

Feasibility Index and Attributes of Farm Implements as Perceived by Farmers

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ABSTRACT

Farmers lay emphasis of different attributes of farm implements and the degree of emphasis laid by the farmers on various attributes affect their selection and purchase. Therefore, the study was conducted by selecting 288 representative farmers in the irrigated and rain-fed areas to study the feasibility index and perceived attributes of farm implements. The perceived feasibility index regarding the attributes of all farm implements was 69.00 per cent, in the irrigated area, while in rain-fed area it was 64.83 per cent with an overall feasibility index of 66.92 per cent. All the respondents perceived that relative advantage of farm implement affected the selection and purchase of farm implements, followed by ability to trial (99.65%), implements' durability (98.26%), implements' simplicity (97.22%) and initial cost of implements (94.44%). The resale value of farm implement did not affect the selection and purchase for a majority (86.11%) of the respondents. This may be because of sentimental and collecting tendency for the implements. Based on the findings, it has been established that input agencies should make durable implement at affordable price to farmers.

Keywords: Feasibility index, Attributes, Farm implements, Farmers, Irrigated, Rain-fed

INTRODUCTION

The technological improvements and innovations in Indian agriculture during the mid sixties have brought about revolutionary increase in agricultural production. In the context of increasing commercial farming, farm mechanization is very important and vital. Farm mechanization increased the output with timely operations and precision in input application. Farm mechanization saves time and labor, cuts down production costs, reduces post-harvest losses and boosts output and farm income (Singh *et al.*, 2011). Adoption or rejection of any technology immensely depends on the attributes or feasibility of that technology. Similarly, perceived attributes of farm implements affect their selection and purchase. This necessitated a close study of the feasibility index and perceived attributes of farm implements.

METHODOLOGY

For the irrigated area, Newasa and Rahuri tehsils of Ahmednagar and Pandharpur and Malshiras tehsils of Solapur districts were selected. For the rain-fed area, Karjat and Pathardi tehsils of Ahmednagar and Karmala and Mohol tehsils of Solapur districts were selected. A total of 288 representative farmers were selected from 16 villages of these 8 tehsils by identifying 18 farmers from each village using proportionate random sampling procedure. The data were collected through a specially developed interview schedule. The data were analyzed, tabulated and interpreted with suitable statistical instruments like frequency, percentage and arbitrary method. In order to find out the overall feasibility of the farm implements, a feasibility index of all the respondents was calculated as under:

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$$PFI = \frac{E (RA + S + A + T + IC + RV + CS + CRM + AS + D + B + AAI)}{P (RA + S + A + T + IC + RV + CS + CRM + AS + D + B + AAI)} \times 100$$

Where, PFI= Perceived feasibility index (for attributes of the farm implements)

E = Summation of Extent to which farm implement was rated feasible by all the respondents regarding the attributes (relative advantage, simplicity, triability of implement, initial cost of implement, resale value of implement, cost of spare parts, cost of repair and maintenance, availability of services and spare parts, durability of implement, brand / company/ manufacturer, accessibility and availability)

P = Summation of Maximum limit to which farm implement was rated feasible by all the respondents regarding the attributes (relative advantage, simplicity, triability of implement, triability, initial cost, resale value, cost of spare parts, cost of repair and maintenance t, availability of services and spare parts, durability, brand / company/ manufacturer, accessibility and availability)

Perceived attributes of farm implements referred to the degree of emphasis laid by the respondents on various attributes of farm implements while purchasing. A schedule was developed to measure this aspect. It included 12 attributes. The respondents were asked to state the relative importance given by them to each of the attributes on a three point continuum namely 'most important', 'important' and 'least important' with the weightings of 3, 2 and 1, respectively. Cumulative score for each respondent was worked out and they were classified into five categories on the basis of minimum and maximum obtainable score by using arbitrary method and attributes level is worked out.

RESULTS AND DISCUSSION

Feasibility index for the farm implements

Although the respondents possessed various farm implements and machineries, it was thought appropriate to understand their perceived feasibility index for the farm implements as a whole. The data presented in Table 1 reveals that, in the irrigated area, perceived feasibility index by all the respondents regarding the attributes of all farm implements was 69.00 per cent, while in rain-fed area it was 64.83 per cent and an overall feasibility index was 66.92 per cent. Therefore, it is concluded that the respondents perceived that the farm implement were more feasible for them. A technology having high feasibility index can be easily adopted by the respondents. Hence, perceived feasibility of farm implements was measured through twelve attributes viz., relative advantage of implement, simplicity of implement, triability of implement, triability of implement, initial cost of implement, resale value of implement, cost of spare parts of implement, cost of repair and maintenance of implement, availability of services and spare parts of implement, durability of implement, brand / company/ manufacturer of implement and accessibility and availability of implements. The findings are in line with the findings of Pandey *et al.* (2013).

