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RESEARCH PAPER

# A study on demand analysis of farm machineries and equipments in Nilgiris district

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## ABSTRACT

This study was undertaken with an overall objective of assessing the demand for farm machineries and equipments in Nilgiris district of Tamil Nadu. A total of 180 farmers were selected from the different taluks of Nilgiris for the study. Both primary and secondary data were collected and utilized for the study. Majority of the sample respondents were middle aged, educated and experienced in farming. Majority of the sample farmers did not own any farm machineries and aware on farm machineries and equipments through Government institutions. The utilization of farm machineries and equipments for cole crops and plantation crops were found that it was used for various field operations like, field preparation, earthing up and weeding, plant protection, irrigation and harvesting. Tractors and power tillers were mostly used for land preparation by the sample farmers. The sample dealers were middle aged, had better educational status and well experienced in retailing. All the sample dealers were sole proprietors and deal with products like seeds, fertilizers, farm equipments and pesticides. Methods of promotion followed by the sample farmers were mainly by using phamplets, field demonstrations, stalls and exhibitions. Farmer's preference and brand image were the major factors influencing the brand preference of the sample dealers.

**KEY WORDS :** Farm machineries, Farm mechanization, Farm equipments, Probit

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Farm mechanization or Agricultural Mechanization is the process of using agricultural machinery to mechanize various operations in agriculture for increasing productivity. Effective farm mechanization contributes to increase production by timeliness of operation and secondly the good quality of work. Farm mechanization also saves time and labour, cuts down crop production costs in the long run, reduces post-harvest losses and boosts crop output and farm income. It helps to reduce women drudgery, but also saves energy. Therefore, farm mechanization improves the competitive position of the farmers in market for agricultural produce.

Countries including India, Bangladesh, the Republic of Korea, China, Philippines and Thailand, presenting different levels of agricultural mechanization from advanced to medium and low level, to assess the current status of agriculture and agricultural mechanization. The BRICS Nations along with Japan and Turkey are joining

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the ranks of heavy weight agricultural machinery markets. India and China were confirmed as the countries with the greatest take-up of tractors with sales of 5,92,942 and 5,24,600 units, respectively in 2014 in the power categories over 30 hp and not counting the vast numbers of self-propelled machinery. There are so many industries manufacturing threshers, seed drills, ploughs, cultivators, plant protection equipments, pumps etc., in India.

The Government of India has implemented many programmes to popularize agricultural machinery/ implements under the centrally sponsored scheme of macro management of agriculture with the financial assistance from the centre and state government on 90:10 basis, Agricultural Mechanization Programme under National Agriculture Development Programme (NADP), Demonstration of Newly Developed Agricultural Equipment and Machinery, training programmes to farmers in the field of agricultural mechanization, Training to youth on operation maintenance of the newly developed agricultural machinery implements, Custom hiring of agricultural machinery of farmers, Online booking of agricultural machinery under custom hiring, Encouragement of formation of farm workers group to ease the farm work.

Tamil Nadu has a total geographical area of 13 million hectares with a net sown area of about five million hectares (38.92%) and cropping intensity of 114.9 per cent. The state was found to have a decrease in trend of tractor sales from 2001-2005 and was found to be increasing from 2006 due to less labour availability and favorable subsidy schemes (Singh *et al.*, 2011). Majority of the population in Nilgiris were either cultivators or agricultural labourers. The major crops grown in the area were plantation crops and cole crops, in which they are using farm equipments. The farmers mostly used traditional tools for most of the farming operations. The level of mechanization of different operations for cultivation of various crops in Indian agriculture was found to be varying due to various reasons such as, climatic and soil conditions, land and topography, irrigation facilities etc.,. Therefore, the various operations included in cultivation required different kinds of machineries, implements and equipments for easy operation and to increase production.

The tractor/power operated equipments were available with the large category of farmers and found significantly higher as compared to other farm groups such as small and medium, but their number was very small. The availability of agricultural equipment was found to be very low. In addition, the condition of hill farmers is different from that of farmers from the plains as their land holding is much smaller and fragmented. Moreover, farm mechanization is a capital intensive and thus it remains beyond the reach of small and marginal farmers. With the above background, the broad objective of this research study would be to analyse the demand for farm machineries and equipments in the study area

The main objective of the study is to assess the awareness and usage of farm machineries and equipments at farm level and to identify the scope for utilization of farm machineries and equipments I Nilgiris district of Tamil Nadu.

