

International Journal of Agriculture Extension and Social Development

Volume 9; Issue 6; June 2026; Page No. 572-577

Received: 02-03-2026
Accepted: 09-04-2026

Indexed Journal
Peer Reviewed Journal

Factors affecting and problems faced by farmers in the purchase of farm implements in Junagadh district of Gujarat

¹Vasan Ravi, ²DR Vahoniya and ³Bhautik Bagda

¹M.Sc. Scholar, International Agri-Business Management Institute, Anand Agricultural University, Anand, Gujarat, India

²Assistant Professor & Head, Department of Agri-entrepreneurship and Project Management, International Agri-Business Management Institute, Anand Agricultural University, Anand, Gujarat, India

³Senior Research Fellow, International Agri-Business Management Institute, Anand Agricultural University, Anand, Gujarat, India

DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i6g.3739>

Corresponding Author: DR Vahoniya

Abstract

Farm mechanization plays a vital role in enhancing agricultural productivity, reducing labour dependency and improving farm efficiency. Understanding the factors that influence farmers' purchase decisions and the constraints they face in acquiring farm implements is essential for promoting mechanization among farming communities. Therefore, the present study was conducted during 2025-26 in the Junagadh district of Gujarat to examine the socio-economic profile of farmers, identify the factors influencing their purchase decisions, assess the effectiveness of promotional tools and analyze the constraints faced in purchasing farm implements. Primary data were collected from 200 tractor-owning farmers selected from 20 villages of Vanthali, Manavadar, Bheshan, and Keshod talukas through a structured interview schedule. Percentage analysis and Weighted Average Mean (WAM) were used for data analysis. The findings revealed that the majority of respondents were middle-aged and belonged to the small and marginal farmer categories. Tractor ownership was universal among the selected respondents, with TAFE (Massey Ferguson), Mahindra & Mahindra and Swaraj being the most preferred brands. Cultivators, MB/disc ploughs and rotavators were the most commonly owned farm implements. Price/affordability emerged as the most influential factor affecting purchase decisions, followed by durability & quality, and field performance. Among promotional tools, field demonstrations were found to be the most effective, followed by word-of-mouth communication and dealer recommendations. The major constraints faced by farmers included high initial cost, lack of credit facilities and high repair and maintenance expenses. The study highlights the need for improved credit support, efficient after-sales services and farmer-oriented demonstration programmes to enhance the adoption of farm implements and accelerate agricultural mechanization.

Keywords: Farm implements, purchase behaviour, farm mechanization, influencing factors, promotional tools

1. Introduction

India's agriculture sector is currently at a crucial stage of transformation. It supports more than 1.4 billion people and provides livelihoods for nearly half of the population, yet the level of mechanization remains at around 45-47 per cent (Dhila *et al.*, 2026) ^[4]. This is considerably lower than in developed agricultural economies such as the USA, Europe and China, where mechanization levels are substantially higher. With decreasing landholding size, rising labour shortages and increasing input costs, traditional farming methods are becoming less sustainable. Mechanization has therefore emerged as an essential component of modern agriculture, not only for reducing manual labour but also for improving operational efficiency, enhancing productivity and promoting precision farming practices. It is estimated that the proper use of farm machinery can increase agricultural productivity by about 30 per cent and reduce cultivation costs by nearly 20 per cent. However, in India, the use of machinery is still largely concentrated around

tractors, and there is considerable scope for expanding mechanization to operations such as sowing, harvesting and post-harvest management (ISAE, 2024).

Mechanization also plays a significant role in promoting sustainable agriculture. In the face of challenges such as climate change, water scarcity and soil degradation, the adoption of modern and resource-efficient technologies has become increasingly important. Government initiatives such as the Sub-Mission on Agricultural Mechanization (SMAM) and the promotion of Custom Hiring Centres (CHCs) have improved farmers' access to agricultural machinery. Nevertheless, constraints such as limited awareness, inadequate technical knowledge, poor access to credit and insufficient after-sales services continue to restrict the wider adoption of farm implements. To achieve the vision of a developed India by 2047, greater emphasis must be placed on smallholder farmers, regional inclusiveness, technological innovation and effective public-private partnerships. Affordable machinery, improved training

programmes, better financing options and reliable repair and maintenance services are essential for accelerating the pace of mechanization (ISAE, 2024).

The purchase of farm implements is influenced by several economic, technical and promotional factors. Farmers often consider aspects such as affordability, durability, field performance, availability of spare parts, dealer support and access to finance while making purchase decisions. Similarly, promotional tools such as field demonstrations, dealer recommendations and farmer-to-farmer communication play an important role in shaping their preferences. Understanding these factors and the constraints faced by farmers is essential for manufacturers, policymakers and extension agencies to formulate effective strategies for promoting agricultural mechanization.

