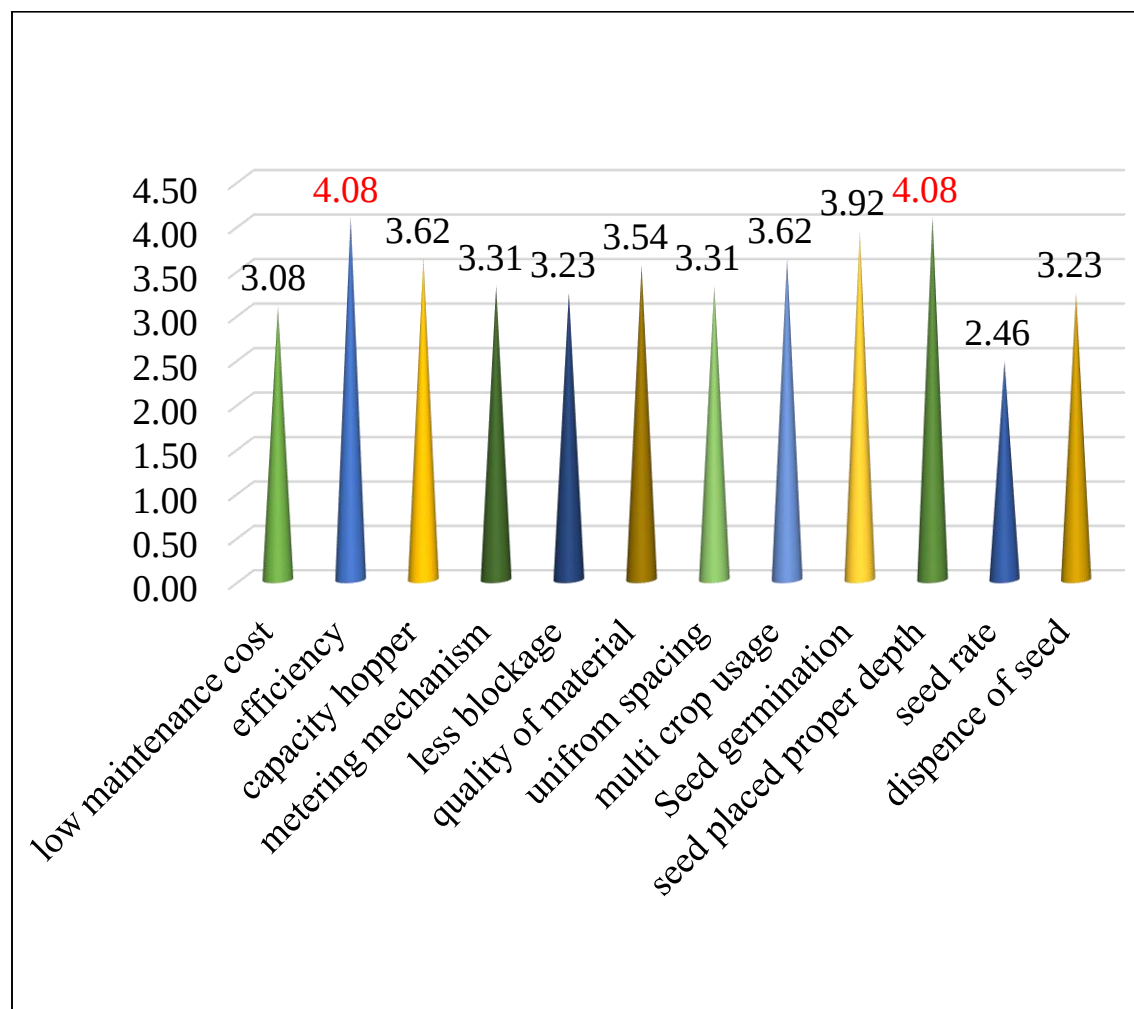


Figure 4.17.6 Customer Satisfaction Level of Gujarat Agro Seed Drill on the Basis of Technical Attributes

7. Bharat Agro (11 respondents)

Table 4.17.7: Customer Satisfaction Level of Bharat Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	1	1	2	2	5	11	3.73
efficiency	0	2	4	2	3	11	3.55
capacity hopper	0	1	2	4	4	11	4.00
metering mechanism	0	1	3	4	3	11	3.82
less blockage	3	2	3	2	1	11	2.36
quality of material	0	1	2	3	5	11	4.09
uniform spacing	1	0	3	5	2	11	3.55
multi crop usage	0	0	1	6	4	11	4.27
Seed germination	0	2	4	4	1	11	3.36
seed placed proper depth	1	2	4	2	2	11	3.09
seed rate	1	1	2	3	4	11	3.64
dispense of seed	0	1	5	4	1	11	3.45

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Bharat agro were fully satisfied with the Multi crop usage attribute (4.27), followed by Quality of material (4.09), and its hopper capacity (4.00) respectively.

As per survey, respondents were told that Bharat Company's seed drill performance was better than other company's seed drill and it is new comer in this industry.

Bharat Company gave 7 types of seed rollers for different crops. So, they were satisfied with the multi crop usage attribute and their quality of material was also good.

Majority of respondents were fully satisfied with the hopper capacity because seed compartment capacity was 50 kg and fertilizer capacity was 60 kg respectively.

Respondents were also satisfied with seed rate attributes because seed drill had precise seed rate distribution arrangement respectively.

Bharat company's seed drill users were satisfied with low maintenance cost and its price was also lower.

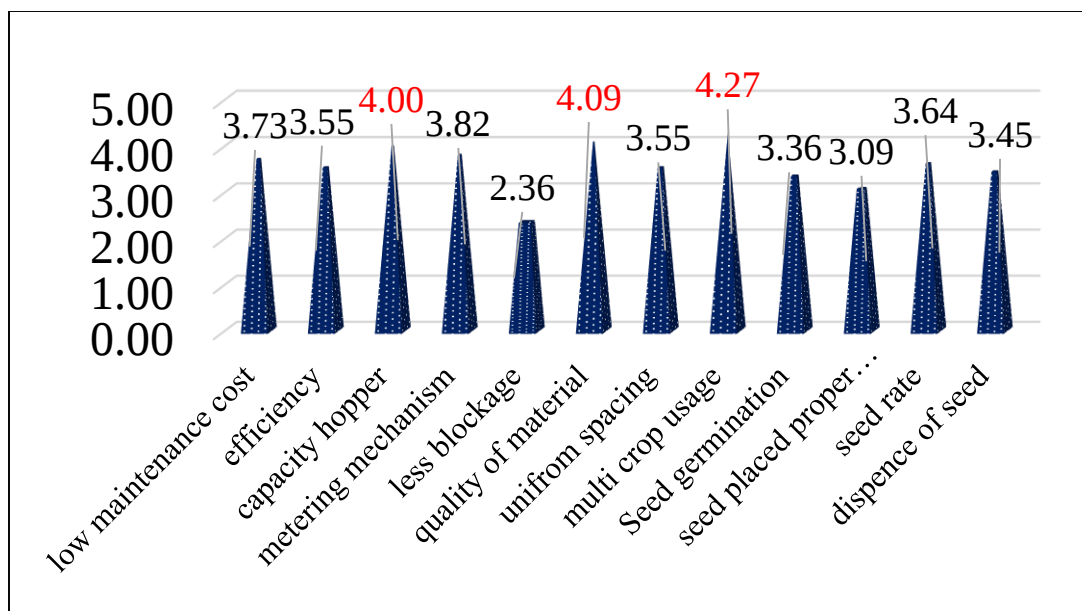


Figure 4.17.7 Customer Satisfaction Level of Bharat Agro Seed Drill on the Basis of Technical Attributes

8. Bhumi agro. (10 respondents)

Table 4.17.8: Customer Satisfaction Level of Bhumi Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	1	3	5	0	1	10	2.60
Efficiency	0	1	2	6	1	10	3.70
capacity hopper	0	0	4	4	2	10	3.80
metering mechanism	0	3	5	1	1	10	3.00
less blockage	0	1	1	3	5	10	4.20
quality of material	1	2	2	2	3	10	3.30
uniform spacing	0	0	3	5	2	10	3.90
multi crop usage	1	1	2	3	3	10	3.50
Seed germination	0	2	3	4	1	10	3.40
seed placed proper depth	0	2	3	2	3	10	3.60
seed rate	1	1	2	3	3	10	3.50
dispense of seed	0	1	3	4	2	10	3.70

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Bhumi agro were fully satisfied with the less blockage attribute (4.20), followed by uniform spacing (3.90) and its hopper capacity (3.80) respectively.

As it was noted that, Bhumi agro seed drill was implemented with side wheel drive mechanism. Therefore agitator of seed compartment and fertilizer compartment was very effective and problem of blockage was resolved with this type of system. So, majority of respondents were fully satisfied with the less blockage attribute respectively.

Some respondents were also satisfied with the uniform spacing attribute of seed drill and its hopper capacity was also better than other competitors. As seed compartment capacity was 55 kg and fertilizer capacity was 65 kg.

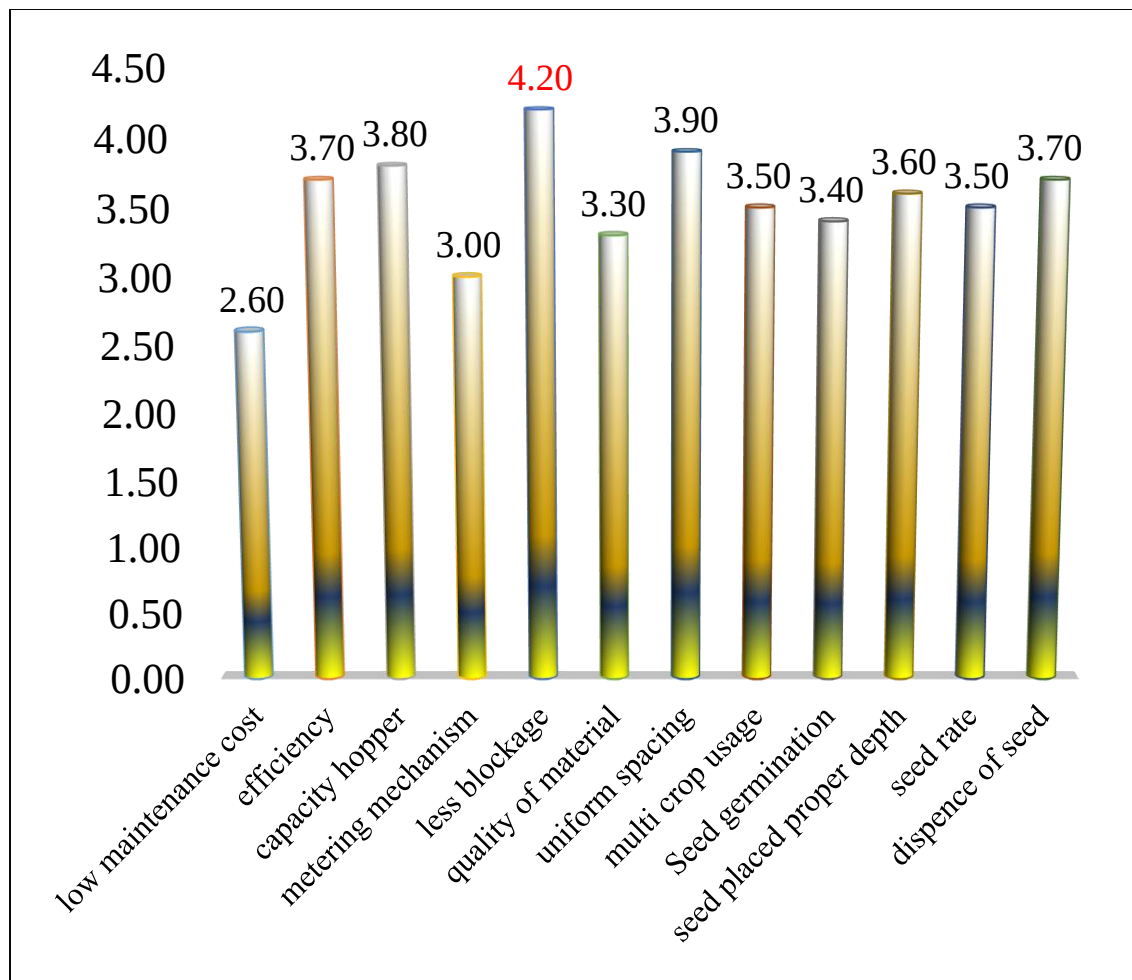


Figure 4.17.8 Customer Satisfaction Level of Bhumi Agro Seed Drill on the Basis of Technical Attributes

9. Shapar Agro (8 respondents)

Table 4.17.9: Customer Satisfaction Level of Shapar Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	0	1	2	2	3	8	3.88
Efficiency	0	2	1	3	2	8	3.63
capacity hopper	0	2	3	2	1	8	3.25
metering mechanism	0	2	3	2	1	8	3.25
less blockage	0	1	4	2	1	8	3.38
quality of material	0	1	3	2	2	8	3.63
uniform spacing	0	2	5	1	0	8	2.88
multi crop usage	0	3	3	2	0	8	2.88
Seed germination	0	2	4	2	0	8	3.00
seed placed proper depth	0	4	2	2	0	8	2.75
seed rate	0	1	3	3	1	8	3.50
dispense of seed	0	0	4	2	2	8	3.75

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Shapar agro were satisfied with the low maintenance cost (3.88), followed by dispense of seed (3.75) and its efficiency (3.63) respectively.

