Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2582-2845.8588

ISSN: 2582 – 2845

Ind. J. Pure App. Biosci. (2021) *9*(1), 422-428

Indian Journal of Pure & Applied Biosciences

Peer-Reviewed, Refereed, Open Access Journal

Research Article

Analysis of Farmer's Decision towards Purchase of Chilli Seed in Guntur District of Andhra Pradesh

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Received: 9.01.2021 | Revised: 11.02.2021 | Accepted: 18.02.2021

ABSTRACT

Buying behavior is the process where individuals decides what, when, where, how and from whom to purchase goods and services. The study was undertaken in Guntur district of Andhra Pradesh about factors influencing farmers to purchase chilli seed. Through factor analysis technique , it was observed that offered quality by dealers was major influencing factor with mean score 6.36 followed by farm production factors with mean score 5.89, followed by risk factors, location and accessibility ,social influences, product image, product attributes with mean sores 5.61, 5.25, 5.03, 4.73, 4.56 respectively.

Keywords: *Factor analysis, Buying behaviour, Product, Mean score.*

INTRODUCTION

Chilli (botanically known as *Capsicum annuum* L.) are the most important horticultural commercial crops cultivated in the world. The top five growing countries are India, China, Pakistan, Ethiopia and Myanmar. The total area cultivated in India under chilli crop was 10.38 lakh ha with production of 50 to 60 per cent followed by China. Andhra Pradesh, Telangana, Maharashtra, Karnataka and Tamil Nadu are major chilli producing states in India which aggregate to nearly 75 per cent of the total chilli grown area and Guntur district of Andhra Pradesh stands first in chilli cultivation with an area of 8,381 hectare and production of 148.89 MT.

Majority of the small and marginal farmers cultivate the chilli crop with their innovative ideas on variety, fertilizer dose and agronomic practices. Chillies are cultivated by farmers throughout the year. It is a much simpler crop to cultivate with duration of 3 to 4 months which is a short duration crop and gives monetary returns immediately once after crop is harvested. It can survive on different soil types and several climatic conditions and plants are propagated by seed, often in nursery beds and then transplanted into fields later.

Cite this article: Hussain, K. A., Rani, S. U., & Ramana Murthy, B. (2021). Analysis of Farmer's Decision towards Purchase of Chilli Seed in Guntur District of Andhra Pradesh, *Ind. J. Pure App. Biosci. 9*(1), 422-428. doi: http://dx.doi.org/10.18782/2582-2845.8588

Information was collected about popular chili seed brands prevailing in the study area and the top eight brands were 355 BYADAGI, BSS- 355, VIKRANTH, GAYATRI-155, ROMY 21 VNR- 577. JINI 2626, US 341. Majority of the research studies are inclined towards production, distribution issues and a small attempt has been made on the buying behaviour aspects of the farmers. To fill up this gap, present study on "An analysis of farmer's buying behavior towards chilli seed in Guntur district of Andhra Pradesh'' has been undertaken.

MATERIALS AND METHODS

Purposively selected two mandals i.e Vatticherukuru and Sattenapalli which has maximum area under chilli crop cultivation and production. Further selected three villages in each mandal. Hence, total of 6 villages with 120 sample farmers and 15 dealers were selected for the study. The selected villages were Gudipudi, Nandigama, Peddamakkena, Anantavarappadu, Vatticherukuru and Lemallepadu. Statistical techniques like factor analysis and Likert scale technique were used.

Factor Analysis

The major objective to employ this factor analysis is to group the various identified information needs of farmers. Principal component analysis can accommodate many variables and reduce the information to a convenient size. Since the objective of the factor analysis is to represent each of the variables as linear combination of the smaller set factors, we can express this as

$$X1 = \lambda\ 11\ F1 + \lambda\ 12\ F2 + \ldots + \lambda\ 1m\ Fm + e1$$
$$X2 = \lambda\ 21\ F1 + \lambda\ 22\ F2 + \ldots + \lambda\ 2m\ Fm + e2$$
$$\ldots\ \ldots\ \ldots\ \ldots\ \ldots$$
$$\ldots\ \ldots\ \ldots\ \ldots\ \ldots$$
$$Xn = \lambda\ n1\ F1 + \lambda\ n2\ F2 + \ldots + \lambda\ nm\ Fm + en$$

Where,

X1 to Xn: Standardized scores

F1 – Fn: Standardized factor scores

λ11 – λmn: Factor loadings

e1-en: Error variance

For this study, a total of 24 variables on various aspects were selected. The consumers were asked to indicate their responses on a 7 point scale, whether they extremely important to not at all important.

To test the sampling adequacy, the Kaiser-Meyer-Olkin measure of sampling adequacy was calculated. The Bartlett's test of sphericity was employed to test the validness of factor analysis. The variables with communalities greater than 0.50 were retained. The factors with Eigen- values greater than 1.0 were considered and the analysis was conducted.