## METHODOLOGY

The study aimed to analyze the demand for farm machineries and equipments and to study the awareness and usage of farm machineries by the farmers. The Nilgiris district has less usage of farm machineries and equipments when compared to all the other districts of Tamil Nadu. Thus, Nilgiris district of Tamil Nadu was purposively selected for this study and its demand was analyzed. The market share of the various brands of farm machineries and equipments are also analyzed. The Nilgiris district comprises of 6 taluks in which three taluks namely Ooty, Coonoor and Kundah were selected purposively, these taluks are having major cultivation of vegetables and plantation crops. Totally 180 farmers consists of 60 farmers in each taluk were selected at randomly. Both primary and secondary data were collected for the study. The primary data from the sample respondents were collected during the months of December 2015 and January 2016. Different statistical tools like conventional analysis, compound annual growth rate, Probit regression analysis and Garrett were used for the analysis of the study.

## ANALYSIS AND DISCUSSION

The findings of the present study as well as relevant discussion have been summarized under the following heads :

### Sample farmers:

*General characteristics of the sample farmers*:

Analyzing the general characteristics of the sample

farmers with respect to age, education, occupation, farming experience, size of land holding, irrigation source, irrigation type etc., will be helpful in understanding their decision making and practices followed by them in farming. The general characteristics of the sample farmers are discussed in this section.

It could be observed from Table 1 that, Coonoor had a majority of sample farmers (26.67%) of age above 60 years and Ooty had a majority (18.33%) of sample farmers belonging to the age group of less than 35 years comparatively. Major share of farmers (69.40%) in all three taluks had undergone secondary education followed by farmers with primary education with 20.60 per cent. Since, most of the sample farmers were educated it would facilitate them in attending trainings and certificate courses which would in turn help in adoption of new technologies and purchase of farm machineries for improving production and productivity. Majority of the

**Table 1: Demographic details of the sample farmers** **(n= 180)**

| Particulars | classification | Coonoor taluk | Kundah taluk | Ooty taluk | Overall |
|---|---|---|---|---|---|
| Age | <35 (young aged) | 3 (5.00) | 5 (8.33) | 11(18.33) | 19(10.55) |
| (years) | 36-60 (middle aged) | 41 (68.33) | 43 71.67) | 42(70.00) | 126(70.00) |
| | >60 (senior citizen) | 16 (26.67) | 12(20.00) | 7 (11.67) | 35(19.45) |
| Total | | 60 (100.00) | 60(100.00) | 60(100.00) | 180(100) |
| Education | Illiterate | 4(6.70) | 3 (5.00) | 3(5.00) | 10(5.60) |
| | Primary | 12(20.00) | 13(21.70) | 12(20.00) | 37(20.60) |
| | Secondary | 40(66.60) | 42(70.00) | 43(71.70) | 125(69.40) |
| | Graduate | 4(6.70) | 2(3.30) | 2(3.30) | 8(4.40) |
| Total | | 60(100.00) | 60(100.00) | 60(100.00) | 180(100.00) |
| Occupation | On farm | 53(88.30) | 58(96.70) | 59(98.30) | 170(94.50) |
| | On and Off farm | 7(11.70) | 2(3.30) | 1(1.70) | 10(5.50) |
| Total | | 60(100.00) | 60(100.00) | 60(100.00) | 180(100.00) |
| Farming | <10 | 1(1.60) | 0 | 4(6.67) | 5(2.80) |
| experience | 10-20 | 17(28.30) | 25(41.70) | 27(45.00) | 69(38.30) |
| | >20 | 42(70.00) | 35(58.30) | 29(48.30) | 106(58.80) |
| Total | | 60(100.00) | 60(100.00) | 60(100.00) | 180(100.00) |
| Type of farmers | <1 (Marginal) | 29(48.30) | 7(11.70) | 13(21.70) | 49(27.20) |
| | 1-2 (Small) | 20(33.30) | 17 (28.30) | 32(53.30) | 69(38.30) |
| | 2-4 (Medium) | 8(13.30) | 27(45.00) | 13(21.70) | 48(26.70) |
| | >4 (Large) | 3(5.00) | 9(15.00) | 2(3.30) | 12(6.70) |
| Total | | 60(100.00) | 60 100.00) | 60(100.00) | 180(100.00) |
| Annual Income | <1,50,000 | 38(63.30) | 18(30.00) | 38(63.30) | 94(52.20) |
| | 1,50,000- 3,00,000 | 12(20.00) | 30(50.00) | 19(31.70) | 61(33.90) |
| | >3,00,000 | 10(16.60) | 12(20.00) | 3 (5.00) | 25(13.90) |
| Total | | 60(100.00) | 60(100.00) | 60(100.00) | 180(100.00) |
| Sources of | Open Well | 23(38.30) | 12(20.00) | 15(25.00) | 50(27.80) |
| irrigation | Bore Well | 4(6.70) | 13(21.70) | 16(26.70) | 33(18.30) |
| | Tank/Pond | 1(1.70) | 1(1.70) | 1(1.70) | 3(1.70) |
| | Stream | 32(53.30) | 34(56.70) | 28(46.70) | 94(52.20) |
| Total | | 60(100.00) | 60(100.00) | 60(100.00) | 180(100.00) |
| Type of irrigation | Sprinklers | 33(55.00) | 35(58.30) | 31(51.70) | 99(55.00) |
| | Hoses | 27(45.00) | 25(41.60) | 29(48.30) | 81(45.00) |
| Total | | 60 (100.00) | 60(100.00) | 60(100.00) | 180(100.00) |