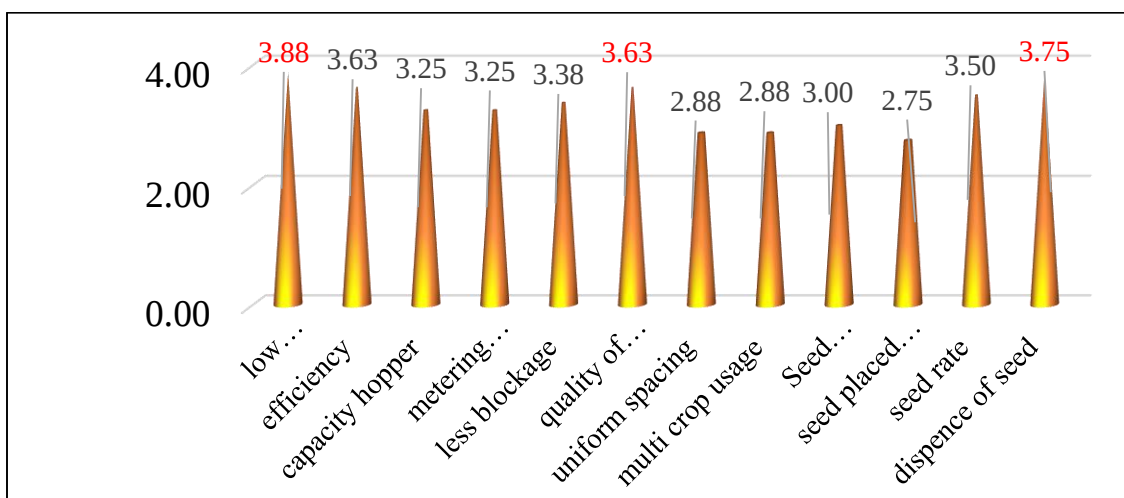


Figure 4.17.9 Customer Satisfaction Level of Shapar Agro Seed Drill on the Basis of Technical Attributes

10. Ramdev Agro (3 respondents)

Table 4.17.10: Customer Satisfaction Level of Ramdev Agro Seed Drill on the Basis of Technical Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
low maintenance cost	0	2	1	0	0	3	2.33
Efficiency	0	3	0	0	0	3	2.00
capacity hopper	0	0	3	0	0	3	3.00
metering mechanism	0	2	1	0	0	3	2.33
less blockage	0	1	2	0	0	3	2.67
quality of material	0	3	0	0	0	3	2.00
uniform spacing	0	1	1	1	0	3	3.00
multi crop usage	0	0	3	0	0	3	3.00
Seed germination	0	1	2	0	0	3	2.67
seed placed proper depth	0	0	3	0	0	3	3.00
seed rate	0	1	2	0	0	3	2.67
dispense of seed	0	2	1	0	0	3	2.33

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of respondents of Ramdev agro were neutral with the Capacity of hopper (3.00), followed by uniform spacing (3.00) and multi crop usage (3.00) respectively.

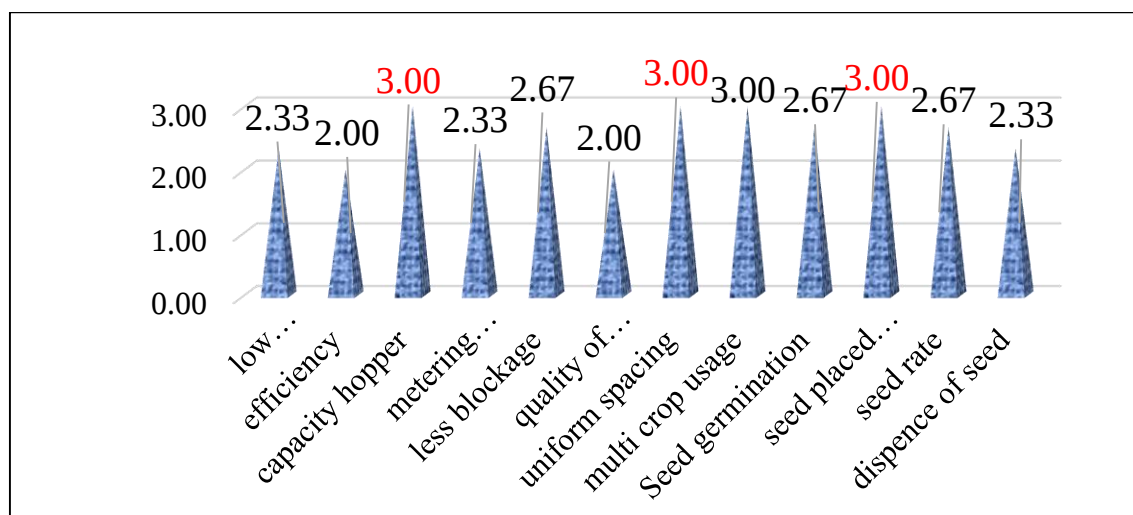


Figure 4.17.10 Customer Satisfaction Level of Ramdev Agro Seed Drill on the Basis of Technical Attributes

4.18 BRAND PREFERENCE LEVEL OF MAJOR SEED DRILL COMPANIES ON THE BASIS OF DIFFERENT ATTRIBUTES

Table 4.18: Brand Preference Level of Major Seed Drill Companies on the Basis of Different Attributes

	Major seed drill companies									
	Khedut agro		Dharti agro		Mausam		Kranti agro		Bharat	
Factors	Garett score	Rank	Garett score	Rank	Garett score	Rank	Garett score	Rank	Garett score	Rank
Price	861	6	975	6	1458	4	1339	1	500	2
Dealers good behavior	1493	1	1068	5	1162	6	937	4	518	3
Spare part Availability	964	4	1548	1	1328	5	1105	2	560	4
After sales service	869	5	1539	2	1651	3	977	3	796	1
Warranty period	1059	3	1507	3	1740	2	891	5	483	5
Sales promotion	1354	2	1163	4	1931	1	751	6	443	6

Table 4.18 represents brand preference level of major seed drill companies on the basis of different attributes, the data analysis revealed that Khedut agro got highest score on dealers good behaviour (1493), followed by sales promotion (1354) and warranty period (1059). One of the major reason of dealer's good behaviour was profit margin given by Khedut agro. According to dealers the profit margin of Khedut agro was 10 to 15% respectively.

As regards of Dharti agro seed drill, company got highest score on spare parts availability (1548), followed by after sales service (1539) and warranty period (1507) respectively. As per customers survey, most of customers told that spare parts of Dharti Company seed drill was easily available.

In context of Mausam agro seed drill, Mausam agro got highest score on sales promotion activities (1931), was ranked first by customers followed by warranty period (1740) and after sales service (1539) respectively. According to customers, farmers meeting and frequency of demonstration in field by Mausam agro was more as compared to other competitors.

Further for Kranti agro seed drill, Kranti agro got highest score on price attribute (1339), was ranked first by customers followed by spare parts availability (1105) and after sales service (977). As per customer told that price of Kranti agro 9 tine seed drill was 30,000 Rs. Which is quite lesser than other companies.

As per analysis, Bharat agro got highest score on after sales service (796), was rank first by customers followed by price (500) and dealer's good behaviour (518).

4.19 BRAND RANKING GIVEN BY RESPONDENTS AS PER THEY PREFERENCE

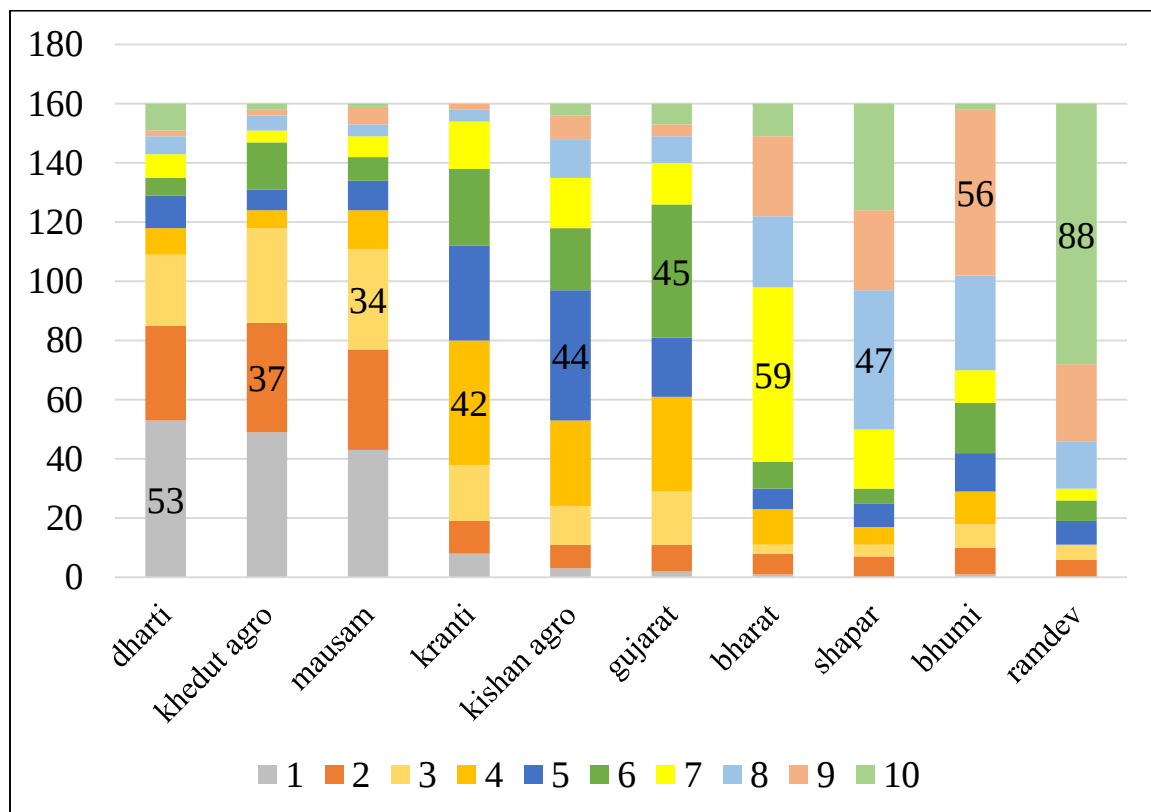


Figure 4.19 Brand Ranking Given by Respondents as Per They Preference

According to my survey, when I asked respondents about gave a rank to the brand according to their reference, 53 out of total respondents gave First rank to the Dharti agro seed drill because the major reason was its efficiency and overall performance

Thereafter, 37 respondents gave second rank to the Khedut agro and 34 respondents gave 3 rank to the Mausam agro seed drill. Khedut agro secured second rank because of its

hopper capacity and Mausam scored third rank because of its sales promotion activities and its metering mechanism.