RESULTS AND DISCUSSION

Table 1: Importance of variables influencing chilli farmers decision to purchase seed

S.No	Variables	Mean score
1	resistance to pest and diseases,	6.83
2	seed quality	6.50
3	Profitability	6.34
4	High yield potential	6.33
5	Availability of land	6.18
6	Availability of farm labour	6.12
7	Availability of other farm inputs	6.11
8	Germination of seed	5.79
9	Soil suitability and climate conditions	5.52
10	Anticipated future yield	5.51
11	Uncertainty and fear about adulterants in the seed material	5.50
12	Uncertainty in yield potential	5.50
13	High cost of certified seed	5.50

14	Availability of seed in the village market	5.47
15	Dealer recommendation	5.43
16	Financial options in available with the dealer	5.36
17	Uncertainty of price in the market	5.33
18	Availability of cash to purchase seed	5.18
19	Peer group influence	5.17
20	Distance of shop	5.03
21	Brand image of seed	4.82
22	Popularity of image	4.65
23	Promotional strategies applied by private companies	4.50
24	Package available in quantities	2.82

(where 1.0 was least important and 7.0 was most important)

Mean score results in the table 1, show that resistance to pest and diseases was found to be the most important and highly preferred variable with the mean score 6.83 influencing the Guntur farmers decision to purchase chilli seed. However, there was no significant difference between this variable and the next three variables they seed quality, profitability and high yield potential with mean scores 6.50, 6.34 and 6.33 respectively.

Farm production variables such as land, labour and farm inputs were also important as availability of cheap and productive labour with good soil conditions will increase the productivity and reduce the harvest losses. Farm inputs like fertilizers and pesticides has direct influence on yield and cost of cultivation the quality of inputs used decides the yield potential of the crop. The mean scores of these are 6.18, 6.12 and 6.11 respectively.

There was significant difference in the next 13 variables. They are germination of seed, soil suitability and climate conditions, anticipated future yield, uncertainty and fear about adulterants in the seed material, uncertainty in yield potential, high cost of certified seed, availability of seed in the village market, dealer recommendation, financial options in available with the dealer, uncertainty of price in the market, availability of cash to purchase seed, peer group influence and distance of shop with mean scores of 5.79, 5.52, 5.51, 5.50, 5.50, 5.50, 5.47, 5.43, 5.36, 5.33, 5.18, 5.17 and 5.03 respectively.

The mean scores of brand image of seed, popularity of image, promotional strategies applied by private companies and package available in quantities with mean scores of 4.82, 4.65, 4.50 and 2.82 respectively.

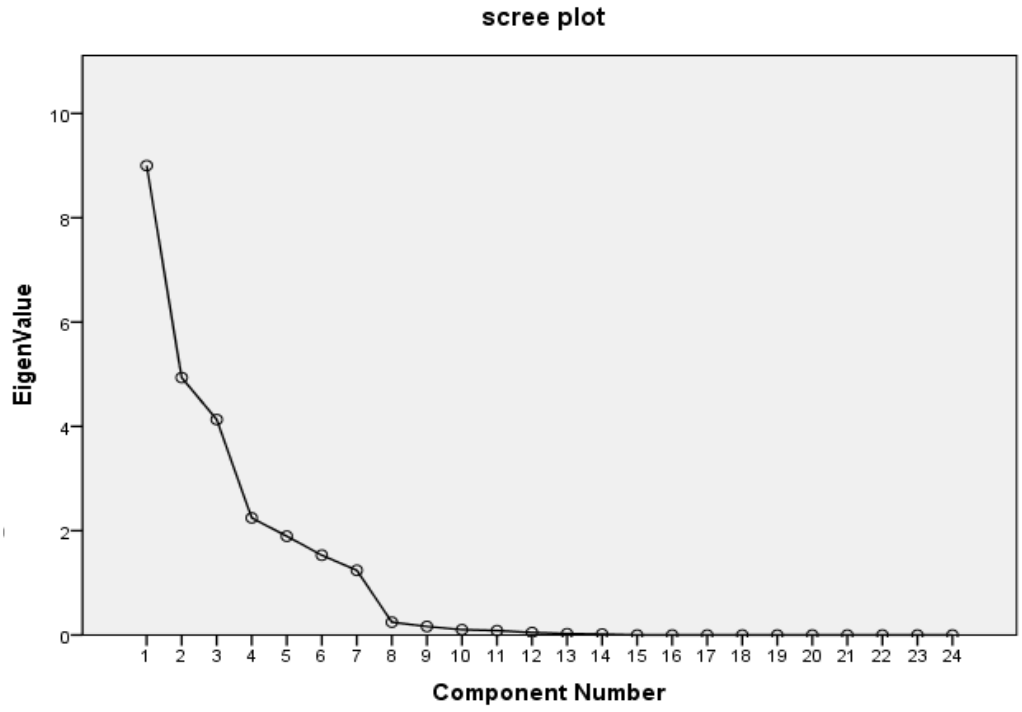

Fig. 1: Scree plot showing the factors influencing a farmer's decision to purchase chilli seed

