

RESEARCH PAPER

Constraints in Farmers' Purchase Decisions of Agricultural Inputs in High Hills Temperate Wet Zone of Himachal Pradesh

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ABSTRACT

The study was conducted in the high hill temperate wet zone of Himachal Pradesh to investigate the information sources used and the constraints in farmers' purchase of agricultural inputs. Multi-stage random sampling technique was used to select a sample size of 448 households in the study area. Multiple response analyses and Kendall's coefficient of concordance were used for the study. The findings of the study revealed that timely non-availability of inputs in government stores, followed by the limited supply of inputs in government stores, high input prices, non-availability of the preferred package of inputs in markets, and fear of adulteration were the significant constraints experienced by the farmers in purchase of agricultural inputs. However, fellow/progressive farmers and private input dealers were the most commonly used source of information for purchased agricultural inputs. The results suggested that an increase in government funding for the development of input delivery systems can positively impact public awareness campaigns aimed at promoting better agricultural input use.

HIGHLIGHTS

- ① Farmers relied mainly on fellow/progressive farmers for the information related to agricultural inputs in the study area.
- ② Lack of technical knowledge and decision dependency on other farmers were the major individual constraints experienced by the farmers in the purchase of agricultural inputs.

Keywords: Agri-inputs, buying process, buying constraints, purchase decisions, buying behavior

Purchasing has become an important management task on the farm and farmers spend a more significant proportion of their revenue on farm inputs. Farmers use agricultural inputs to improve the growth of plants and maximize production. Moreover, the importance of purchased agricultural inputs has significantly increased in the recent past with the advancement in agriculture as this help the small farmers increase crop production, lowering the costs of cultivation and producing high-quality products for better price realization. Agricultural

inputs are any external source that is used to boost the yield of a crop and ranges from high-quality seeds to high-tech tractors. Seed, fertilizer, and crop protection products as well as seedlings, feeds and machinery that support crop and allied production are examples of agricultural inputs. Agricultural inputs have been classified into varied categories

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by different authors. Dogra and Ghuman (2007); Dharni and Singh (2011) classified agricultural inputs broadly into consumables and durables. Consumable inputs are the inputs that are consumed by the crops naturally and are required for farming, season after season. e.g., seeds, fertilizers, pesticides and insecticides *etc.* Whereas, the durable inputs are often mechanical and more technologically advanced and cannot be consumed by the crops naturally, like a tractor, thresher, power-tiller and pesticides implement *etc.* Moreover, Kool *et al.* (1997); Kumar and Kapoor (2017) also classified agricultural inputs into frequently purchased and infrequently purchased categories based on the purchase frequency.

Himachal Pradesh, the country's North-Western and Himalayan state is blessed with a diverse range of agro-climatic conditions, allowing for the cultivation of a wide range of crops in the state's various agro-climatic zones. It is the only state in the country with a rural population of 89.96 per cent (Anonymous, 2011). Agriculture is the primary source of income for the people of Himachal Pradesh and plays a significant role in the state's economy. Agricultural input retailers and government department extension agents supply farmers with products and services needed to grow their crops and business. These include seeds, feed, nutrients, pesticides, equipment and technology and also provide farmers with consultative services such as crop input information, spraying, which ranges from small size family-managed businesses to co-operatives and larger companies. Nevertheless, availability, accessibility, quality and price of agricultural inputs have all been major concerns for farmers in this sector and for this reason, a timely and adequate supply of agricultural inputs at reasonable prices is critical to the production of farm output. Undoubtedly, farmers' use of modern inputs is mainly dependent on the dissemination of information about them which is primarily driven by the marketing system. Information sources also play a significant role in farmers' purchase process and farmers' purchase process depends on the information they receive from various sources. Thus, to communicate adequately with the customers' sellers of farm inputs need to be aware of where farmers search for information related to agricultural inputs.

Hence, more insights into farmers' purchase process will come from identifying the constraints faced by the farmers in purchasing agricultural inputs. Moreover, studying these become relevant for government departments, agribusiness firms and their distributors, since they support farmers regularly and performing not only sales transactions of capital goods, spare parts and related maintenance services but also provide financial services and scientific expertise to the farmers so they can manage the production process more effectively and efficiently. So, in this context present study was conducted in the high hills temperate wet zone of Himachal Pradesh as this zone is significant agriculture and horticulture dominant zone of the state. Farmers of this region frequently purchase agricultural inputs to support their production processes.