Kranti agro was given fourth rank by 42 respondents, as Kranti company seed drill price was lesser than other companies. Kisan agro scored fifth rank by 44 respondents because they gave more discount as compared to other companies. Gujarat agro scored sixth position as its seed placement and seed germination percentage was good.

One of the new company in this industry was Bharat agro, which is giving better quality product and they have got seventh position in the market but it will go up in the near future, remaining companies Shapar agro, Bhumi and Ramdev got eight, nine and tenth rank respectively.

4.20 SEED DRILL COMPANIES ADVERTISE THROUGH DIFFERENT MEDIA

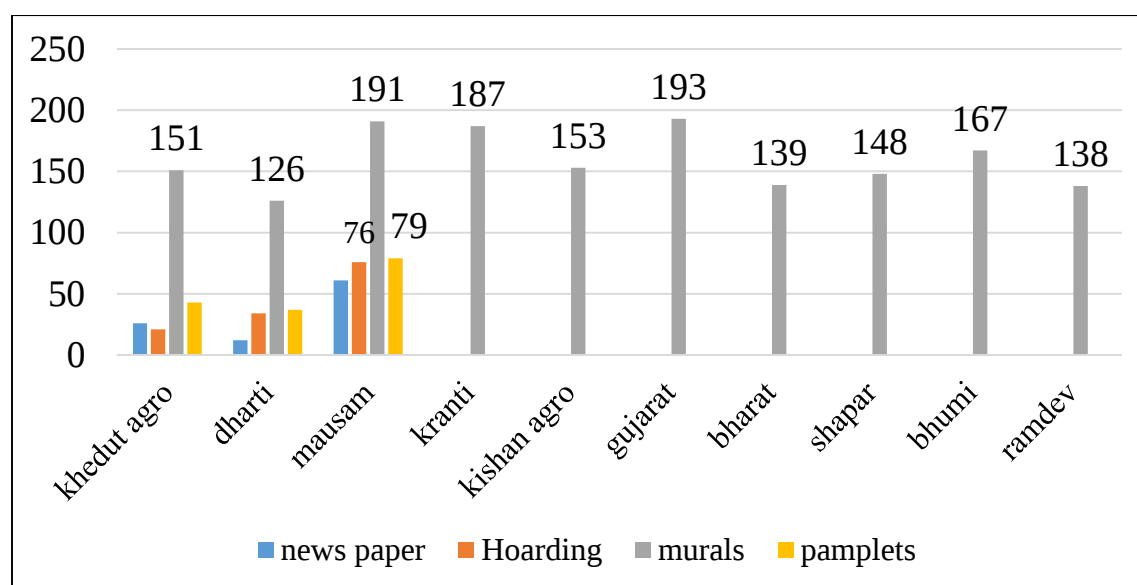


Fig 4.20 Seed Drill Companies Advertise Through Different Media

According to the survey, majority of seed drill companies used murals for advertise their product.

Top 3 leaders used more promotional tools for achieved good market share, particularly Mausam agro used more media to advertise their product. About, 79 respondents told they have seen pamphlet, 76 told that they have seen hoarding of Mausam company products and 191 respondents told that they have seen murals of Mausam company seed drill as they used national highway nearby walls to advertise their products. Sometimes they used

newspapers to reach customers. New comers used the demonstration of products in villages to reach the customers.

4.21 SEED DRILL COMPANIES ADVERTISE THROUGH DEMONSTRATION OR COMPANY STAFF VISITED VILLAGES

Table 4.21: Seed Drill Companies Advertise Through Demonstration or Company Staff Visited Villages

Company staff	Respondents	Frequency
Khedut	53	1 times/year
Dharti	46	1 times/year
Mausam	67	2 times/year
Gujarat	38	1 times/year
Bharat	41	1 times/year
Bhumi	8	1 times/year

As we can see from the table, 67 respondents told that Mausam agro staff came to their village for demonstrating their product two times per year and as compared to Dharti and Khedut agro, who gave demonstration only one time. Apart from the top 3 leader's respondents, 41 respondents told that Bharat agro Staff also comes to their village and demonstrate the product once in a year.

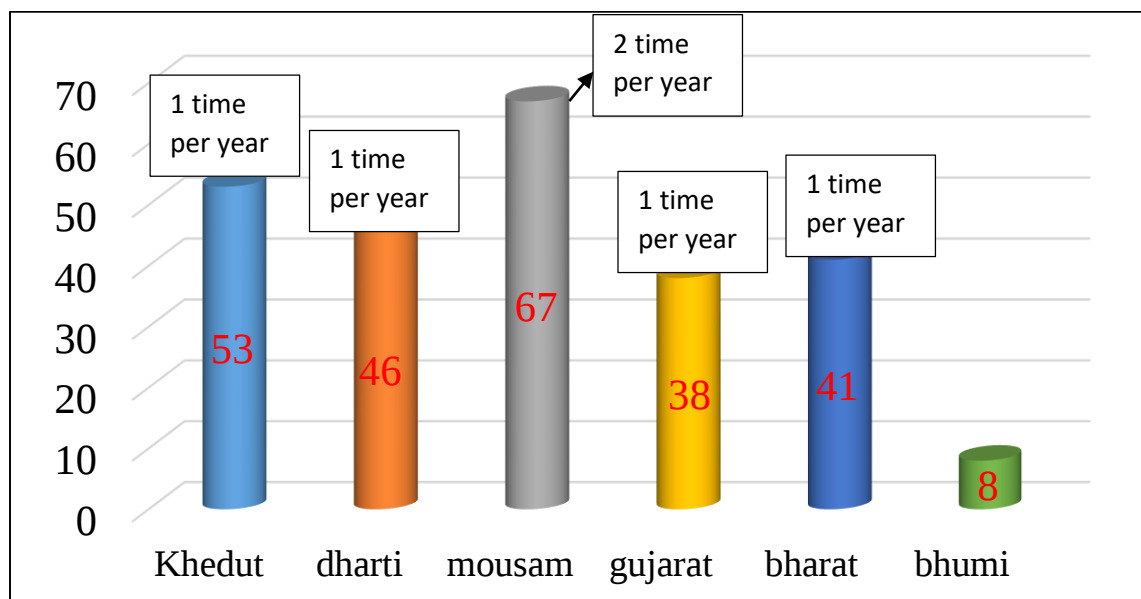


Fig. 4.21 Company Staff Comes to the Villages for Demonstration

4.22 EDUCATIONAL LEVEL OF DEALERS

Table 4.22: Educational Level of Dealers

Educational level	No. of Respondents	Percentage
Metric	5	41.7
H.S.C.	4	33.3
Graduation	1	8.3
Diploma	2	16.7

Out of total respondents, about 42% of the customer's attained metric level education, 33.3% and 16.7% of the customers attained the HSC level and Diploma but only 8.3% customers attained graduation level and technical level education respectively.

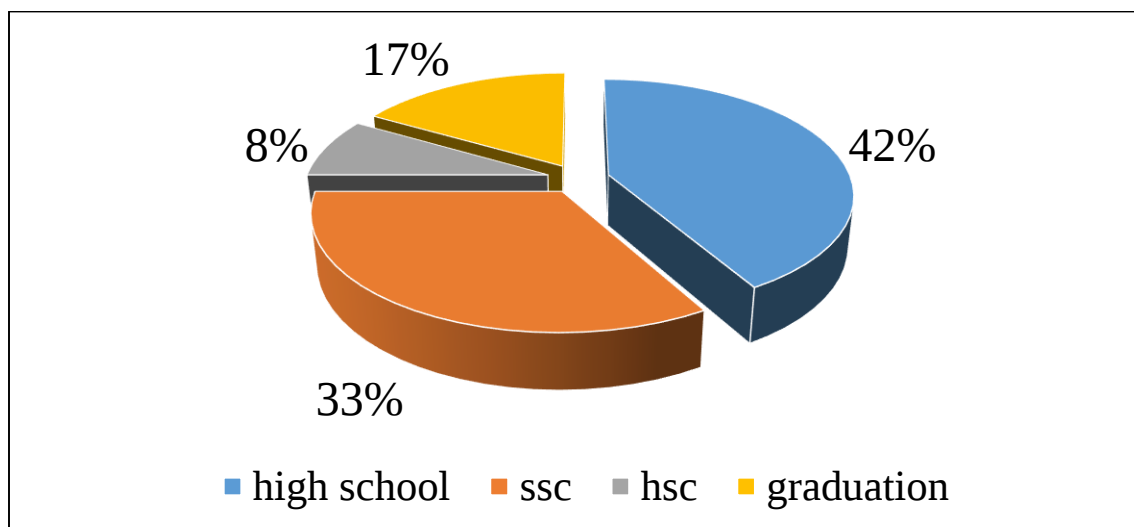


Fig. 4.22 Educational Level of Dealers

4.23 DEALERSHIP EXPERIENCE IN SEED DRILL BUSINESS

Table 4.23: Dealership Experience in Seed Drill Business

Experience in years	No. of Respondents	Percentage
2	5	41.7
3 to 5 years	3	25
5 to 7 years	2	16.7
More than 7 years	2	16.7

Out of total respondents, 42% respondents had experience of 2 years while 25% of respondents had experience between 3 to 5 years. Seed drill industry was established in last 15 years which is the main reason of less experience of dealers in this business. Apart from this, 33% dealers had experience more than 5 years.

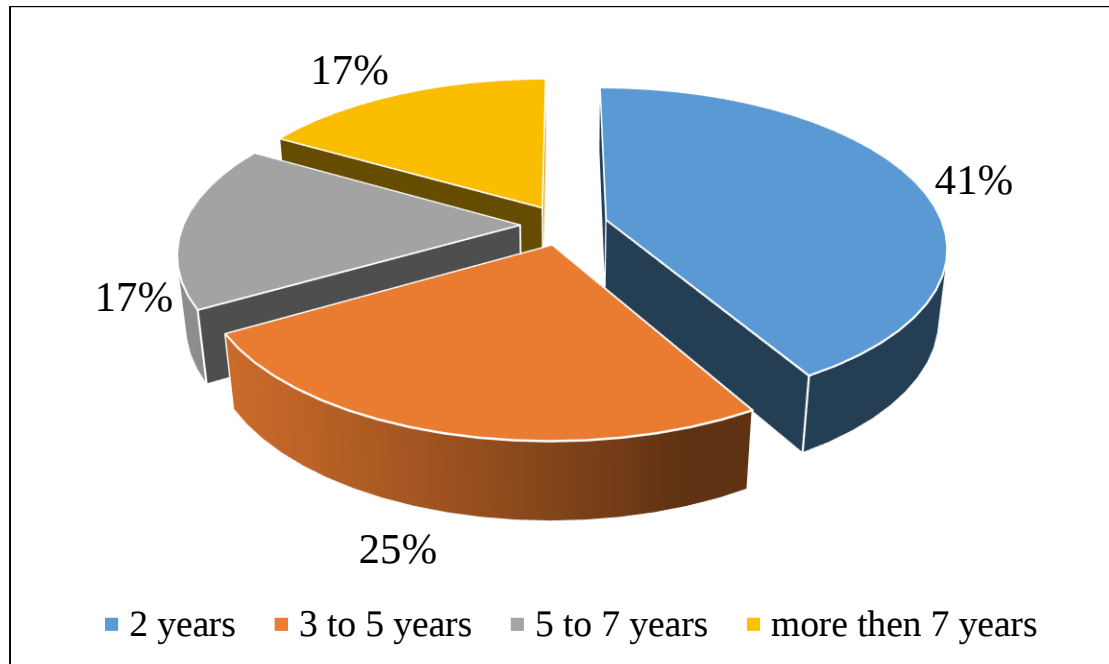


Fig. 4.23 Dealership Experience in Seed Drill Business

4.24 OTHER SOURCES OF INCOME

Table 4.24: Other Sources of Income

Sources of income	Respondents	Percentage
Farming	4	33.3
Non-farm	5	41.7
Both	3	25

In Saurashtra region, it was observed that about 33.3% dealers had farm income and 41.7% had non-farm income (5 dealers were having dealership of other farm equipments) and 3 was having both farm and non-farm source of income.