Rotated component matrix

Table 2: Rotated Component Matrix

Variables	**Factors**						
	1	2	3	4	5	6	7
Brand image of seed	0.720						
Popularity of image	-0.916						
Peer group influence		0.761					
Promotional strategies		0.787					
Dealer recommendation		0.665					
Distance of shop			-0.914				
Availability of seed in the village market			-0.909				
Package available in quantities				0.916			
High cost of certified seed				0.823			
Financial options available with the dealer				0.914			
Availability of land					0.601		
Availability of farm labour					0.778		
Availability of other farm inputs					-0.607		
Availability of cash to purchase seed					0.664		
seed quality						-0.826	
resistance to pest and diseases,						0.832	
Germination of seed						0.862	
High yield potential						0.758	
Uncertainty of price in the market							-0.853
Uncertainty and fear about adulterants in the seed material							0.988
Uncertainty in yield potential							0.577
Soil suitability and climate conditions							0.817
Profitability							0.741
Anticipatedfuture yield							0.812
Factor Mean	4.73	5.03	5.25	4.56	5.89	6.36	5.61
Eigen values	9.00	4.93	4.13	2.24	1.895	1.53	1.24
% variance	37.50	20.56	17.21	9.35	7.89	2.69	1.91
Cumulative %	37.50	58.06	75.28	84.63	92.52	95.22	97.14

The rotated component matrix shows the factor loadings for each variable that were extracted. Grouping was done with the variables having factor loadings greater than 0.5 across the row. The result of the analysis presented in table 2. From the table 2 it could be observed that variables are loaded into seven factors. Among the variables, Fear about adulterants in the seed material of factor 7 has highest factor loadings with 0.988 and popularity of image of factor 1 and packaging of factor has second highest factor loadings with 0.916 whereas the variables like distance of the shop belonged to factor 3 and financial options belonged to factor 4 has factor loadings of 0.914.Variables such as availability of seed in the village market of factor 3, germination of seed of factor 6, uncertainty of price in the market of factor 7, resistance to pest and diseases of factor 6, seed quality (variety) offered by the dealer and retailers of factor 6, high cost of seed belonged to the factor 4, soil suitability and climate conditions of factor 7 and anticipated future yield of factor 7 were with factor loadings of 0.909, 0.862, 0.853, 0.832, 0.826, 0.832, 0.817 and 0.812 respectively.

Grouping of extracted factors

In order to evaluate the factors influencing the farmers while purchasing chilli seed brands the 24 factors were grouped into seven main which presented in the table 3 and table 4. Although it was possible to have as many as factors as the number of variables, but those

variables with Eigen values greater than one was considered for determining the number of factors. Therefore, with the help of cattell's scree plot, factors were determined (fig 1). There are seven factors with Eigen value greater than one and collectively accounted for 97.14 per cent of variation in the farmers responses as shown in the table 2.

Table 3: Grouping of extracted factors

	Factor	Variables	Factor loadings
Factor 1	Product image	brand image	0.720
		popularity of the image	-0.916
Factor 2	Social influences and experiences	peer group influence,	0.761
		promotional strategies	0.787
		Dealer recommendation	0.665
Factor 3	Location and accessibility	Distance of shop	-0.914
		availability of seed in the village market	-0.909
Factor 4	product attributes.	Packaging,	0.916
		high cost of seed	0.823
		financial options	0.914
Factor 5	farm production factors.	availability of land,	0.601
		availability of farm labour	0.778
		availability of other farm inputs	-0.607
		availability of cash to purchase seed	0.664
Factor 6	Offered quality	seed quality (variety) offered by the dealer and retailers, .	-0.826
		resistance to pest and diseases	0.832
		Germination of seed	0.862
		High yield potential	0.758
Factor 7	Risk factor	Uncertainty of price in the market, and	-0.853
		Fear about adulterants in the seed material,	0.988
		Uncertainty in yield potential	0.577
		Soil suitability and climate conditions,	0.817
		Profitability	0.741
		Anticipated future yield	0.812

Factor 1 (product image) consisted of two variables, brand image and popularity of the image which collectively explained the brand value of the product in the market.

Factor 2 (Social influences and experiences) loaded with three variables, peer group influence, promotional strategies and dealer recommendation which explained the services offered and promotional activities taken by the private companies to reach the farmers and to retain brand loyalty of the farmers.

Factor 3 (Location and accessibility) captured 2 variables they are, distance of shop and availability of seed in the village market.