(Figures in parentheses indicate percentages to total)

farmers (94%) depends on Agriculture, they have enough time to make decisions on usage and purchase of farm machineries and equipments.

Experience of the sample farmers in farming would have significant role in allocation and purchase of farm machineries and equipments, management of the farm etc., It could be observed that, majority of the farmers (70.00%) in Coonoor, 58.30 per cent of the farmers in Kundah and 48.30 per cent of the farmers in Ooty had farming experience above 20 years. Hence, the farmers could be aware of the various issues in farming for further development of agriculture. Majority of the sample farmers were under the categories of small and medium, hence their land size would not influence in purchase of any farm machineries. Similar results were found in Singh (2014) studies that 91% of operational holding falls under small and marginal (<2ha) category. A group of small and medium farmers could be motivated to join together and purchase farm machineries for own use and for custom hiring. The large farmer group would be indulged in purchase due to high labour wages and non- availability of labour for their large farms.

It could be inferred from the table that, nearly 52.20 per cent of the sample farmers had an annual income of less than Rs. 1,50,000 followed by 33.90 per cent of farmers having income of Rs. 1,50,000- Rs. 3,00,000 on the whole. Since, income is directly proportional to purchase behaviour, it was found that farmers with high income will purchase farm machineries without hesitation, where farmers with less income are prone to risks in loan repayments for purchasing farm machineries.

The source of irrigation plays a vital role in the selection of crops for cultivation and in the purchase of irrigation equipments. It is evident from the table that, stream irrigation had the highest percentage in all the three taluks. Overall, the highest of 52.20 per cent of the sample farmers irrigated through stream irrigation as expected and the lowest in pond/ lake irrigation with 1.70 per cent. Since, the major source of irrigation was through perennial streams the farmers had continuous irrigation which lead to high crop yield and profit. This would increase the confidence level of the farmers to purchase farm machineries.

It could be observed from the table that, Overall, 55.00 per cent of the sample farmers used sprinklers and 45.00 per cent of the sample farmers used soaker hoses. Sprinklers are equipments used to irrigate the crops and are available to the farmers at subsidy rates.