Attributes of farm implements

Attributes of farm implements is the perceived feasibility of farm implement as perceived by the

Table 1: Distribution of the respondents according to feasibility index of farm implements

Details	Irrigated area (n = 144) (Maximum feasibility score: 5184)		Rainfed area (n = 144) (Maximum feasibility score: 5184)		Overall (N = 288) (Maximum feasibility score: 10368)	
	Actual feasibility (score)	Feasibility index (%)	Actual feasibility (score)	Feasibility index (%)	Actual feasibility (score)	Feasibility index (%)
Overall feasibility index of all farm implements	3577	69.00	3361	64.83	6938	66.92

respondent farmers. Here the term attributes of farm implements was operationalized as the qualities of farm implements directly affect or the respondent takes in to consideration while purchasing and or use of implements. Table 2 reveals that, in irrigated area, more than three fourth (77.08%) of the respondents perceived that farm implement were feasible for them, followed by most feasible (41.67%) and somewhat feasible (9.72%), while very few respondents (1.39%) perceived that farm implements were least feasible and not feasible (0.69%) for them. Similarly, in the rain-fed area majority respondents (72.22%) perceived that farm implement were feasible, followed by somewhat feasible (24.31%). Overall, it is concluded that about three fourth (74.65%) of the respondents perceived that farm implement were more feasible for them. This may be because the farm implements help in performing farm operations speedily, efficiently, uniformly relieving the farmers from the drudgery of physical work. Besides these, nowadays due to rapid growth of technology and speedily dissemination, good exposure to information sources and education level help the respondents to understand and adopt new things. These findings are in line with the findings of Nwaobiala and Ezech (2012) and Pandey *et al.* (2013).

Apart from these categories of attributes of implements, the respondents were categorized as per their response to attributes of implements in five point continuums i.e. (i) strongly affects, (ii) affects, (iii) least affects, (iv) not affects. The item-wise responses of

attributes of implements are presented in Table 3 and is observed that, all the respondents (100%) perceived that relative advantage of farm implement affected (Strongly affects and affects) the selection and purchase of farm implements, followed by triability of farm implements (99.65%), durability (98.26%), simplicity (97.22%) and initial cost (94.44%). The other attributes of farm implements majorly affected on selection and purchase of farm implements were, availability of services and spare parts of implement (67.00%), accessibility and availability (64.24%), cost of repair and maintenance (62.84%), brand/ company/ manufacturer (61.46%), triability (60.07%) and cost of spare parts (56.60%). Similarly, it is interesting to know that the resale value of farm implement didn't affect the selection and purchase of farm implements for majority (86.11%). This may be because of farmer's affinity and collecting tendency for the implements. These findings are in line with the findings of Nwaobiala and Ezech (2012). Grainger (2019) in his study found that there were twelve important factors while buying the tractors viz. dealer competency, design and quality, perceived value, dealership concerns, after sales competency, potential trouble and availability of spare parts. Similarly, Sharma *et al.* (2020) in their study reported that 80 per cent respondents gave priority to the brand of the product while purchasing and about one half of them gave preference to the product features. Naberia *et al.* (2015) in their study also concluded that low cost technologies

Table 2: Distribution of the respondents according to attributes of farm implements

S.No.	Attributes level	Respondents		
		Irrigated (n=144)	Rainfed (n=144)	Overall (N = 288)
1.	Least feasible (0 to 7)	1 (0.69)	0 (0.00)	1(0.35)
2.	Less feasible (8 to 14)	2(1.39)	0(0.00)	2(0.69)
3.	Moderate feasible (15 to 21)	14(9.72)	35(24.31)	49(17.01)
4.	More feasible (22 to 28)	111(77.08)	104(72.22)	215(74.65)
5.	Most feasible (29 to 36)	16(11.11)	5(3.47)	21(7.29)
	Total	144(100.00)	144(100.00)	288(100.00)
	Maximum Score	36	36	36
	Minimum Score	0	0	0
	Class interval	7	7	7

Figures in the parentheses indicate percentages

Table 3: Distribution of respondents according to statement wise response of attributes of implements affecting selection and purchase of farm implements by the farmers