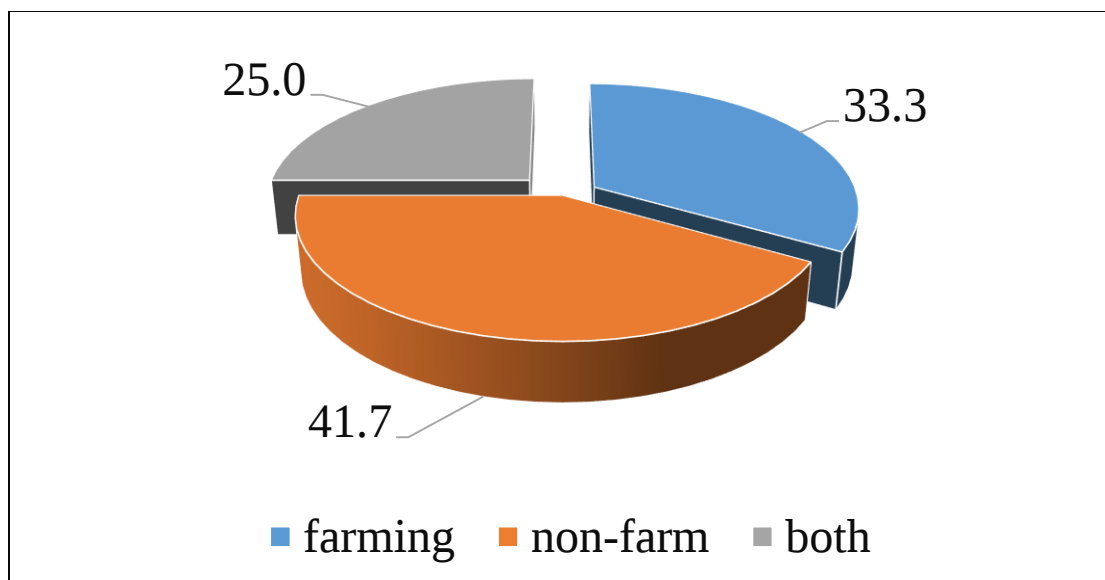


Fig. 4.24 Other Sources of Income

4.25 COVERAGE AREA OF DEALERS

Table 4.25: Coverage Area of Dealers

District	Tehsil covered	Respondents
Junagadh	Junagadh	2
	Vishavadar	2
	Keshod	1
	Mangrol	2
Rajkot	Rajkot	1
	Jashdan	2
	Gondal	1
	Upleta	1

A perusal of table 4.25 revealed that Junagadh district was covered by seven dealers, in which 2 respondents were in Junagadh tehsil, two respondents were in Vishavadar tehsil, 2 respondents were in Mangrol tehsil while one respondent was in Keshod tehsil. Besides that, Rajkot district was covered by 5 dealers in which 2 respondents were in Jashdan, 1 respondent was in Rajkot, 1 respondent was in Gondal and 1 respondent was in Upleta.

4.26 ANNUAL SALES OF THE MECHANICAL SEED DRILL

Table. 4.26: Annual Sales of the Mechanical Seed Drill

Average annual sales	Respondents	Percentage
< 20	7	58.3
20 to 50	3	25.0
More than 50	2	16.7

The above table 4.26 indicates that about 59% of the dealers sold less than 20 seed drill, 25% of the dealers sold 20 to 50 seed drills, while 16.7% of the dealers sold more than 50 seed drill. One of the main reasons of less annual sales of seed drill is it is customised product. So, sometimes customers directly procure from company because of particular specification required in seed drill. Annual production of zero seed drill in India is 30000 units which is manufactured by 385 seed drill manufacturers. In this industry local players are more who are not having registration of seed drill manufacturer. **(Source: - Agriculture mechanization, FICCI report 2013).**

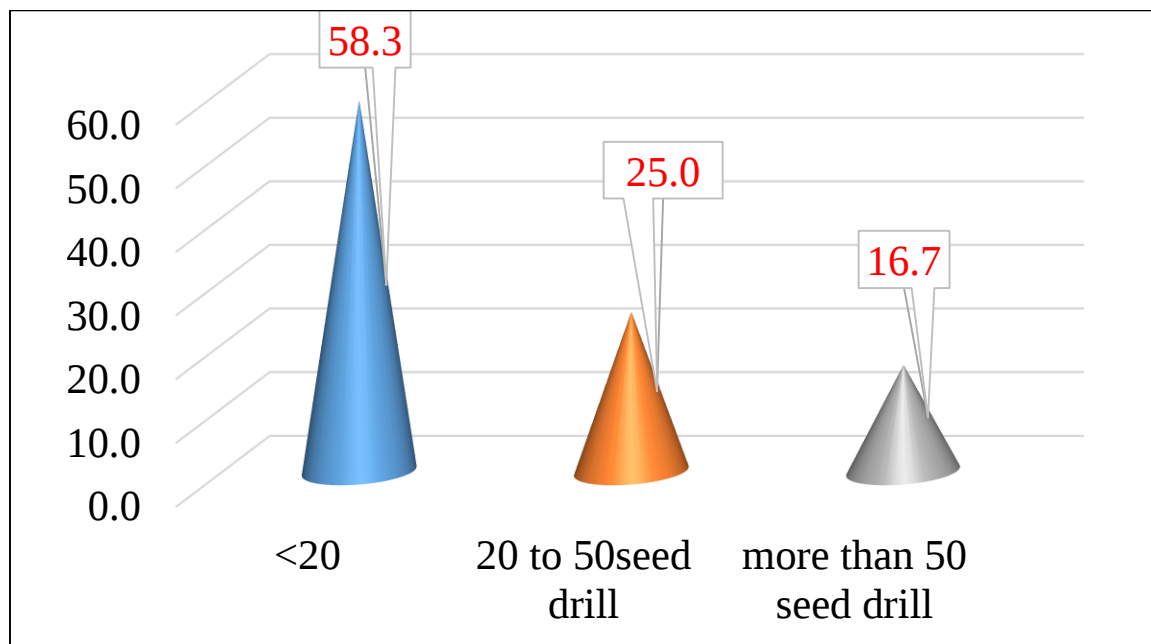


Fig. 4.26 Annual Sales of Mechanical Seed Drill

4.27 BRAND RANKING GIVEN BY DEALERS AS PER THEIR PREFERENCE

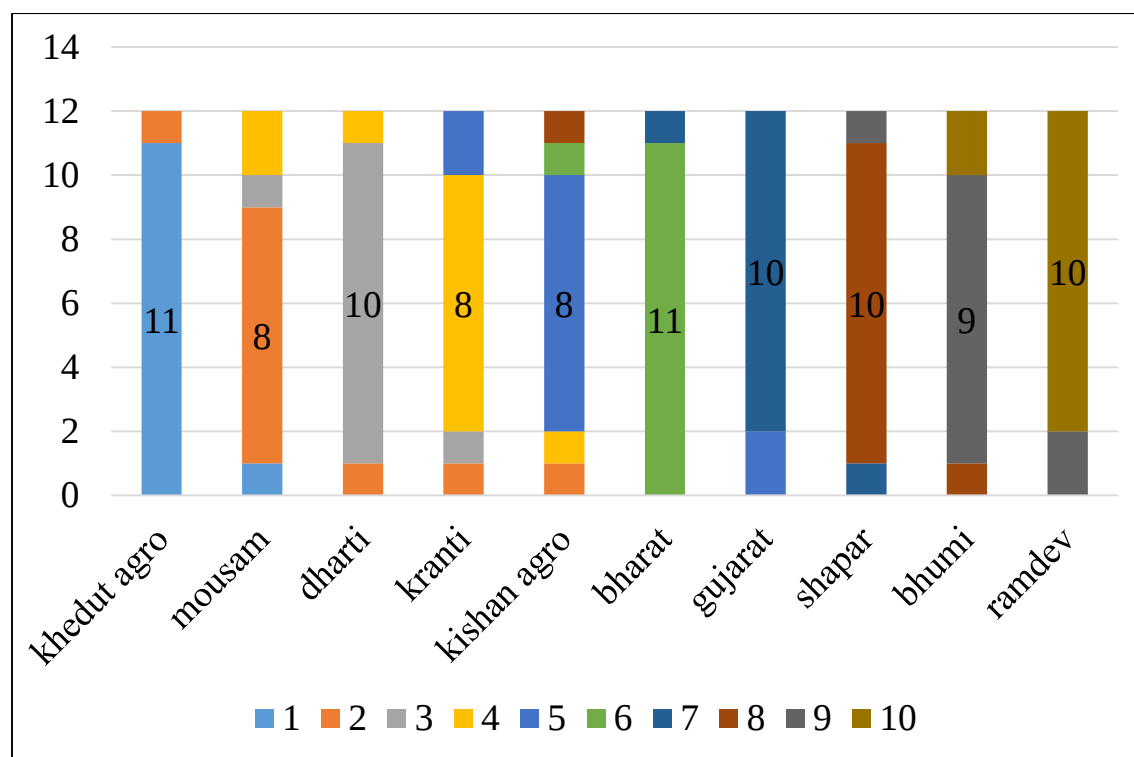


Fig. 4.27 Brand Ranking Given by Dealers as Per Their Preference

According to the survey, 11 respondents of total respondents gave first rank to Khedut agro seed drill because of the profit margin given by Khedut agro. Company. According to dealers Khedut agro gave 10 to 15% margin.

Thereafter, 8 respondents gave second rank to the Mausam agro seed drill because of company's Sales promotional activities and 10 respondents gave third rank to the Dharti seed drill, reason was efficient and effective product.

Kranti agro scored fourth rank by 8 respondents because Kranti agro. Didn't made sales promotional activities and its quality of material was also deteriorated due to which dealers refrain themselves to keep its product.

Kisan agro scored fifth rank by 8 respondents because its other products were more favoured by dealers, not seed drill.

Bharat agro, Gujarat agro, Shapar agro, Bhumi agro and Ramdev agro. Scored sixth, seven, eight, nine and tenth rank respectively because average performance of the products.

4.28 DEALERS SATISFACTION LEVEL OF MAJOR SEED DRILL COMPANIES ON THE BASIS OF DIFFERENT ATTRIBUTES

1. Khedut agro (12 respondents)

Table 4.28.1: Dealers Satisfaction Level of Khedut Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	0	1	3	5	3	12	3.8
Low maintenance cost	0	1	3	3	5	12	4.0
Margin	0	1	2	4	5	12	4.1
Company support	0	1	4	3	4	12	3.8
Efficient	1	2	4	5	0	12	3.1
Price	2	3	7	0	0	12	2.4

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey and as data revealed, majority of dealers were fully satisfied with Khedut agro's profit margin (4.1), followed by low maintenance cost (4.0), Quality of material (3.8) and company support (3.8). It was noted that Khedut agro gave more profit margin because the price offered by them was higher as compared to other companies. On the other hand, they used good quality material so, their maintenance cost is low. As per dealers, margin given by Khedut agro was 10 to 15% respectively.