**Table 2 : Farm machineries owned by sample farmers** **(n=180)**

| Sr. No. | Land holdings ( ha) | Coonoor | | | | | |
|---|---|---|---|---|---|---|---|
| | | Own farm machineries | | | | Do not own farm machineries | Overall |
| | | T | PT | TH | Total | | |
| 1. | Marginal | 1 | 2 | 1 | 4(30.76) | 25(53.19) | 29(48.33) |
| 2. | Small | 1 | 1 | 2 | 4(30.76) | 16(30.04) | 20(33.33) |
| 3. | Medium | 0 | 2 | 1 | 3(23.09) | 5(10.63) | 8(13.31) |
| 4. | Large | 1 | 1 | 0 | 2(15.39) | 1(2.12) | 3(5.00) |
| Total | | 3 | 6 | 4 | 13(100.00) | 47(100.00) | 60(100.00) |
| | | | | | **Kundah** | | |
| 1. | Marginal | 0 | 1 | 2 | 3(8.1) | 4(17.39) | 7(11.67) |
| 2. | Small | 1 | 1 | 9 | 11(29.72) | 5(21.73) | 17(28.33) |
| 3. | Medium | 2 | 1 | 12 | 15(40.54) | 12(52.17) | 27(45.00) |
| 4. | Large | 2 | 2 | 4 | 8(21.62) | 1(4.34) | 9(15.00) |
| Total | | 5 | 5 | 27 | 37(100.00) | 23(100.00) | 60(100.00) |
| | | | | | **Ooty** | | |
| 1. | Marginal | 0 | 1 | 0 | 1(7.14) | 12 (26.10) | 13(21.67) |
| 2. | Small | 1 | 2 | 6 | 9(64.28) | 23(50.00) | 32(53.33) |
| 3. | Medium | 2 | 0 | 2 | 4(28.57) | 9(19.56) | 13(21.67) |
| 4. | Large | 0 | 0 | 0 | 0 | 2(4.34) | 2(3.33) |
| Total | | 3 | 3 | 8 | 14(100.00) | 46(100.00) | 60(100.00) |

(Figures in parentheses indicate percentages to total)

The sample farmers in the study area used these equipments for about a decade. It was concluded that, the farmers had good knowledge about irrigation equipments and purchased them for better irrigation options.

*Farm machineries owned by sample farmers*:

In the present study, the number of sample farmers who owned farm machineries like tractors (T), power tillers (PT) and tea harvester (TH) were analysed and presented in Table 2.

It was observed from Table 2 that, overall only 64 sample farmers (35.50%) accounted for owning farm machineries. In Coonoor, out of 60 sample farmers, only 13 farmers (21.67%) owned machineries. Therefore, the scope for utilization of machineries is more as marginal and small farmers are on a larger scale using less machinery.

In Kundah out of 60 sample farmers only 37 farmers (61.67%) owned machineries and it was found that medium and small farmer categories owned more farm machineries. Hence, there was an opportunity to tap the untapped potential. Ooty had 14 farmers (23.30%) owned farm machineries and 76.67 per cent of the farmers did not own farm machineries and was found that a majority of the farmers in Ooty belonged to the small farmer category. Iqbal *et al.* (2015) also revealed that majority of the farmers in Pakistan are using Tractors for their farming work.

It was evident from Table 3 that, in Coonoor out of 60 sample farmers 36 farmers accounted (60%) for owning farm equipments followed by 34 sample farmers in Kundah (56.6%) and 44 sample farmers of Ooty (73.33%) owned farm machineries, respectively. It was

**Table 3 : Farm equipments owned by sample farmers** **(n=180)**

| Sr. No. | Land holdings (in Ha) | Coonoor | | |
|---|---|---|---|---|
| | | Own farm equipments | Do not own farm equipments | Overall |
| 1. | Marginal | 12(33.33) | 17(70.83) | 29(48.33) |
| 2. | Small | 16(44.44) | 4(16.67) | 20(33.33) |
| 3. | Medium | 6(16.67) | 2(8.33) | 8(13.34) |
| 4. | Large | 2(5.56) | 1 (4.16) | 3(5.00) |
| Total | | 36(100.00) | 24(100.00) | 60(100.00) |
| | | **Kundah** | | |
| 1. | Marginal | 1(2.94) | 6(23.07) | 7(11.67) |
| 2. | Small | 12(35.29) | 5(19.23) | 17(28.33) |
| 3. | Medium | 16(47.05) | 11(42.30) | 27(45.00) |
| 4. | Large | 5(14.7) | 4(15.38) | 9(15.00) |
| Total | | 34(100.00) | 26(100.00) | 60(100.00) |
| | | **Ooty** | | |
| 1. | Marginal | 6(13.63) | 7(43.75) | 13(21.67) |
| 2. | Small | 23(52.27) | 9(56.25) | 32(53.33) |
| 3. | Medium | 13(29.54) | 0 | 13(21.67) |
| 4. | Large | 2(4.56) | 0 | 2(3.33) |
| Total | | 44(100.00) | 16 (100.00) | 60(100.00) |

(Figures in parentheses indicate percentages to total)

**Table 4 : Source of awareness on Government schemes**

| Sr. No. | Source | Frequency | Percentage |
|---|---|---|---|
| 1. | Government institutions | 126 | 70.00 |
| 2. | Neighbours | 71 | 39.40 |
| 3. | Relatives | 55 | 30.50 |
| 4. | Media | 34 | 18.89 |

concluded that, the sample farmers were aware and had good knowledge on usage of farm equipments.