S. No.	Attributes of Implements	Irrigated (n = 144)				Rainfed (n = 144)				Overall (N = 288)			
		SA	A	LA	NA	SA	A	LA	NA	SA	A	LA	NA
1.	Trialability of implement	129 (89.58)	15 (10.42)	0 (0.00)	0 (0.00)	111 (77.08)	32 (22.22)	1 (0.69)	0 (0.00)	240 (83.33)	47 (16.32)	1 (0.35)	0 (0.00)
2.	Initial cost of implement	110 (76.39)	20 (13.89)	10 (6.94)	4 (2.43)	116 (80.56)	26 (18.06)	2 (1.39)	0 (0.00)	226 (78.47)	46 (15.97)	12 (4.17)	4 (1.39)
3.	Relative advantage of implement	113 (78.47)	31 (21.53)	0 (0.00)	0 (0.00)	76 (52.78)	68 (47.22)	0 (0.00)	0 (0.00)	189 (65.63)	99 (34.37)	0 (0.00)	0 (0.00)
4.	Durability of implement	83 (57.64)	58 (40.28)	2 (1.39)	1 (0.69)	88 (61.11)	54 (37.50)	2 (1.39)	0 (0.00)	171 (59.38)	112 (38.88)	4 (1.39)	1 (0.35)
5.	Simplicity of implement	96 (66.67)	46 (31.94)	1 (0.69)	1 (0.69)	67 (46.53)	71 (49.31)	6 (4.17)	0 (0.00)	163 (56.60)	117 (40.62)	7 (2.43)	1 (0.35)
6.	Trialability of implement	71 (49.31)	53 (36.81)	12 (8.33)	8 (5.56)	18 (12.50)	31 (21.53)	64 (44.44)	31 (21.53)	89 (30.90)	84 (29.17)	76 (26.39)	39 (13.54)
7.	Availability of services and spare parts of implement	15 (10.42)	82 (56.94)	39 (27.08)	8 (5.56)	13 (9.03)	83 (57.64)	45 (31.25)	3 (2.08)	28 (9.70)	165 (57.30)	84 (29.18)	11 (3.82)
8.	Accessibility and Availability of Implement	9 (6.25)	72 (50.00)	56 (38.89)	7 (4.86)	14 (9.72)	90 (62.50)	40 (27.78)	0 (0.00)	23 (7.99)	162 (56.25)	96 (33.33)	7 (2.43)
9.	Brand/ Company/ Manufacturer of implement	48 (33.33)	56 (38.89)	18 (12.50)	22 (15.28)	22 (15.28)	51 (35.42)	46 (31.94)	25 (17.36)	70 (24.31)	107 (37.15)	64 (22.22)	47 (16.32)
10.	Cost of repair and maintenance of implement	16 (11.11)	66 (45.83)	57 (39.58)	5 (3.47)	11 (7.64)	88 (61.11)	41 (28.47)	4 (2.78)	27 (9.38)	154 (53.46)	98 (34.03)	9 (3.13)
11.	Cost of spare parts of implement	16 (11.11)	64 (44.44)	48 (33.33)	16 (11.11)	6 (4.17)	77 (53.47)	56 (38.89)	5 (3.47)	22 (7.64)	141 (48.96)	104 (36.11)	21 (7.29)
12.	Resale value of implement	7 (4.86)	13 (9.03)	43 (29.86)	81 (56.25)	6 (4.17)	14 (9.72)	44 (30.56)	80 (55.56)	13 (4.51)	27 (9.38)	87 (30.21)	161 (55.90)

(SA: Strongly affects, A: Affects, LA: Least affects, NA: Not affects)

(Figures in the parentheses indicate percentages)

taken under MAPWA programme had medium level of adoption by majority of the small landholding beneficiaries.

CONCLUSION

It can be concluded that majority of the farmer respondents perceived that in overall the farm implement were more feasible for them. The triability, durability, simplicity and cost were the major attributes of the farm implements that affect the selection and purchase of farm implements. Based on the findings, it is suggested that input agencies should manufacture durable implement at affordable price to farmers.

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REFERENCES

Grainger B. (2019). Factors influencing farmers' buying behaviour regarding agricultural tractors in the North West Province. Mini-dissertation (Master of Business Administration) North-West University, <http://repository.nwu.ac.za/handle/10394/33002>.

Naberia, S., Gautam, U.S. and Gupta, A.K. (2015). Psychological characteristics affecting the adoption of agricultural technologies, *Indian Journal of Extension Education*, **51**(3&4), 130-132.

Nwaobiala C.U. and Ezech C.I. (2012). Farmers' perception of simple mechanized farm implements used in crop production in Abia State, Nigeria, *The Journal of Agricultural Sciences*, **7**(3), 159-162.

Pandey, S., Sharma, P. and Sharma, R.K. (2013). Effectiveness of training on tubular maize sheller for reducing the drudgery of farmwomen, *Indian Research Journal of Extension Education*, **13**(2), 17-20.

Patil, S.D. (2015). Utilization of farm implements by the farmers. Ph.D. (Agri.) Thesis. Mahatma Phule Krishi Vidyapeeth, Rahuri.

Sharma, P., Riar, T.S. and Garg, L. (2020). Buying behavior and farmers' practices regarding agrochemicals use on rice crop in Punjab, *Indian Journal of Extension Education*, **56**(4), 87-91.

Singh, S.P., Singh, R.S. and Singh, S. (2011). Sale trend of tractors and farm power availability in India, *Agricultural Engineering Today*, **35**(2), 31-44.

Sivakumar, V. and Kaliyamoorthy, S. (2014). Factors influencing the purchase of agricultural tractors: An empirical study, *IOSR Journal of Business and Management*, **16**(1), 42-46.