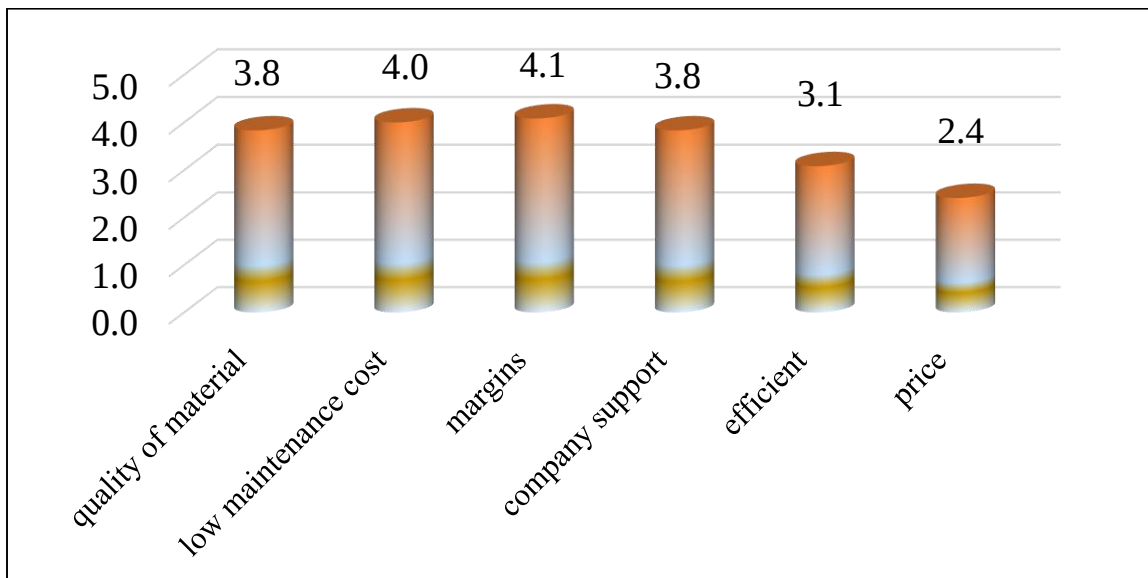


Fig. 4.28.1 Dealers Satisfaction Level of Khedut Agro on the Basis of Attributes

2. Dharti Agro (12 respondents)

Table 4.28.2: Dealers Satisfaction Level of Dharti agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	0	1	1	5	5	12	4.2
Low maintenance cost	0	1	3	4	4	12	3.9
Margin	0	3	5	2	2	12	3.3
Company support	0	2	2	4	4	12	3.8
Efficient	0	0	1	5	6	12	4.4
Price	0	2	5	4	1	12	3.3

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey and as data revealed, majority of dealers were fully satisfied with Dharti agro's efficiency (4.4), followed by quality of material (4.2), low maintenance cost (3.9). It was noticed that Dharti agro. 9 tine seed drill area coverage per hour is 2 acre. So, it was highly efficient. Dharti agro gave good quality of seed tubes materials and metering devices respectively. Dharti' price was higher so, dealers gave average rating to price attribute (3.3).

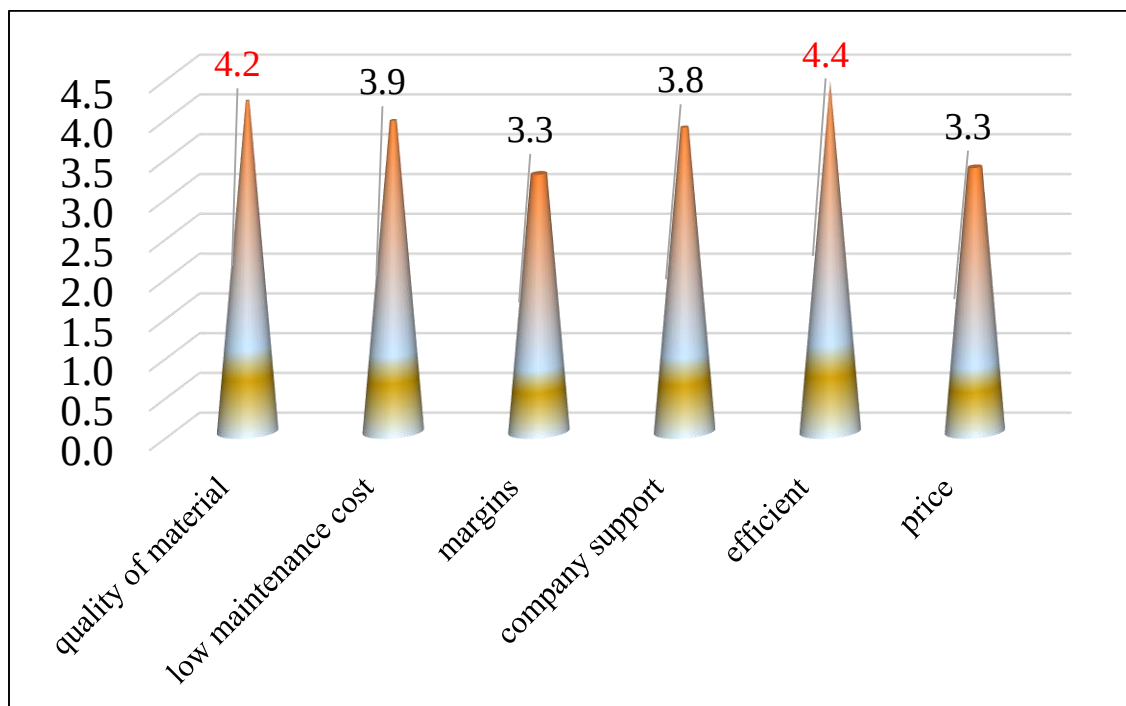


Fig. 4.28.2 Dealers Satisfaction Level of Dharti agro on the Basis of Attributes

3. Mausam Agro (12 respondents)

Table 4.28.3: Dealers Satisfaction Level of Mausam Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	1	1	2	4	4	12	3.8
Low maintenance cost	1	1	4	4	2	12	3.4
Margin	1	2	2	4	3	12	3.5
Company support	0	1	2	3	6	12	4.2
Efficient	0	1	4	3	4	12	3.8
Price	0	2	4	5	1	12	3.4

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey and as data revealed, majority of dealers were fully satisfied with Mausam agro's company support (4.2), followed by quality of material (3.8) and efficient (3.5). Mausam agro focused more on sales promotional activities and they support the dealers to increase their sales. Mausam agro and dealer made demonstration in some villages and also promoting their product jointly.

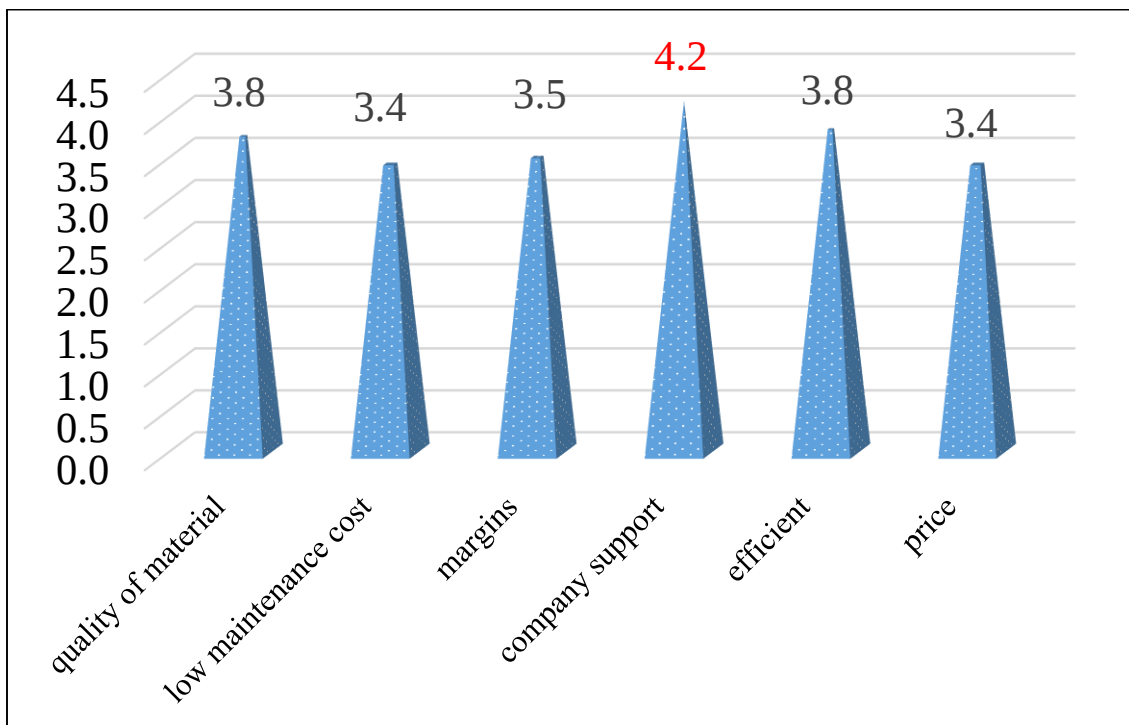


Fig. 4.28.3 Dealers Satisfaction Level of Mausam Agro on the Basis of Attributes

4. Kranti Agro (12 respondents)

Table 4.28.4: Dealers Satisfaction Level of Kranti Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	1	3	5	3	0	12	2.8
Low maintenance cost	0	1	4	6	1	12	3.6
Margin	2	3	5	2	0	12	2.6
Company support	2	3	4	3	0	12	2.7
Efficient	0	2	3	4	3	12	3.7
Price	0	0	2	3	7	12	4.4

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of dealers were fully satisfied with Kranti agro's seed drill price (4.4), followed by efficiency (3.7) and low maintenance cost (3.6). As Kranti agro decreased its price year by year because they are first comer in this industry and decrease their average production cost by modifying their machineries. Kranti's seed drill efficient also. So, average farmer prefer the Kranti agro's seed drill.

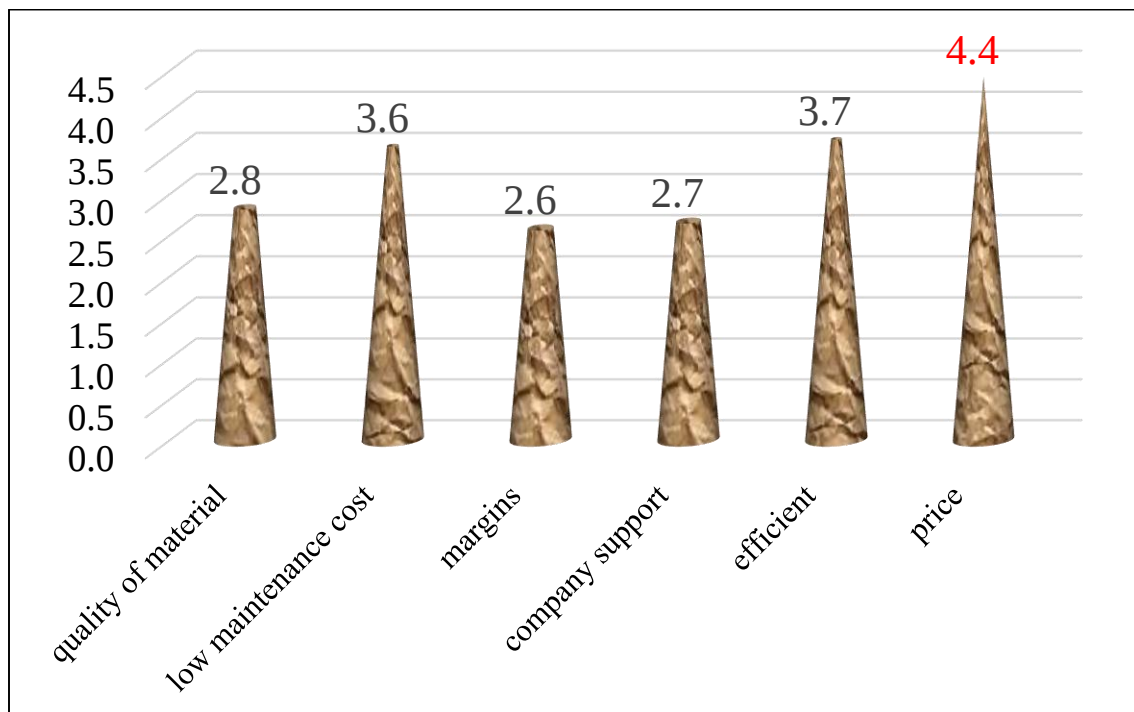


Fig. 4.28.4 Dealers Satisfaction Level of Kranti Agro on the Basis of Attributes

5. Kisan Agro (12 respondents)

Table 4.28.5: Dealers Satisfaction Level of Kisan Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	0	3	5	2	2	12	3.3
Low maintenance cost	0	2	3	4	3	12	3.7
Margin	0	1	2	4	5	12	4.1
Company support	0	2	3	3	4	12	3.8
Efficient	1	2	3	3	3	12	3.4
Price	0	2	4	3	3	12	3.6

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of dealers were fully satisfied with Kisan agro's seed drill profit margin (4.1), followed by company support (3.7) and low maintenance cost (3.7). As Kisan agro gave more profit margin and they also increased their sales of other equipments. Kisan agro's product mix was more farm equipments and earth mowers. So, they provide discount on sales of seed drill with other farm equipments.