Factor 4 (Product attributes) consisted of packaging, high cost of seed and financial options available with the dealer. Therefore, this group of variables was labelled as product attributes.

Factor 5 (Farm production factors) comprised of availability of land, availability of farm labour, availability of other farm inputs and availability of cash to purchase seed. Therefore, this factor was labelled as farm production factors.

Factor 6 (Offered quality) labelled as offered quality which consisted of variables like seed quality (variety) offered by the dealer and retailers, resistance to pest and diseases, Germination of seed and High yield potential. These factor helps the companies to retain the brand loyalty of the farmers and helps to attract other famers.

Factor 7(Risk factors) included 6 variables they are, Uncertainty of price in the market, fear about adulterants in the seed material, Uncertainty in yield potential, Soil suitability and climate conditions, Profitability and Anticipated future yield. Therefore, this group of variables was labelled as risk factor which explained all the associated risks faced by the farmers with seed, climate, yield and adulterants.

Ranking of Grouped Factors

The mean scores of each factor were calculated and ranking was given according to the scores obtained and presented in the table 4. It was found that the factor offered quality ranked first with the mean score of 6.36 followed by farm production factors with 5.89 mean score. Risk factor, location and

accessibility and social influences and experiences factors ranked 3, 4 and 5 with close mean scores of 5.61, 5.25 and 5.03 respectively. Factors like product image and product attributes were considered least by the sample famers ranked 6 and 7 with low mean score of 4.73 and 4.56 respectively compared to the other factor.

Table 4: Ranking of grouped factors

Factors	Mean score	Rank
Offered quality	6.36	1
Farm production factors.	5.89	2
Risk factor	5.61	3
Location and accessibility	5.25	4
Social influences and experiences	5.03	5
Product image	4.73	6
Product attributes	4.56	7

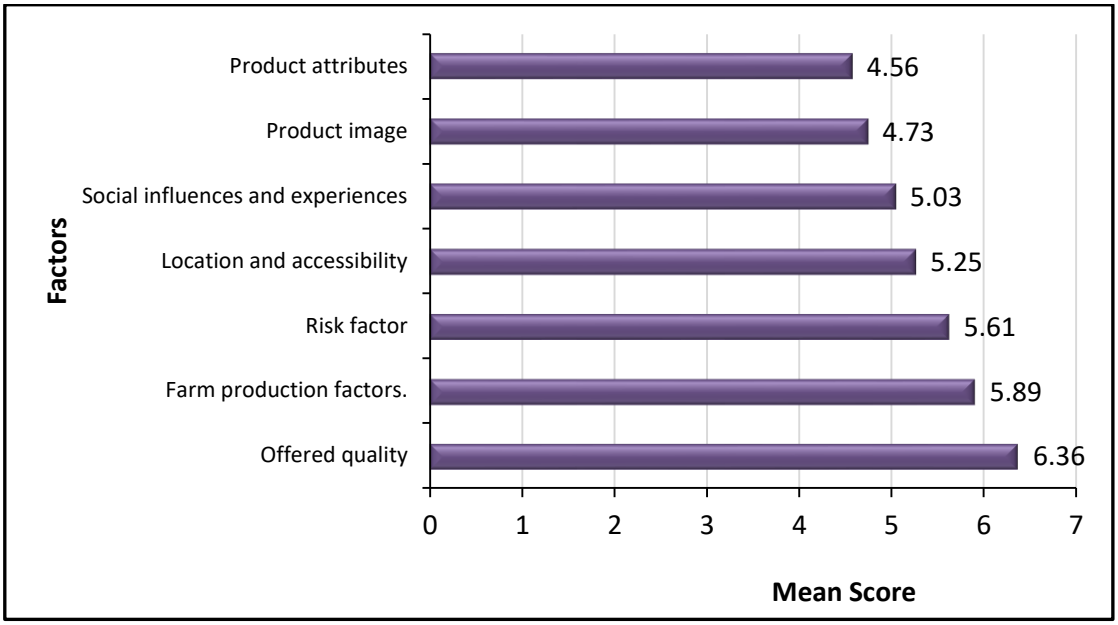

Fig. 2: Ranking of grouped factors

CONCLUSION

There are as many as 24 variables identified that influence farmer while purchasing chilli seed. Not all the variables listed have same impact on all the farmers. So, to know the important factors that are highly influencing the farmers factor analysis was used. Factor analysis revealed that among the 24 variables only 7 of them had eigen value greater than 1. It determines that 24 variables should be grouped into seven factors such as, product image, social influences and experiences, location and accessibility, product attributes, farm production factors, offered quality, risk factor. These seven factors collectively accounted for 97.14 per cent of variation in the farmers responses. Among the seven factor the most influencing factor was offered quality with meanscore of 6.36 followed by farm production factors with mean score of 5.89.

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