Although several studies have examined the adoption of agricultural machinery in India, limited empirical evidence is available regarding the factors influencing farmers' purchase decisions and the problems faced during the purchase of farm implements in the Junagadh district of Gujarat. Therefore, the present study was undertaken with the specific objectives of examining the socio-economic profile of farmers, identifying the key factors influencing the purchase of farm implements, determining the most effective promotional tools affecting purchase decisions, and analyzing the constraints faced by farmers during the purchase of farm implements.

2. Methodology

2.1 Study Area

Junagadh district of Gujarat was purposively selected for the study due to the widespread use of tractors and tractor-drawn implements in agricultural operations. The district has a diverse cropping pattern comprising groundnut, cotton, wheat and pearl millet, and agriculture remains one of the major livelihood activities. The study was conducted in four talukas, namely Vanthali, Manavadar, Keshod and Bheshan, where the adoption of farm machinery is relatively prominent compared to other areas of the district.

2.2 Sampling Procedure

A multistage purposive sampling technique was adopted for the study. Junagadh district was selected purposively due to its considerable use of farm machinery. Four talukas, namely Vanthali, Manavadar, Keshod and Bheshan, were selected for investigation. From each taluka, five villages were selected, resulting in a total of 20 villages. Further, 10 tractor-owning farmers possessing at least one farm implement were selected purposively from each village, resulting in a sample size of 200 respondents.

Primary data were collected from December 2025 to March 2026 through personal interviews using a pre-tested structured interview schedule. Secondary information

related to agriculture and mechanization was collected from published reports, journals and official government sources.

Weighted Average Mean

The Weighted Average Mean (WAM) technique was used to determine the relative importance of factors influencing purchase decisions, promotional tools and constraints faced by farmers in the purchase of farm implements. Respondents were asked to indicate their level of agreement on a five-point Likert scale ranging from 1 (least important) to 5 (most important). The weighted average mean for each factor was calculated using the following formula:

$$\text{Weighted Average Mean (X)} = \frac{(F1X1 + F2X2 + F3X3 + F5X5)}{X_t}$$

Where,

F = Weight given to each response X = Number of responses

X_t = Total number of responses

3. Results and Discussion

3.1 Socio-economic profile of farmers

The socio-economic profile of the respondents revealed that agricultural decision-making in the study area is entirely male-dominated, as all respondents were male. The majority of farmers (55.50%) belonged to the middle-age group (36-50 years), followed by older farmers (24%) and young farmers (20.50%). This indicates that farming activities and investment decisions related to farm machinery are primarily undertaken by experienced farmers who possess adequate farming knowledge and operational experience. Similar findings were reported by Dhila *et al.* (2026) ^[4]. With regards to education, most respondents had attained primary education (34%), followed by secondary education (19.50%) and higher secondary education (16.50%). Only a small proportion of respondents were graduates (4.50%), while 16 per cent were illiterate. The education profile suggests that although literacy levels are reasonably satisfactory, higher educational attainment among farmers remains limited.

The annual income distribution showed that 41.50 per cent of respondents belonged to the medium-income category (₹ 2-4 lakh annually), followed by low-income (33%) and high-income (25.50%). The predominance of medium-income farmers indicates moderate purchasing capacity, which may influence investment decisions regarding agricultural machinery. The majority of respondents were small farmers (38%), followed by marginal farmers (20%), indicating the dominance of small and fragmented landholdings in the study area. Such landholding patterns often influence the type and scale of machinery adopted by farmers.