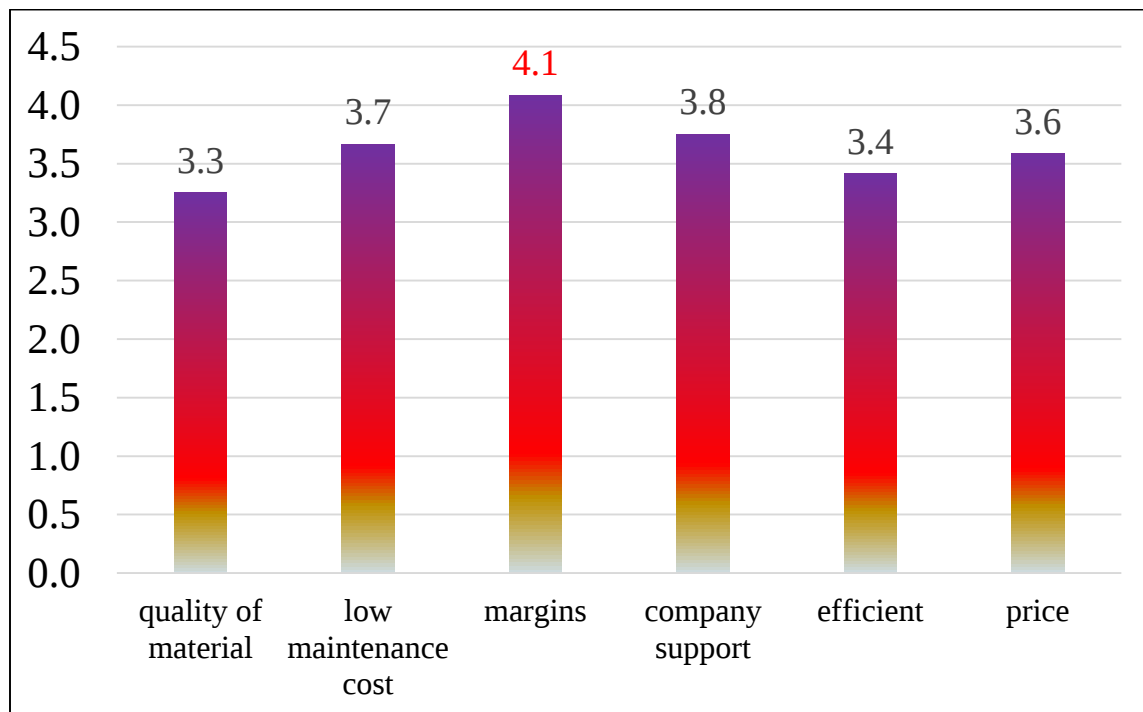


Fig. 4.28.5 Dealers Satisfaction Level of Kisan Agro on the Basis of Attributes

6. Gujarat Agro (12 respondents)

Table 4.28.6: Dealers Satisfaction Level of Gujarat Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	1	2	4	3	2	12	3.3
Low maintenance cost	2	2	4	2	2	12	3.0
Margin	0	2	4	5	1	12	3.4
Company support	0	2	4	3	3	12	3.6
Efficient	0	1	3	3	5	12	4.0
Price	0	1	4	5	2	12	3.7

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of dealers were fully satisfied with Gujarat agro's seed drill efficiency (4.0), followed by price (3.7) and profit margin (3.4). As Gujarat agro's seed drill area coverage per hour was 1.5 acres which higher than others and seed placement was also good as compared to others. As per dealers, seed germination of Gujarat seed drill was also better respectively.

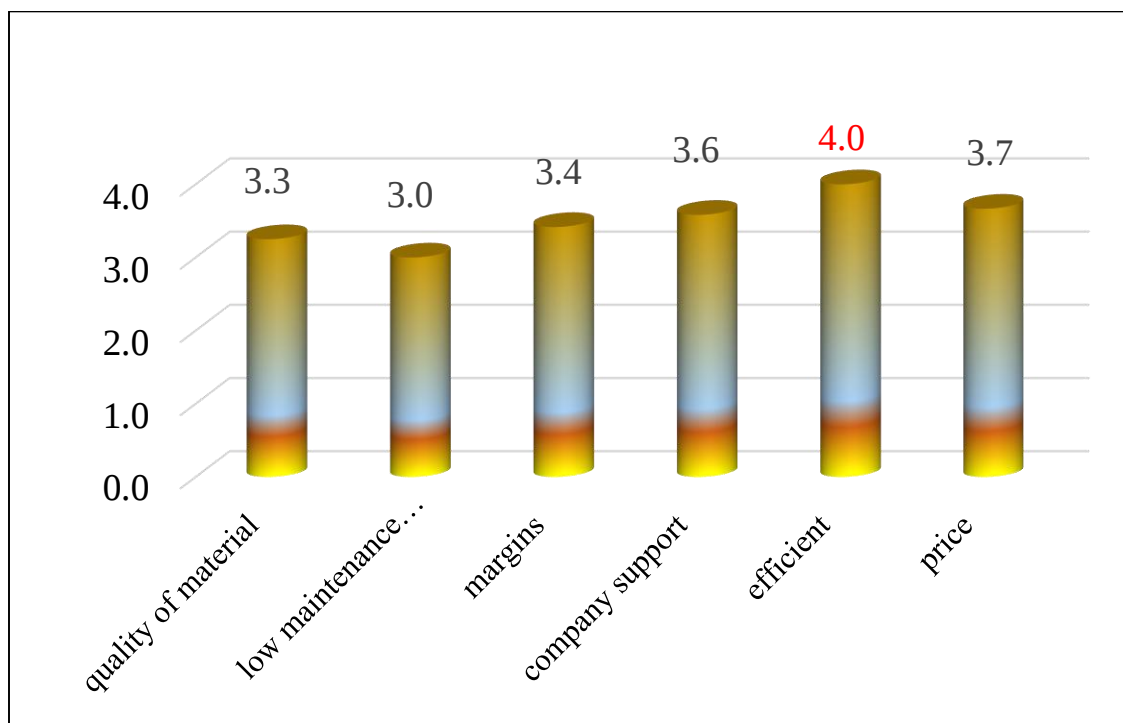


Fig. 4.28.6 Dealers Satisfaction Level of Gujarat Agro on the Basis of Attributes

7. Bharat Agro (12 respondents)

Table 4.28.7: Dealers Satisfaction Level of Bharat Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	0	1	2	4	5	12	4.1
Low maintenance cost	0	1	3	4	4	12	3.9
Margin	0	1	4	3	4	12	3.8
Company support	0	1	3	2	6	12	4.1
Efficient	1	2	2	4	3	12	3.5
Price	0	2	3	4	3	12	3.7

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of dealers were fully satisfied with Bharat agro seed drill's quality of material (4.1), followed by company support (4.1) and low maintenance cost (3.9). As Bharat agro's seed drill seed tubes and metering devices quality of material was better as compared to others. Therefore, its maintenance cost was low. Respondents were satisfied with the company support because company is in introduction stage and they want to capture the market. So, they support the dealers to sales promotion activity.

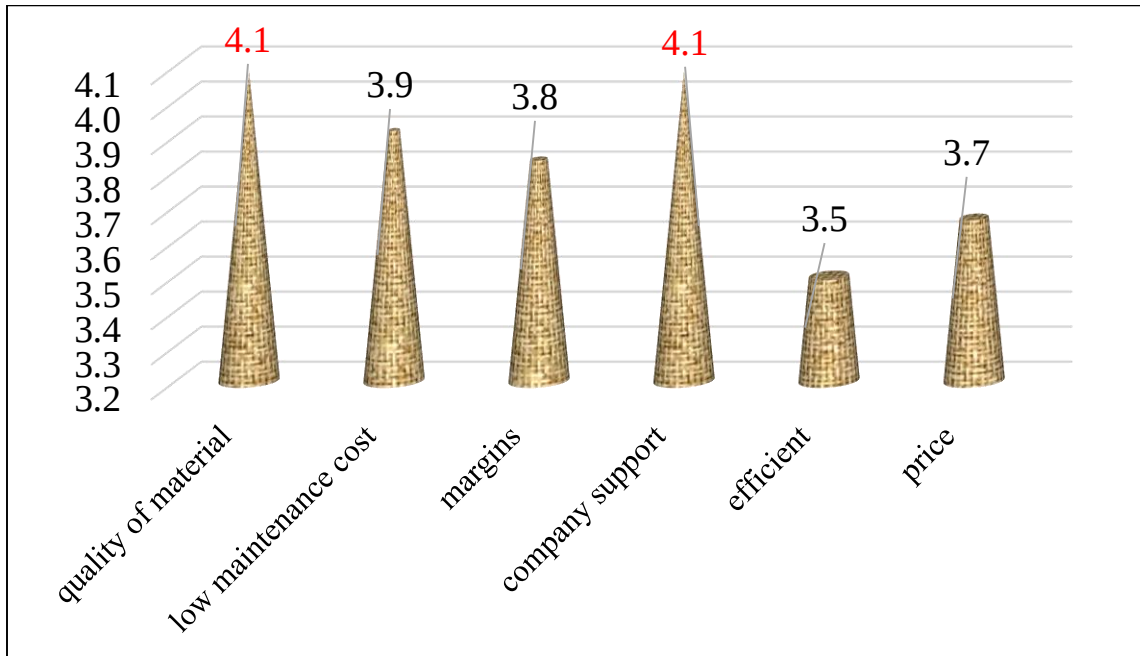


Fig. 4.28.7 Dealers Satisfaction Level of Bharat Agro on the Basis of Attributes

8. Bhumi Agro (12 respondents)

Table 4.28.8: Dealers Satisfaction Level of Bhumi Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	1	3	5	2	1	12	2.9
Low maintenance cost	1	4	5	2	0	12	2.7
Margin	0	2	4	5	1	12	3.4
Company support	2	2	2	3	3	12	3.3
Efficient	0	2	3	4	3	12	3.7
Price	0	1	3	2	6	12	4.1

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of dealers were fully satisfied with Bhumi agro's seed drill price (4.1), followed by efficient (3.7) and company support (3.3). As Bhumi agro's seed drill price was Rs 32,700 which was very less as compared to other company's seed drill but quality of material was not up to mark.

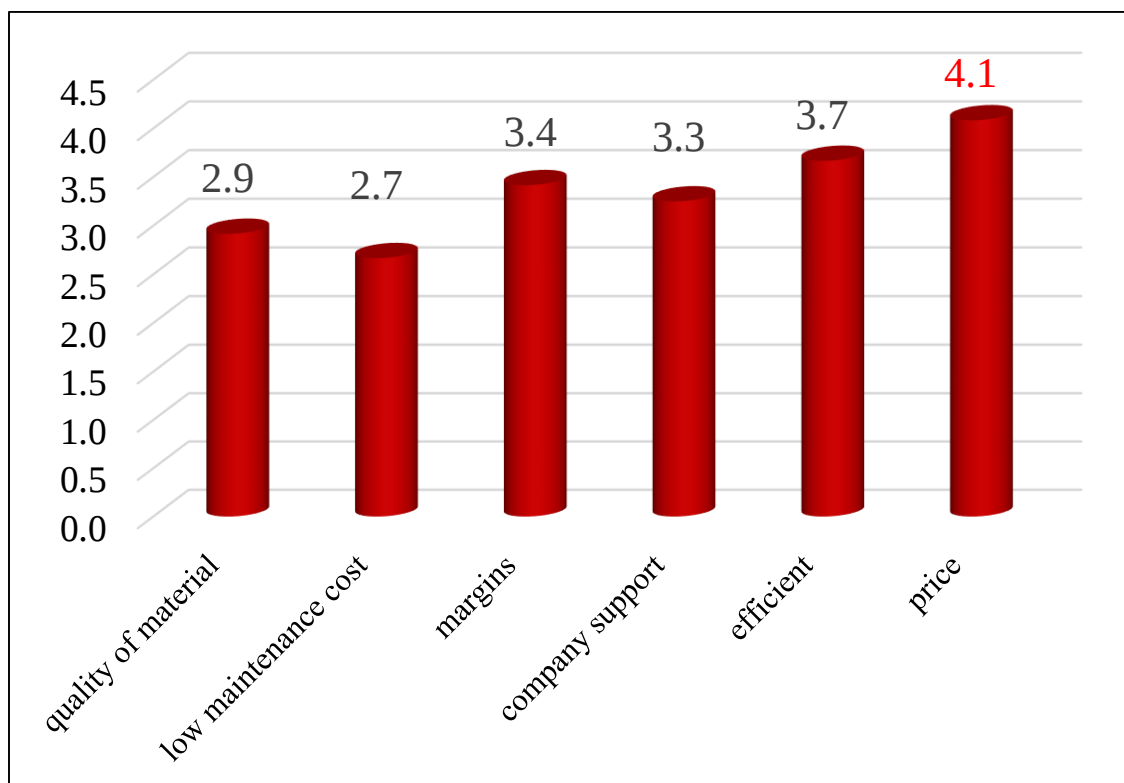


Fig. 4.28.8 Dealers Satisfaction Level of Bhumi Agro on the Basis of Attributes

9. Shapar Agro (12 respondents)

Table 4.28.9: Dealers Satisfaction Level of Shapar Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	0	2	5	4	1	12	3.3
Low maintenance cost	1	2	2	3	4	12	3.6
Margin	1	2	5	3	1	12	3.1
Company support	1	1	6	2	2	12	3.3
Efficient	1	3	3	4	1	12	3.1
Price	0	1	3	6	2	12	3.8

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of dealers were fully satisfied with Bhumi agro's seed drill price (3.8), followed by low maintenance cost (3.6) and quality of material (3.3). As Bhumi agro's seed drill price was average lesser than other seed drills. Respondents gave average rating to this company seed drill.