From the Table 4, it was inferred that the major source of awareness of government schemes provided to the farmers on farm machineries and equipments were the government institutions with 70.00 per cent followed by their neighbours (39.00%), relatives (30.50%) and lastly media (18.89 %). Hence, Government institutions played a major role in creating awareness about the various schemes given by the government through group meetings, demonstrations etc.

From Table 5, it was inferred that farm machineries and equipments were used on various field operations which are elaborated below.

**Field preparation:**

It is known from the table that, Kundah had the most number of tractors and power tillers when compared to Coonoor and Ooty. A majority of sample farmers in the study area used more number of tractors (8.90%) and power tillers (12.70%) and among all the implements country plough (43.30%) was most used by the sample farmers for field preparation.

**Earthing up and weeding:**

A majority of above 50.00 per cent of the sample famers used crow bar, spade and hand hoe in all the three taluks.

**Plant protection:**

It was also observed that Kundah had a majority usage of plant protection equipments such as knap sack sprayer, power sprayer and hand sprayer. On the whole, hand sprayers (97.78%) followed by knap sack sprayers (83.88%) were mostly used by the sample farmers and power sprayers (47.77%) were used less.

**Irrigation:**

Sprinklers and Soaker hoses were mostly used in Kundah when compared to Coonoor and Ooty. The

**Table 5: Utilization of farm machineries and equipments in the sample farmers (numbers)**

| Sr. No. | Particulars | Coonoor | Kundah | Ooty | Overall | Percentage to total sample farms |
|---|---|---|---|---|---|---|
| **1.** | **Field preparation** | | | | | |
| | Country plough | 24 | 29 | 25 | 78 | 43.30 |
| | Power tiller | 4 | 17 | 3 | 23 | 12.70 |
| | Tractor | 1 | 13 | 2 | 16 | 8.90 |
| | Cultivators | 3 | 10 | 2 | 15 | 8.33 |
| | Mould board plough | 2 | 2 | 3 | 7 | 3.88 |
| | Disc plough | 3 | 2 | 1 | 6 | 3.33 |
| | Rotavators | 1 | 2 | 2 | 5 | 2.70 |
| **2.** | **Earthing up and weeding** | | | | | |
| | Hand hoe | 54 | 78 | 48 | 180 | 100.00 |
| | Spade | 53 | 89 | 34 | 176 | 97.80 |
| | Crow bar | 48 | 52 | 32 | 132 | 73.30 |
| **3.** | **Plant protection** | | | | | |
| | Hand sprayer | 65 | 60 | 51 | 176 | 97.78 |
| | Knap sack sprayer | 49 | 59 | 43 | 151 | 83.88 |
| | Power sprayer | 25 | 32 | 29 | 86 | 47.77 |
| **4.** | **Irrigation** | | | | | |
| | Sprinklers | 28 | 52 | 34 | 114 | 63.30 |
| | Soaker Hoses | 4 | 38 | 1 | 43 | 23.80 |
| **5.** | **Harvesting** | | | | | |
| | Sickle | 59 | 60 | 52 | 171 | 95.00 |
| | Tea harvester | 4 | 21 | 2 | 27 | 15.60 |

overall usage of sprinklers (63.3%) was high followed by soaker hoses (23.8%)

**Harvesting:**

It was understood that, the usage of tea harvesters were more in Kundah when compared to Ooty and Coonoor. In general, Sickles were used as a major implement (23.3%) followed by tea harvesters (15.6 %) for harvesting tea leaves.

Hence, it was concluded from the table that, Kundha having more cultivation of tea and vegetable crops there was more utilization of farm machineries, implements and equipments.

**Factors influencing the willingness of sample farmers to purchase farm machineries:**

Farm machineries and equipments are necessary for easy cultivation of crops and improving its yield as it reduces the cost of operation and improves the efficiency of production. Hence, to improve the production efficiency and reduce the cost of production there is a need to identify the factors that influence the willingness of the sample farmers to purchase farm machineries and equipments. The probit regression analysis was used to identify the factors that actually influence the willingness to purchase the farm machineries and equipments. The results of probit regression are presented in Table 6.