Table 1: Socio-economic profile of farmers

Sr. No.	Particular	Frequency (n)	Percentage
1	Gender distribution		
	Male	200	100.00
	Female	-	-
	Total	200	100.00
2	Age group		
	18-35 years (Young)	41	20.50
	36-50 years (Middle)	111	55.50
	Above 50 years (Old)	48	24.00
	Total	200	100.00
3	Education qualification		
	Illiterate	32	16.00
	Can read and write	19	09.50
	Primary school	68	34.00
	Secondary school	39	19.50
	Higher secondary	33	16.50
	Graduates	09	04.50
	Postgraduate and above	-	-
	Total	200	100.00
4	Annual income		
	Low (< ₹ 2 lakh)	66	33.00
	Medium (₹ 2-4 lakh)	83	41.50
	High (> ₹ 4 lakh)	51	25.50
	Total	200	100.00
5	Total land holding		
	Marginal (<1 ha / <2.5 acres)	40	20.00
	Small (1-2 ha / 2.5-5 acres)	76	38.00
	Semi-Medium (2-4 ha / 5-10 acres)	31	15.50
	Medium (4-10 ha / 10-25 acres)	29	14.50
	Large (>10 ha / >25 acres)	24	12.00
	Total	200	100.00
6	Own tractor		
	Yes	200	100.00
	No	-	-
	Total	200	100.00
7	Distribution of tractor brands		
	Mahindra & Mahindra	28	14.00
	Sonalika	19	09.50
	Eicher	16	08.00
	TAFE (Massey Ferguson)	47	23.50
	Kubota	11	05.50
	John Deere	09	04.50
	Swaraj	27	13.50
	New Holland	19	09.50
	Farmtrac	15	07.50
	Others	09	04.50
	Total	200	100.00
8	Farm implements ownership*		
	Cultivator	188	94.00
	MB plough / Disc plough	107	53.50
	Rotavator	89	44.50
	Seed drill	21	10.50
	Thresher	23	11.50
	Mulcher	15	07.50
	Sprayer	02	01.00
	Harrow	04	02.00
	Total	449	-

*Note: Multiple responses were recorded as farmers owned more than one farm implement

Tractor ownership was observed among all respondents, reflecting a relatively high level of mechanization in the study area. Among different tractor brands, TAFE (Massey Ferguson) was the most preferred brand (23.50%), followed by Mahindra & Mahindra (14%) and Swaraj (13.50%). This

preference may be attributed to brand reliability, local dealer networks and availability of spare parts. Regarding farm implement ownership, cultivators were the most widely owned implements (94%), followed by MB/disc ploughs (53.50%) and rotavators (44.50%). In contrast, ownership of

specialized implements such as seed drills, threshers, mulchers, sprayers and harrows was comparatively low. This indicates that mechanization in the study area is largely concentrated in land preparation activities, while the adoption of machinery for sowing, crop management and post-harvest operations remains limited.

3.2 Factors influencing the purchase decision of farm implements

The factors influencing farmers' purchase decisions regarding farm implements were analyzed using the Weighted Average Mean (WAM) technique, and the results are presented in Table 2. The findings revealed that price/affordability was the most influential factor, securing the highest WAM score of 4.83. This indicates that farmers give primary importance to the economic feasibility of farm machinery before making a purchase decision. The predominance of small and marginal farmers in the study area may be one of the major reasons for the high importance attached to affordability.

Durability and quality ranked second with a WAM score of 4.71, followed by performance in the field (4.64). These findings suggest that farmers prefer farm implements that provide reliable performance over a longer period and generate higher operational efficiency. Since farm machinery involves substantial investment, farmers tend to prioritize equipment that offers long-term value and dependable field performance.

Table 2: Factors influencing purchase decision

Rank	Factors	WAM Score
1	Price / Affordability	4.83
2	Durability & quality	4.71
3	Performance in the field	4.64
4	Spare parts availability	4.49
5	Brand Reputation / Trust	4.34
6	Ease of operation	4.22
7	Fuel efficiency / Power requirement	4.18
8	After-sales service	4.04
9	Dealer's recommendation / Influence	3.90
10	Peer Influence / Word of mouth	3.68
11	Resale value	3.56
12	Warranty / Guarantee terms	3.40
13	Innovative features	3.28

Spare parts availability (4.49), brand reputation/trust (4.34), ease of operation (4.22), fuel efficiency/power requirement (4.18) and after-sales service (4.04) were also found to be important considerations. The significance of these factors indicates that farmers not only evaluate the initial purchase cost but also consider operational convenience, maintenance requirements and service support while selecting farm implements.

On the other hand, dealer recommendation/influence (3.90), peer influence/word of mouth (3.68), resale value (3.56), warranty/guarantee terms (3.40) and innovative features (3.28) received comparatively lower scores. This suggests that farmers place greater emphasis on practical utility and economic benefits than on promotional claims or advanced technological features. Similar findings were reported by Dhila *et al.* (2026) ^[4], who observed that affordability, durability and field performance were among the most

critical determinants influencing farmers' purchase decisions. The results indicate that economic and performance-related factors play a dominant role in shaping farmers' purchasing behaviour. Therefore, manufacturers and policymakers should focus on developing affordable, durable and efficient farm implements supported by strong service networks and easy availability of spare parts.