METHODOLOGY

A multi-stage random sampling technique was used to select sampled households in the study area. In the first stage, four districts namely Shimla, Mandi, Chamba and Kullu, were selected purposively for the study as a more significant proportion of the area of these districts falls under the high hills temperate wet zone of Himachal Pradesh. In the second stage, a complete list of blocks fallen under the high hills temperate wet zone of the selected districts was prepared and one third of the blocks were chosen randomly from each selected district. In the third stage, a complete list of panchayats was prepared from each selected block and out of which four panchayats were selected randomly from each selected block. In the fourth stage, a complete list of villages was prepared from each selected panchayat and two villages were selected randomly from each chosen panchayat for the study. At the final stage of sampling, eight farmers using an equal allocation method were selected from each village constituting a sample size of 192 in the Shimla district, 64 in Mandi, 128 in Chamba and 64 in the Kullu district. Thus, a total sample size of 448 respondents was selected for the study. Primary data were collected from the significant decision-makers in each household on well-designed pre-tested schedules by survey method in the year 2020-21.

For the present study, frequently purchased inputs were selected based on the frequency of their

purchase by the farmers and seed, agrochemical and fertilizer were included in this category. To study the informational sources used by the farmers in the purchase of agricultural inputs, multiple response analysis was used and data were organized into three categories: frequency of responses, percentage of responses and percentage of cases. Whereas, to study the constraints faced by the farmers in the purchase of agricultural inputs, the farmers were asked to assign their response on 5 points Likert scale for each category of the constraints proposed to them (5 = Strongly agree, 4 = Agree, 3 = Neutral, 2 = Disagree and 1 = Strongly disagree). The mean scores for all the statements were calculated and the most influencing factors were identified through the ranks assigned to the factors having the highest mean value score was considered to be the major constraint faced by the farmers in the study area. Kendall's W statistic (Coefficient of Concordance) is a non-parametric test also used to assess agreement between the ranked constraints experienced by the farmers in the study area, whose value ranged from 0 (no agreement) to 1 (complete agreement). The following hypothesis was tested for the constraints as follows:

H_0 = There is no agreement among the constraints faced by the farmers in purchasing agricultural inputs

H_1 = There is agreement among the constraints faced by the farmers in purchasing agricultural inputs

The Kendall's coefficient of concordance was calculated for significance by using the following formula

$$W = \frac{12 \left[T^2 - \frac{\sum (T)^2}{n} \right]}{nm^2n^2 - 1}$$

Where,

T = sum of ranks for each constraint being ranked

m = number of ranking (Farmers)

n = number of constraints being ranked

RESULTS AND DISCUSSION

Demographic characteristics

Table 1 revealed that the average family size

of sampled farmers was 5.56 persons and the proportion of males was higher than that of females, with 52.46 per cent of males and 47.54 per cent of females. The majority of the farmers (54.69%) belonged to nuclear families and 45.31 per cent of farmers had joint families in the study area. The majority of sampled farmers were married (89.96%) and only (10.04%) were unmarried and 76.79 per cent of them belonged to the above poverty line and only 23.21 per cent belonged to the below poverty line. Education plays an extremely important role in the farmer's buying process as it influences the purchase decisions of the farmers. It helps to determine the extent of knowledge, managerial skill, decision-making ability and innovation etc. of the farmers and is also helpful in the adoption of new technology. It is observed from Table 1 that the literacy rate of the farmers in the study area was 89.73 per cent and among different levels of education, higher numbers of farmers were matriculated (25.22 %) followed by intermediate (21.43 %) and graduates and above (18.30 %), middle (13.62 %) and primary (11.16 %). Only 10.27 per cent of farmers were illiterate in the study area.

Table 1: Demographic profile of farmers in the study area (N=448)

Particulars	Frequency	Percentage
Average family size (No.)	5.56	
Male	235	52.46
Female	213	47.54
Family structure (No.)		
Joint	203	45.31
Nuclear	245	54.69
Marital status		
Married	403	89.96
Unmarried	45	10.04
Economic status		
APL	344	76.79
BPL	104	23.21
Educational status		
Illiterate	46	
Primary	50	11.16
Middle	61	13.62
Matriculate	113	25.22
Intermediate	96	21.43
Graduate and above	82	18.30
Literacy rate	89.73	

Occupational status		
Agriculture	284	63.39
Business	70	15.63
Service	57	12.72
Other	37	8.26
Average distance to nearest market (km)		
0-10	25	5.58
11 to 20	117	26.12
21 to 40	210	46.87
Above 40	96	21.43

About 63.39 percent of farmers in the study area had agriculture as their major occupation, followed by business (15.63 %), service sector (12.72 %), and others (8.26 %). Hence, it could be inferred that farming was the major occupation of most of the sampled farmers in the study area. Whereas, the distance to market is directly related to market access for the buying and selling of agricultural commodities. Distance from the market raises transportation expenses, increasing the input costs and lessening farmers' effective price for their output. It was observed that nearly 47 per cent of farmers travelled 21-40 kms for the procurement of farm inputs in the study area. About 26 per cent of farmers stated that the average distance to the nearest market for agricultural input was between 10 and 20 kms whereas, it was more than 40 kms for 21.43 per cent of farmers in the study area. Only 6 per cent of the farmers had near accessibility to the market in the study area.