It is observed from the Table 6 that, only land and income were significant with respect to the independent variables such as age, education, occupation and experience which are positively related to the dependent variable. All the other independent variables are not significant. Hence, the highly influencing factors would urge the farmers to purchase farm machineries and equipments.

If there is one unit increase in the land size, the probability of purchasing farm machineries and equipments would increase by 0.38 times. Hence, there would be a wider scope for the farm machineries and equipments among the large farmers. Therefore, the firm should launch their product by targeting the medium and large sized farmers in the study area as they would serve as the potential customers for purchasing farm machineries and equipments.

If there is one unit increase in annual income, the probability of purchasing the farm machineries and equipments would increase by 1.04 times. The data revealed that the sample farmers who had a higher income were willing to purchase farm machineries and equipments (Sharma, 2007 and Singh, 2004).

It is concluded from the table that, neighbours influence was the major reason for using farm

**Table 6 : Factors influencing the willingness to purchase farm machineries and equipments**

| Sr. No. | Variable | Co-efficient | p-value |
|---|---|---|---|
| 1. | Constant | -6.94138 | <0.00001 *** |
| 2. | Age | 0.00656459 | 0.98474 |
| 3. | Education | 0.065158 | 0.71866 |
| 4. | Occupation | 0.803471 | 0.20722 |
| 5. | Land_ha_ | 0.386371 | 0.01910 ** |
| 6. | Experience | 0.368886 | 0.20441 |
| 7. | Income | 1.04422 | <0.00001 *** |

Note: ** and *** indicate significance of values at P=0.05 and 0.1, respectively level N: 180

**Table 7 : Reasons for purchasing farm machineries and equipments** **(n=180)**

| Sr. No. | Reasons | Score | Rank |
|---|---|---|---|
| 1. | Neighbor's influence | 64.7 | I |
| 2. | Work simplification | 64.6 | II |
| 3. | Cost reduction | 61.9 | III |
| 4. | Subsidy | 61.6 | IV |
| 5. | Labor scarcity | 60.2 | V |
| 6. | Price of the Product | 42.1 | VI |

machineries and equipments followed by work simplification and cost reduction in operation. The other reasons like subsidy, labour scarcity and price had less influence to the respondents (Singh *et al.*, 2010 and Tyagi *et al.,* 2010).

It was observed from the table that, the major reason for not purchasing equipments and farm machineries was mainly due to the size of the farm held by the sample farmers followed by that the machineries and equipments did not suit the crop. Lack of capital and expensiveness of the farm machineries were the other reasons for not purchasing.

## Dealers:

*Socio-economic characteristics of the sample dealers*;

General characteristics like age, educational status, experience in retailing, type of ownership and product line dealt, adoption of promotional methods and factors influencing the brand preference were collected in order to understand their decision making and marketing competencies in retailing. The general characteristics of the sample dealers are discussed in Table 9.

It could be observed from the table that the major group of dealers (70.00%) belonged to the age group of 30-50 years and they are were well educated with a graduation followed by the age group of dealers of greater 50 years of age. Hence, most of the dealers were of middle age and they were found to be more enthusiastic and motivating the farmers in purchase of farm machineries and equipments.

It is evident from the Table 9 that, most of the dealers had an experience of 10-20 years (60.00%) in

**Table 8 : Reasons for not purchasing farm machineries and equipments** **(n=180)**

| Sr. No. | Reasons | Score | Rank |
|---|---|---|---|
| 1. | Size of the farm | 62.6 | I |
| 2. | Does not suit crop | 62.5 | II |
| 3. | Lack of capital | 56.3 | III |
| 4. | Too expensive | 50.2 | IV |