3.3 Influence of various promotional tools on farmers' purchase decisions

The influence of various promotional tools on farmers' purchase decisions was analyzed using the Weighted Average Mean (WAM) technique, and the results are presented in Table 3. The findings revealed that field demonstrations/field days emerged as the most effective promotional tool with the highest WAM score of 4.42. This indicates that farmers prefer practical exposure to farm machinery before making purchase decisions. Field demonstrations enable farmers to directly observe the performance, efficiency and suitability of implements under actual farming conditions, thereby reducing uncertainty associated with machinery investments.

Word of mouth communication from friends and fellow farmers ranked second with a WAM score of 4.31, followed by dealer recommendations (4.14). The high ranking of these factors highlights the importance of trust-based communication in influencing farmers' purchasing behaviour. Farmers often rely on the experiences and recommendations of fellow farmers and local dealers because they are perceived as reliable and relevant sources of information.

Table 3: Influence of various promotional tools on farmers' purchase decisions

Sr. No.	Promotional tools	WAM Score	Rank
1	Field demonstration/Field days	4.42	1
2	Word of mouth (friends/peers)	4.31	2
3	Dealer recommendation	4.14	3
4	Exhibition/Krushhi melas	3.94	4
5	Social media/Mobile/Internet	3.66	5
6	Television advertisements	3.49	6
7	Posters/Banners	3.01	7

Exhibitions and Krushi Melas secured a moderate level of influence with a WAM score of 3.94. Such events provide opportunities for farmers to compare different brands, interact with manufacturers and gain information regarding new technologies. Similarly, social media, mobile applications and internet-based platforms received a moderate score (3.66), indicating the growing but still limited role of digital communication channels in agricultural machinery promotion.

Television advertisements (3.49) and posters/banners (3.01) were found to be the least influential promotional tools. This suggests that passive advertising methods are less effective in influencing farmers compared to interactive and experience-based promotional approaches. Similar observations were reported by Dhila *et al.* (2026) ^[4], who emphasized the effectiveness of field demonstrations, interpersonal communication and dealer interactions in shaping farmers' purchase decisions. The findings indicate that experiential marketing and trust-based communication

channels play a more significant role than conventional advertising methods in promoting farm implements. Therefore, manufacturers, dealers and extension agencies should prioritize field demonstrations, farmer meetings and dealer-led awareness programmes to improve the adoption of agricultural machinery. The comparatively lower influence of digital media may be attributed to differences in digital literacy and internet usage among rural farmers.

3.4 Key barriers faced by farmers in the purchase of farm implements

The barriers faced by farmers in the purchase of farm implements were analyzed using the Weighted Average Mean (WAM) technique, and the results are presented in Table 4. The findings revealed that high initial cost was the most severe constraint, obtaining the highest WAM score of 4.29. This indicates that the substantial capital investment required for purchasing farm implements remains a major obstacle, particularly for small and marginal farmers who constitute the majority of the respondents.

Lack of finance or credit facilities ranked second with a WAM score of 4.14, followed by high repair and maintenance costs (4.05). These findings suggest that financial limitations continue to be a significant challenge not only at the time of purchase but also during the operational life of farm machinery. Limited access to institutional credit often discourages farmers from investing in modern farm implements, while high maintenance expenses further increase the overall cost of ownership.

Table 4: Barriers faced in purchase

Rank	Factor	WAM Score
1	High initial cost	4.29
2	Lack of finance / Credit facility	4.14
3	High repair & maintenance cost	4.05
4	High fuel consumption / Operating cost	3.95
5	Non-availability of timely after-sales service	3.86
6	Unsuitability to local soil / Crop type	3.71
7	Unavailability in the local market	3.14

High fuel consumption and operating costs (3.95) and the non-availability of timely after-sales services (3.86) were also identified as important constraints. These factors affect the long-term economic viability of machinery use and may discourage farmers from adopting advanced farm implements. The unsuitability of certain implements to local soil and crop conditions (3.71) was reported as a moderate barrier, indicating the need for location-specific machinery solutions. Among the identified constraints, unavailability of farm implements in the local market received the lowest WAM score (3.14), suggesting that market access is relatively less problematic compared to financial and operational challenges. Similar findings were reported by Dhila *et al.* (2026) ^[4], who observed that financial constraints were among the most important factors limiting the adoption of farm machinery.

The results indicate that economic barriers, particularly high purchase costs and inadequate access to finance, are the primary challenges faced by farmers in acquiring farm implements. Therefore, strengthening institutional credit support, expanding subsidy programmes and improving after-sales service networks can significantly enhance the

adoption of farm machinery in the study area.