Information Sources Used for Agricultural Inputs

Farmers require various kinds of information from various sources to improve the existing methods and adopt new technologies for increased output and profitability (Nikam *et al.* 2022). Rahman *et al.* (2020) reported that farmers' ability to search for information depends on the sources that are accessible to them. It is clear from table 2 that farmers of the study area preferred more personal sources of information to inform their purchase decisions about agricultural inputs. Fellow/progressive farmers (76.34%), were the main sources on which farmers relied for information related to agricultural inputs in the study area, followed by the private input dealer (53.35%), State agriculture/horticulture department extension staff

(44.64%), co-operative societies (39.29%) and SAU's/ KVK's (37.95%). About 13.39 per cent of farmers in the study area preferred advertisement as a source of information for agricultural inputs while articles in print media/magazines were assessed by 12.72 per cent of farmers. Only a small per cent of farmers used TV/radio (10.27%) for input information. Sharma *et al.* (2020) reported that the informal peer group discussion confirms the effectiveness of a specific product/innovation and makes a choice. Further, Kaniki (2001) also reported that most farmers relied on personal experience and informal social networks (family, friends, neighbours and colleagues) to meet their information needs.

Table 2: Information sources used for agricultural inputs by sampled farmers in the study area (N=448)

Sources of Information	Multiple Response Analysis		
	Responses		Per cent
	N	Per cent	of cases
State Agriculture/ Horticulture Department	200	15.50	44.64
SAU's/KVK's	170	13.18	37.95
Cooperative Societies	176	13.64	39.29
Private input dealers	239	18.53	53.35
Fellow/ Progressive farmers	342	26.51	76.34
Article in Print Media/ magazine	57	4.42	12.72
Advertisements	60	4.65	13.39
TV/Radio	46	3.57	10.27
Total	1290	100.00	

Constraints in Farmers' Purchase Decisions of Agricultural Inputs

The constraints faced by the farmers of the study area in purchasing agricultural inputs were identified and presented in table 3. The Kendall's 'W' was found 0.21, 0.29, 0.26, and 0.22 for Shimla, Mandi, Chamba and Kullu districts, respectively, and found significant at 5 per cent level. The null hypothesis was rejected in favour of the alternate hypothesis, which stated that the constraints in farmers' buying decisions for frequently purchased agricultural inputs are in agreement. Overall, Kendall's 'W' value of 0.11 indicates that there was an 11 per cent agreement between the farmers in the study area when it came to ranking the constraints related to these inputs. Furthermore, these agreements range from 21 per cent in the Shimla district to 29 per cent in the Mandi district.

Table 3: Constraints faced by the farmers in purchase of agricultural inputs in the study area

Constraints	Shimla		Mandi		Chamba		Kullu		Overall	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Individual constraints										
Lack of technical knowledge	4.11	II	4.17	I	4.57	I	3.58	III	4.17	I
Decision dependency upon retail chain holders	3.79	III	2.37	II	2.74	II	3.84	I	3.30	III
Decision dependency on other farmers	4.20	I	2.06	III	2.39	III	3.72	II	3.31	II
Infrastructural constraints										
Lack of Awareness of government schemes & subsidies	3.89	V	3.73	V	4.08	III	3.76	III	3.90	IV
Limited supply of inputs in government stores/shops	4.22	I	3.91	III	4.19	I	3.72	IV	4.09	II
Timely non-availability of inputs in government stores	4.16	II	4.58	I	4.10	II	4.44	I	4.24	I
Distant market for inputs	4.10	III	4.05	II	3.97	IV	4.07	II	4.05	III
Lack of credits/funds availability	4.03	IV	3.86	IV	3.83	V	3.39	VI	3.85	V
Limited farm consultancy provided by the input provider	3.28	VI	3.64	VI	3.77	VI	3.70	V	3.79	VI
Marketing constraints										
Shortage of inputs supply in the market	2.46	VIII	3.08	VIII	3.85	VII	2.37	VIII	2.93	VIII
High pricing of the input	4.25	I	3.66	VII	4.12	II	4.59	I	4.18	I
Lack of input variety/brand choice	3.83	VII	3.98	I	3.99	III	3.66	IV	3.87	III
Lack of discounts/offers	3.99	V	3.70	V	3.91	IV	3.51	VI	3.85	V
Non-availability of preferred packages of inputs	4.12	II	3.89	III	4.42	I	3.72	II	4.12	II
Lack of market information on inputs	4.02	IV	3.69	VI	3.87	VI	3.62	V	3.86	IV
Fear of adulteration	4.07	III	3.92	II	3.62	VIII	3.69	III	3.84	VI
Lack/Poor post-purchase services	3.92	VI	3.80	IV	3.88	V	3.45	VII	3.82	VII
Number of observations	192		64		128		64		448	
Kendall's W	0.21		0.29		0.26		0.22		0.11	
χ^2	633.18*		296.60*		524.48*		222.96*		755.11*	
Degrees of freedom	16		16		16		16		16	

*represents significance at $p < 0.05$.