**Table 9 : Socio-economic characteristics of the sample dealers** **(n=10)**

| Attributes | Classification | No. of respondents | Percentage |
|---|---|---|---|
| Age | <30 (young aged) | 1 | 10.00 |
| | 30-50 (middle aged) | 7 | 70.00 |
| | >50 (senior citizens) | 2 | 20.00 |
| Total | | 10 | 100.00 |
| Education | Higher Secondary | 4 | 40.00 |
| | Graduate | 6 | 60.00 |
| Total | | 10 | 100.00 |
| Experience in dealership | <10 | 1 | 10.00 |
| | 10-20 | 6 | 60.00 |
| | >20 | 3 | 30.00 |
| Total | | 10 | 100.00 |
| Ownership status | Sole proprietary ship | 10 | 100.00 |
| | Partnership ship | 0 | 0 |
| Total | | 10 | 100.00 |
| Product line dealt | Seeds | 3 | 30.00 |
| | Fertilizers | 5 | 50.00 |
| | Pesticides | 7 | 70.00 |
| | Farm Equipment | 10 | 100.00 |
| | Spare parts | 3 | 30.00 |
| Total | | 10 | 100.00 |

the field of selling farm machineries and equipments and they were formed the business as soleprepreitor. Since, most of the dealers belonged to middle age group, they were found to be enthusiastic and hard working by tackling situations. All the dealers were dealing with farm equipments followed by pesticides and fertilizers with 70 .00 and 30.00 per cent, respectively.

**Methods of promotion:**

The major methods of promotion followed by the sample dealers in the study area were analyzed using Garrett's ranking technique, where the data was collected using an open ended question in a pre-tested questionnaire and presented in Table 10.

It was inferred from the table that cent percentage of the sample dealers used pamphlets for promoting the products followed by field demonstrations and stalls with 80.00 and 70.00 per cent, respectively and it was also inferred that, there was no credit sales given to the customers.

From the Table 11 it was concluded that the major factors influencing the brand preference of the dealers was due to the farmers preference followed by the brand image and marginal sales.

**Conclusion:**

The majority of the sample farmers did not own any farm machineries and all the respondents had awareness on farm machineries and equipments and the major source was through Government institutions. The possession of various types of machinery among sample respondents indicated that the mechanization of farm operations were not fully adopted. The farm machineries utilized by the sample respondents for agricultural activity were tractors, power tillers and tea harvesters and the farm equipments used were sprinklers, pumps, hoses and sprayers. Land preparation was the major activity carried out through machines and plant protection was the major activity carried out through equipments. The size of land holding and income only influenced the sample farmers in their willingness to purchase farm machineries in the study area. The major reason for purchasing farm machineries and equipments were neighbours' influence and simplification of work.

The sample dealers were middle aged, had better educational status and well experienced in retailing. All the sample farmers were sole proprietors and deal with products such as farm machineries and equipments and pesticides. Methods of promotion followed by the sample farmers were mainly by using phamplets, field demonstrations, stalls and exhibitions. Farmer's preference and brand image were the major factors influencing the brand preference of the sample dealers.

**Table 10 : Methods of promotion for different agricultural inputs** **(n=10)**

| Sr. No. | Methods of promotion | Score | Rank |
|---|---|---|---|
| 1. | Pamphlets | 82.16 | I |
| 2. | Field demonstrations | 78.91 | II |
| 3. | Stalls in exhibitions | 64.32 | III |
| 4. | Advertisements | 56.07 | IV |
| 5. | Seasonal offers | 50.73 | V |
| 6. | Farmers meet | 43.99 | VI |
| 7. | Discount sales | 37.65 | VII |
| 8. | Personal contact | 31.28 | VIII |

**Table 11 : Factors influencing brand preference of the sample dealers** **(n=10)**

| Sr. No. | Factors | Score | Rank |
|---|---|---|---|
| 1. | Farmers preference | 81.9 | I |
| 2. | Brand image | 72.4 | II |
| 3. | Marginal sales | 65.6 | III |
| 4. | High profit | 52.2 | IV |
| 5. | Credit facility | 32.2 | V |
| 6. | Representatives influence | 27.3 | VI |
| 7. | Promotional support | 20.4 | VII |

**Implications of the study:**

Based on the findings of the study, the following were the implications.

– Government subsidy policies need to concentrate relatively more on machinery along with implements or attachments that could be used exclusively for land preparation and for transport activities.

– To promote mechanization, attempts have to be made either to increase facilities for the hiring of tractors and power tillers.

– Farm machinery company/sales teams have to focus their sales target in the study area as the demand is more for tractor with the land preparation implements and attachments.

– The farmers considered tractors as a commercial vehicle. The demand was also more for tractors as they are used for field preparations in this region. Since, major share of farmers were marginal and small farmers, entrepreneurs can think of innovation models of farm machineries and equipments for hiring business which could be a profitable venture.

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