4. Conclusion

The study revealed that farmers in Junagadh district are relatively well-equipped with tractors and basic farm implements, particularly cultivators, MB/disc ploughs and rotavators. However, the adoption of advanced and specialized farm machinery remains limited. The findings indicated that farmers' purchase decisions are primarily influenced by price/affordability, durability and quality, and field performance, highlighting the importance of economic and functional considerations in machinery selection. Among promotional tools, field demonstrations, word of mouth communication and dealer recommendations were found to be the most effective in influencing purchase decisions.

The study further identified high initial cost, lack of finance or credit facilities, and high repair and maintenance expenses as the major constraints faced by farmers in purchasing farm implements. These findings suggest that financial limitations continue to be a significant barrier to the wider adoption of agricultural machinery. To enhance farm mechanization, efforts should focus on improving access to affordable credit, strengthening after-sales services, ensuring timely availability of spare parts and promoting field-based demonstrations. A coordinated approach involving government agencies, financial institutions, manufacturers and extension organizations is essential for providing affordable and farmer-friendly mechanization solutions. Such initiatives can contribute to increased adoption of farm implements, improved farm productivity and sustainable agricultural development in the region.

References

1. Barman A, Toor MS. Demand and supply projections of food grains in India. *Journal of Agricultural Development and Policy*. 2017;27(2):75-80.
2. Bhure K, Kumar BG, Radhika P, Chary DS. Market research on factors influencing the buying decision on tractors by farmers in Adilabad district, Telangana. *Asian Journal of Agricultural Extension, Economics & Sociology*. 2021;38(9):113-120. doi:10.9734/AJAEES/2020/v38i930413.
3. Chauhan TT, Dudhagara CR, Mahera AB. Farmers' perception towards organic fertilizers in Kutch District of Gujarat, India. *Archives of Current Research International*. 2024;24(5):739-744. doi:10.9734/acri/2024/v24i5748.
4. Dhila D, Sapara H, Vasan R, Vahoniya DR, Bagda B, Sangada SG. Factors influencing farmers' purchase decisions and constraints in the adoption of farm implements in selected districts of Gujarat. *International Journal of Agriculture Extension and Social Development*. 2026;9(5):556-561. doi:10.33545/26180723.2026.v9.i5g.3625.
5. Farkade AH. Consumer's buying motives towards agricultural equipment: A study in Vidarbha region. *International Journal for Research in Emerging Science and Technology*. 2014;1(5):82-86.
6. Federation of Indian Chambers of Commerce and Industry, Ministry of Agriculture and Farmers Welfare.

- Transforming agriculture through mechanisation. In: 7th India International Agri & Dairy Machinery Industry Exhibition: Agrimach India 2019 Knowledge Report. New Delhi; 2015.
<https://ficci.in/public/storage/SPDocument/20682/agrimach.pdf>
7. Gupta H, Sharma N. Customer awareness and parameters that influence in purchasing the tractor. *International Journal of Commerce and Management Research*. 2015;1(1):22-25.
 8. IMARC Group. Agriculture equipment market size, share, trends and forecast by equipment type, application, sales channel, and region, 2025-2033. 2025.
<https://www.imarcgroup.com/agriculture-equipment-market>
 9. Jain A, Rathore R. Farmer buying behaviour toward major agri-inputs: Findings from Fazilka District of Punjab. *Economic Affairs (New Delhi)*. 2023;68(3):1373-1378.
doi:10.46852/0424-2513.3.2023.3.
 10. Mehta CR, Chandel NS, Bangale RA, Kumar M. Farm mechanization in India: Status and way forward. *AMA-Agricultural Mechanization in Asia, Africa and Latin America*. 2023;54(2).
 11. Patoliya DN, Vahoniya DR, Dodiya BA. Purchasing behaviour and problems faced by farmers in the adoption of biostimulants in selected talukas of Kutch District, Gujarat, India. *Archives of Current Research International*. 2025;25(7):182-188.
 12. Rajanikanth M, Gaurav K. Influence of reference group on tractor purchasing decision of farmers in Telangana. *Academy of Marketing Studies Journal*. 2023;27(5):1-12.
<https://www.researchgate.net/publication/371508569>
 13. Sathya SN. Consumer behaviour towards agricultural equipment: A study with reference to Erode district. *International Journal of Creative Research Thoughts*. 2022;10(4):148-158.
 14. Shaktiman Agro. About us. 2025.
<https://shaktimanagro.com/the-company/about-us/>
 15. Singh G. Modernization of agriculture in India: Part I. Farm mechanization. *Agricultural Situation in India*. 2000 Jan:5-12.