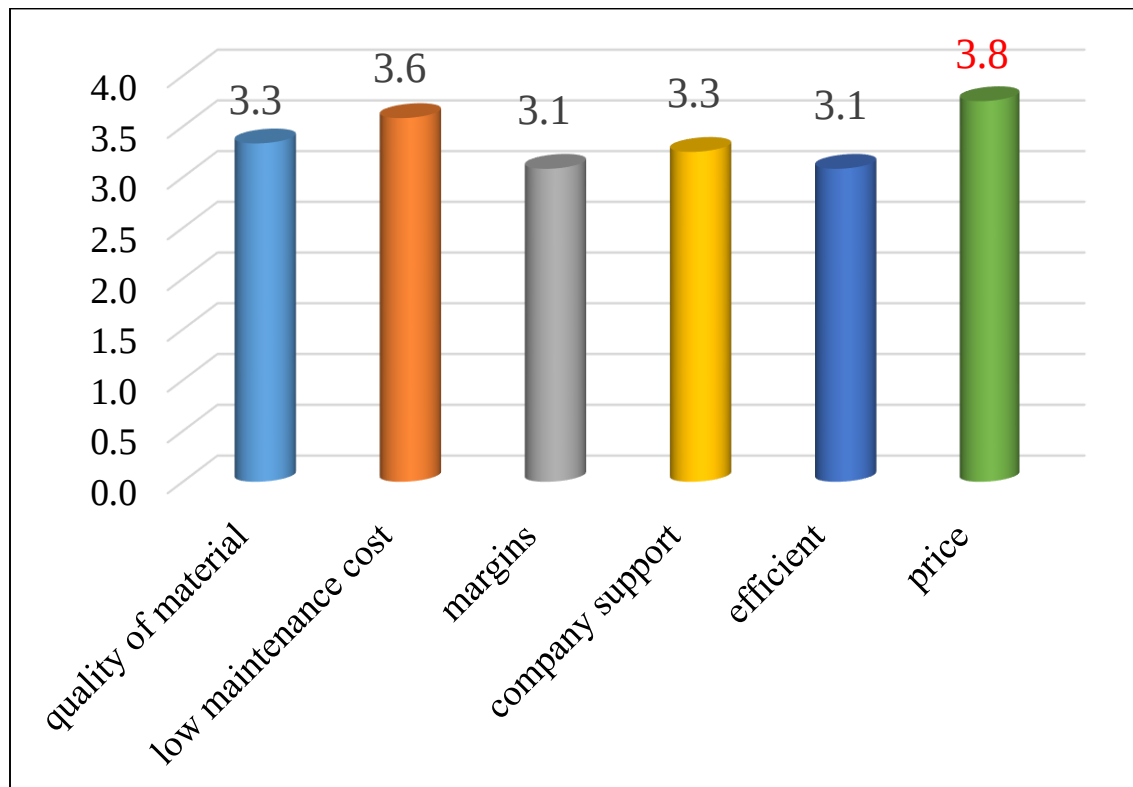


Fig. 4.28.9 Dealers Satisfaction Level of Shapar Agro on the Basis of Attributes

10. Ramdev Agro (12 respondents)

Table 4.28.10: Dealers Satisfaction Level of Ramdev Agro on the Basis of Attributes

Attributes	Responses					Total respondents	WAM
	1	2	3	4	5		
Quality of material	1	3	5	3	0	12	2.8
Low maintenance cost	2	3	4	3	0	12	2.7
Margin	0	3	3	6	0	12	3.3
Company support	0	1	5	3	3	12	3.7
Efficient	1	4	5	2	0	12	2.7
Price	2	3	3	2	2	12	2.9

(Note: - 1 is strongly dissatisfied, 2 is dissatisfied, 3 is neutral, 4 is satisfied and 5 is strongly satisfied)

According to the survey, majority of dealers were satisfied with Ramdev agro's company support (3.7), followed by profit margin (3.3). As per the table we can conclude that most of respondents gave average rating to Ramdev agro, basically they were providing average product to this industry.

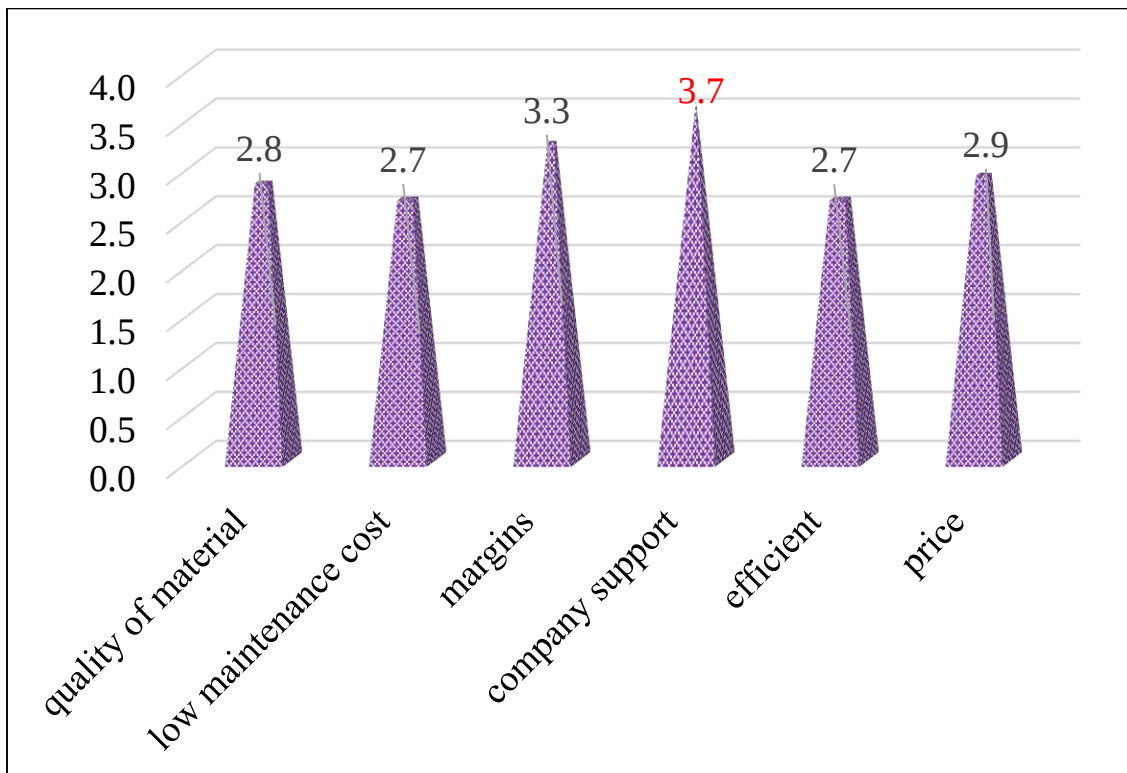


Fig. 4.28.10 Dealers Satisfaction Level of Ramdev Agro on the Basis of Attributes

4.29 COMPANY'S COMPARISON ON THE BASIS OF LAST YEAR PERFORMANCE ACCORDING TO DEALERS

Table 4.29: Company's Comparison on the Basis of Last Year Performance According to Dealers

Company	Respondents	Percentage
Dharti	3	25
Mausam	2	16.67
Khedut	2	16.67
Kranti	2	16.67
Bharat	3	25

It was found that Bharat agro and Dharti agro performed better in last year as both company gave efficient and effective product compared to other companies Because Dharti was second comer in the industry and they modify their product year by year while bharat was new comer in this industry and their product was good as compared to other companies.

Second rank was scored by Mausam agro, Khedut agro and Kranti agro because these companies had different characteristic and special technical features.

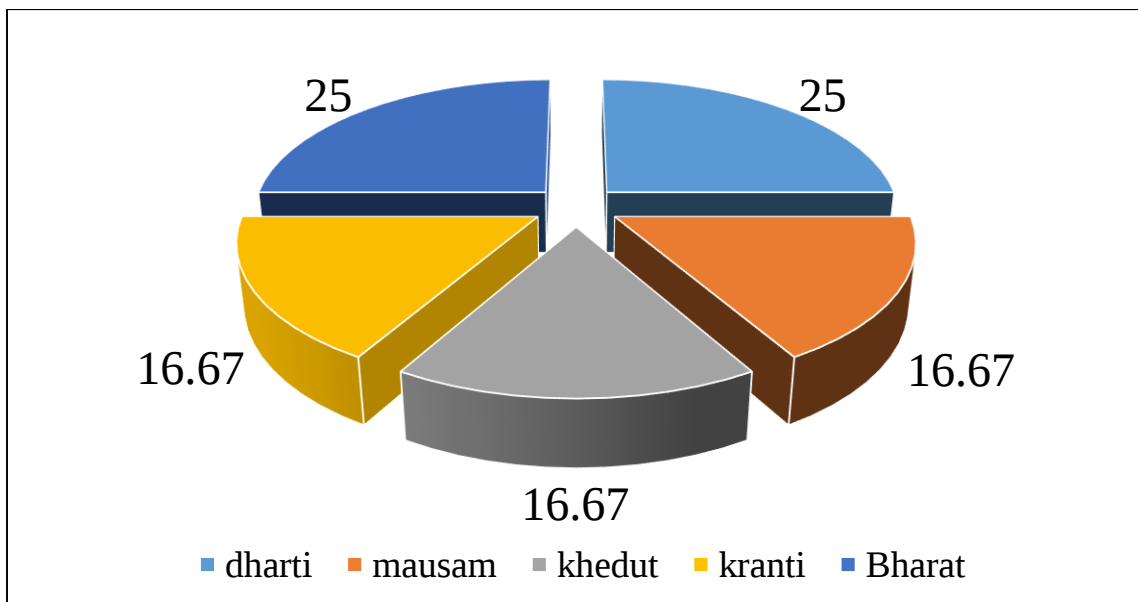


Figure 4.29 Company's Comparison on the Basis of Last Year Performance According to Dealers

When dealers were asked about whether their next generation wishes to join this business, 80% respondents replied negatively because they thought, this industry will enter into perfect competition were 20% respondents replied positively.

As per the survey, majority of farmers faced the problem of improper germination of seed, blockage of tubes due to fertilizer clods, lack of signal device at zero seed availability, less hopper capacity and seed is not placed at proper depth.

When they were asked about expectation from different companies, they told that general problems should be resolved and companies should apply sales promotional tools. They also told that company should start the training program for dealers' staff or farmers for achieving better efficiency of seed drill.