Furthermore, a detailed analysis of table 3 revealed that, under various individual constraints in the Shimla district, decision dependency on other farmers related to purchasing frequently purchased inputs was the major constraint with a mean score of 4.20 and ranked first. Similarly in the Mandi and Chamba districts, lack of technical knowledge and decision dependency on retail chain holders were the prominent constraints faced by the farmers. However, in the Kullu district, decision dependency on retail chain holders and fellow farmers was the major constraint in purchasing inputs. Overall, it was observed that lack of technical knowledge (4.17) and decision dependency on other farmers (3.31)

were the two main constraints experienced by the farmers of the study area.

A cursory glance at various infrastructural constraints experienced by the farmers of the study area revealed that limited and timely non-availability of inputs (seed, agrochemicals and fertilizers) in government stores followed by distant markets and lack of awareness of government schemes & subsidies were the major problems in Shimla and Chamba districts. Whereas, the farmers of Mandi and Kullu districts faced similar problems in purchasing these inputs, that is, timely non-availability of inputs in government stores and distant markets for agricultural input. Further,

at an overall level, it was observed that timely non-availability of inputs (seed, agrochemicals & fertilizers) in government stores ranked first with a mean score (4.24) followed by the limited supply of these inputs in government stores (4.09), distant market (4.05), lack of awareness of government schemes and subsidies (3.90) and lack of credit (3.85). Nedumaran *et al.* (2020) in their study reported that the majority of small and marginal farmers use loans to purchase inputs such as seeds, fertilizers, and insecticides and also expressed confidence in inputs, mainly seeds and fertilizers, provided at subsidized rates by notified state government agencies.

Whereas, in the Shimla district, high price (4.25) was the major marketing constraint and was ranked first by the farmers, followed by the non-availability of the preferred package of inputs (4.12) and fear of adulteration (4.07). Lack of input variety/ brand choice (3.98), fear of adulteration (3.92), and non-availability of preferred packages of inputs (3.89) were the major marketing constraints faced by the farmers of Mandi district. However, in the Chamba and Kullu districts, the non-availability of preferred packages in the market, high prices, and lack of input variety/brand choice were the major constraints. The overall scenario of the study area showed that high price (4.18) followed by non-availability of the preferred package of inputs in the market (4.12), lack of input variety/brand choices (3.87), and lack of market information related to the inputs (3.86) were the major product and market-related constraints experienced by the farmers of the study area. Solanki *et al.* (2016) also found that major problems associated with agricultural inputs were related to the price, lack of expert advice, no discount, and lack of adequate availability of inputs, especially seeds, lubricants, fertilizer, oils, and pesticides at the right price right time (Lakshminarayan *et al.* 2022).

CONCLUSION

The findings of the study concluded that a timely and adequate supply of agricultural inputs at fair prices is of great importance in the production of farm output. It was observed that timely non-availability of inputs, limited supply of inputs in government stores, and distant market for the purchase of farm inputs were the major infrastructural constraints in

farmers' purchase decision of agricultural inputs in the study area. Therefore, the government should provide these inputs on time and at subsidized rates to the farmers as the prices are increasing very rapidly and affecting the production processes of farmers. Further, high prices, non-availability of preferred packages of inputs, lack of input varieties and brand choice, and lack of market information on the inputs were the major market-related constraints faced by the farmers. However, the findings of the study also put forth that lack of technical knowledge and decision dependency on other farmers were the major individual constraints experienced by the farmers in the purchase of agricultural inputs. It was observed that farmers were influenced by their peer group and family so some amount of training coverage on agricultural inputs may eventually reach larger groups. Therefore, it is suggested that extension services should be revamped and strengthened to cater to the existing needs of the farmers. On the other hand, factors such as a lack of information or knowledge about the government schemes and subsidies programs on inputs, fear of adulteration as well as cost considerations limit their application in agriculture. Therefore, it is suggested that awareness campaigns on improved agricultural input use can be positively influenced government investment in agricultural research, extension, credit and development of input delivery systems.

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