5. SUMMARY AND CONCLUSION

Mechanisation has an important role to play in Indian agriculture. Given the low levels of mechanization in Indian farming, there is high scope to improve level of mechanization. Agricultural machinery and implements are an important factor in agricultural production and productivity enhancement. There are direct as well as indirect effects of agricultural machinery and implements on productivity through better use of other inputs, more efficient and timely completion of agricultural operations and increase in cropping intensity. Tractor industry is one of the most capital intensive industries in agriculture industries in agriculture machinery industry.

India is home to 387 companies dealing with seed drills. A wide array of seed drills are offered in the market viz. animal operated seed drills, tractor operated seed drills, automatic seed drills, seed cum fertilizer drills and zero till drills and per year production of mechanical seed cum fertilizer drill is 25,000 to 30,000 units. As far as Saurashtra region is concerned there are 10 companies who are involved in seed drills manufacturing: (1) Khedut agro (2) Dharti engineering (3) Mausam agro Pvt. Ltd. (4) Kranti agro engg. (5) Kisan agro industries (6) Gujarat agro. (7) Bharat agro engg. (8) Shapar agro enterprise (9) Bhumi agro industries and (10) Ramdev agro engineering.

The study entitled “Farmer’s and dealer’s satisfaction and brand preference for seed drill in Rajkot and Junagadh districts of Gujarat” is part of a project undertaken for Tirth Agro Technology Pvt. Ltd. (SHAKTIMAN), based in Rajkot, Gujarat.

The Project was undertaken with the basic objectives of studying the farmer’s and dealer’s satisfaction level for mechanical seed drill of major companies; analysing the brand preference for mechanical seed drill and identifying the problem faced by farmers using mechanical seed drill in Junagadh and Rajkot districts. The study area consisted of 160 users and 40 non users of mechanical seed drill selected from 8 tehsils and 16 villages’ two selected districts. Both, primary as well as secondary data were used to achieve the stipulated objectives of the study. Primary data were collected with help of schedule while secondary data were collected from the relevant publications, apart from the records

maintained by private and government organizations. Descriptive statistics, Likert scale and Garrett ranking were used to analyse the data.

Tirth Agro Technology Pvt. Ltd. is a leading Indian agricultural implements manufacturer company with a history of over a decade. Founded by a progressive farmer late Shri Ladhubhai S. Gohil as A.G. Agro Industries in 1997 at Rajkot, Gujarat, the company envisioned to mechanize Indian agriculture completely. Initially, the company focused on the production of spare parts, but soon a complete production line of agricultural implements with the brand name of “SHAKTIMAN”. The company boast of state-of-the-art manufacturing plant spread across 27.5 acres. The plant has a production capacity of around 1 lakh machinery. The world class integrated manufacturing plant offers all facilities from engine to assembly, under one roof.

5.1 CUSTOMERS’ ANALYSIS

The study revealed that most of customers were semi medium farmers (36%) and nearly 39% farmers were found in the age group of 36 to 45 years. About 41.5% of the customers attained below metric level education while 42 % of the respondents’ income fell into slab of 2 to 4 lakh.

In Saurashtra region, majority of respondents sowed cotton, groundnut and wheat and 39% of farmers had experience of more than 15 years. According to survey, 82% respondents had self-propelled farm equipments, while 80% respondents had mechanical seed drill as sowing equipment.

Analysed Data revealed that 7% of respondents did not used seed drill due to various reasons like small farm holding, seed viability was less, seed drill price was high and man power easily available for manual broadcasting.

As per survey, 31 respondents used Mausam company seed drill and then it is followed by 26 and 22 respondents who had used seed drill of Dharti and Khedut Company respectively. First player of this industry is Kranti agro which was established in 1970. Out of total respondents 12.5% respondents fall in this segment. Then after remaining 38.5% respondents have seed drill of Kisan, Gujarat, Bharat, Bhumi, Shapar and Ramdev Company.

As regards of buying the mechanical seed drill, customers' major consideration was seed placement at proper depth, and it was given highest rating (4.71) by all sampled customers, followed by spacing adjustment (4.23), multi crop usage (4.15), spare part availability (4.03), metering device (4.03), seed rate (4.03) and hopper capacity (4) in that order. Other major consideration were recommendation of relatives/friends/other villagers (3.63) and its efficiency. Besides, there were some other factors which influenced the buying behaviour of the customer. These include: brand name, seed rate, price, and product appearance.

Likert scale was used for analysing customers' satisfaction level towards seed drill of various companies. It was found that Dharti's respondents were fully satisfied with the 'quality of material' (3.8) and its 'efficiency' (4.15) attribute, Khedut agro's respondents were fully satisfied with the 'hopper capacity' (4.14) attribute, Mausam agro's respondents were fully satisfied with the 'metering mechanism' (4.32) attribute, Kranti agro's respondents were fully satisfied with the 'multi crop usage attribute' (4.15), Gujarat agro's respondents were fully satisfied with the 'seed placement at proper depth' (4.08) and Bhumi agro's respondents were fully satisfied with the 'Less blockage attribute' (4.20).

With regard to brand preference level towards major brands of mechanical seed drill, Garrett ranking method was used. As per this method, Dharti agro got highest score for 'spare parts availability' (1548) attribute and Mausam agro got highest score for 'Sales promotional' (1931) attribute. Kranti agro and Bharat agro got highest score for 'price' (1339) and 'after sales service' (796), while Khedut agro got highest score for 'good behaviour of dealer' (1493).

The most commonly used promotional tool in the study area was demonstration of seed drill in villages, followed by Wall painting and distribution of pamphlets.

Majority of farmers faced the problem of improper germination of seed, blockage of tubes due to fertilizer clods, lack of signal device at zero seed availability, less hopper capacity and improper placement of seed.

5.2 DEALERS' ANALYSIS

In the context of dealers' profile, Most of dealers (42%) were attained metric level education and about 33% dealers had more than 5 years' experience. About 33.3% had farm income and 41.7% had non-farm income as other source apart from present dealership.

As data revealed that Junagadh district covered by seven dealers and Rajkot district covered by five dealers. According to survey, 16.7% dealers sold more than 50 seed drills while 58.3% dealers sold less than 20 seed drills.

According to ranking rank given by dealers on the basis of overall performance; Khedut agro, Mausam agro and Dharti agro got top positions as compared to other brands.

As far as dealers' satisfaction level towards the brands was concerned, for the 'profit margin', dealers were fully satisfied with the Khedut agro (4.1) and for the 'Company support' dealers were fully satisfied with the Mausam agro engineering (4.2). With respect to 'efficiency' attribute, dealers were fully satisfied with the Dharti agro (4.4) and for the 'Price' attribute', dealers were fully satisfied with the Kranti agro engineering (4.4).

When dealers were asked about expectation from different companies, they told that general problems should be resolved and companies should apply sales promotional tools. They also told that company should start the training program for dealers' staff and farmers for achieving better efficiency of seed drill.

5.3 SUGGESTIONS

Based on the findings, It was suggested that problem of blockage of tubes due to fertilizer clods should be resolved through effective agitator, which is driven through side wheel gear drive mechanism. To get an idea of 'low seed level', company should introduce "Low seed level" acoustic alarm for the problem of lack of signal device at zero seed availability.

For the problem of hopper capacity, companies should increase the volume of hopper capacity and for the multi crop usage, companies should start the use of 'Internal Double run type' seed metering devices which has double faced wheel, one face has a larger

openings for larger seeds and one face has smaller openings for smaller seeds. To achieve higher efficiency, company must focus on using light weight and quality fibre that will help in covering larger area in lesser time.

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ANNEXURE I

Schedule for Customers

Name: - _____

Age:- ☐ below 21 Years ☐ 22 to 35 Years ☐ 36 to 45 Years
☐ 46 to 65 Years ☐ above 65 Years

Educational Background: - _____

Occupation: - ☐ Farmer ☐ Any Other

Address: - _____

Village: - _____

Talukas: - _____

District: - _____

Contact No: _____

1. Land you own

Total Cultivable Land _____

2. How Many Crops do you grow?

☐ 1 ☐ 2 ☐ 3

3. Cropping Pattern

Season	Crop Grown	Net Area sown

4. No of years since you have been doing farming

☐ 5-10 years ☐ 10-15 years ☐ >15 years

5. Which type of irrigation method have you used?

☐ Surface irrigation ☐ Drip irrigation ☐ Sprinkler

6. Average Annual income from various sources

☐ < 1 lakh ☐ 1 – 3 lakh ☐ 3- 5 lakh ☐ > 5 lakh

7. Agricultural equipment's owned

Tractor	
Mini tractor	
Power tiller	
Mechanical seed drill	
Thresher	
Plough , Cultivator	
Rotavator	
Irrigation system	
Other	

8. Brand & models of tractor you own or leased

Brand	Model	HP

9. Have you ever used seed drill?

☐ Yes ☐ No

Support your answer: -

10. Brands of seed drill you own or leased?

Brand	Model	HP requirements	Mode of Purchase

11. Which type of problems arrive during sowing operation when mechanical seed drill used?

12. Rate the following factors on scale of 1 to 5 (1- least important, 5- most important)

Seed placement at proper depth	
Spacing adjustment	
Multi crop usage	
Spare Parts availability	
Metering devices	
Seed rate	
Hopper capacity	
Financial Facility	
Dealers behavior	
Output	
After sales service	
Brand name	
Recommendation of relative / friends	
Quality of material	
Price	
Product look & appearance	

13. Customer satisfaction level According to technical attribute (Scale of 1 to 5)

Attributes	Khedut agro.	Dharti engg.	Mausam agro.	Kran ti agro.	Kish an agro.	Gujar at agro.	Bharat agro.	Shapar agro.	Bhumi agro.	Ramdev agro.
Low maintenance cost										
Efficiency										
Capacity (hopper)										

Metering mechanism										
Less blockage										
Quality of material										
Uniform spacing										
Multi crop usage										
Seed germination										
Seed placed at proper depth										
Seed rate										
Dispense of seed										

Brand preference level of major brands according to following attributes (Rank attributes of 1 to 6)

Attributes	Khedut agro.	Dharti engg.	Mausam agro.	Kranti agro.	Kishan agro.
Price					
Dealers good behavior					
Spare parts availability					
After sales services					
Warranty period					
Sales promotion					

14. Rank major brands according to your preference

Brands	Rank	Reason
Khedut agro.		
Dharti		
Mousam		
Kranti agro.		

Kishan Agro		
Gujarat agro.		
Bharat agro		
Shapar agro.		
Bhumi agro industries		
Ramdev agro engg.		

15. Have you seen the advertisement of seed drills?

☐ Yes

☐ No

16. If Yes,

Brand	Media	Message	Place

17. Company's representative/ dealer's staff come to your village for giving demo?

Brand	Frequency	Place

ANNEXURE II

Schedule for Dealers

Name: - _____

Educational Background: - _____

Address: - _____

Village: - _____

Talukas: - _____

District: - _____

Contact No: _____

1. Other business / sources of income

2. No of years in seed drill business

3. Monthly & annual sales of seed drill

Brand Name	Monthly sale	Annual sale

4. Do you feel the need of some modification in the product as per customers' requirements?

5. According to you, list out the major competitors (Rank from 1 to 10)

Brand	Rank	Market share	Reason
Khedut agro.			
Dharti			

Mousam			
Kranti agro.			
Kishan Agro			
Gujarat agro.			
Bharat agro			
Shapar agro.			
Bhumi agro industries			
Ramdev agro engg.			

6. Rate the major brand according to attributes (Scale of 1 to 5)

Attributes	Khedut agro.	Dharti engg.	Mausam agro.	Kranti agro.	Kishan agro.	Gujarat agro.	Bharat agro.	Shapar agro.	Bhumi agro.	Ramdev agro.
Quality										
Less maintenance cost										
Margins										
Company support										
Efficient										
Price										

7. Which company is growing/doing better during the last 1 year within your area?

8. Do you prefer that your next generation come in this business?

☐ Yes

☐ No

9. Your expectation from different companies

A _____

B _____

C _____

D _____