Organic Food Products : A Study on Perceptions of Indian Consumers

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Abstract

Organic food products are popular across Europe and United States of America. Asia is not far behind with India being a prominent player. The concept of organic food products is not new to Indian farmers. However, there is not much of a consumption taking place domestically despite the fact that India is one of the top 10 players in the world when it comes to the number of farmers engaged in organic cultivation. This study was conducted to understand the factors of consumer perception towards organic food products. The study covered both primary investigation and secondary literature review. Data was collected with the help of a structured questionnaire and was analyzed using percentage analysis and factor analysis to identify the factors of consumer perception.

Keywords: **demography, organic food products and factors of consumer perception**

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India is one of the Asian countries that have the largest land area under organic cultivation (Willer & Kilcher, 2009). Local markets have spawned in many of the big cities of India. Delhi, Bengaluru, Chennai, and Pune are some of the Indian cities which are witnessing increased internal consumption of organic products. For the period of 2012-2017, the Indian organic food market is expected to grow at a compounded annual growth rate of 19% (India organic food market forecast and opportunities, 2017).

Consumer interest in organic food has shown continued growth for the past two decades. Organic food sales in the U.S. grew from $ 1 billion in 1990 to $17 billion in 2006. Sales in 2010 represented a 7.7% growth over 2009 sales. Experiencing the highest growth in sales during the year 2010 were organic fruits and vegetables, which were up by 11.8% over 2009 sales (Organic Trade Association's 2011 Organic Industry Survey). Around the world, a total of 130 countries are engaged in producing certified organic food with 90 of them belonging to the developing countries having favorable environmental conditions for growing organic produce (Krystallis & Chryssohoidis, 2005).

The organic food market in India has come into existence and is beginning to display potential signs of growth. Country-specific research undertaken by A. C. Neilsen in 2006 has indicated that Indians are among the top 10 buyers of food with health supplements, but lack access to organic food products. High logistic costs and low volume operation has made organic food products a costly disposition. However, India is an emerging player in the export market with billions of export potential.

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Literature Review

Mukherjee (2008), in his study, conducted an eight city survey in the year 2006 which indicated a potential demand to the tune of INR 5.6 billion for organic food products in India. However, the domestic market is characterized by limited retail presence, low certified branded produce, and a small range of organic product offerings with respect to varieties, though potential growth is becoming evident.

Crutchfield and Roberts (2000) investigated that the last one decade has witnessed growing public concern towards issues such as health, nutrition, and safety. Williams and Hammitt (2001) identified that the introduction of genetically modified organisms, spread of Escherichia coli infections, etc. have lead to the association of risk with the consumption of conventionally grown produce amongst consumers. Birchard (2001) revealed that due to the spread of harmful infections as a result of the introduction of genetically modified organisms in conventionally grown produce, there is a greater interest generated towards organic food. According to Makatouni (2002), organic food is closely associated with not just health, but also with social, economic, and ecological sustainability.

Rimal, Moon, and Balasubramanian (2005) examined that there is plenty of international growth potential according to agricultural and food-industry experts. The organic food market in the South East Asian region constitutes an average consumption of 20% per annum, while the organic industry is valued at US $25 million .

Onyango, Hallman, and Bellows (2007) examined consumer preferences for organic food in the context of both socioeconomic variables, and the importance of food attributes relative to consumption decisions. Their results indicated that food attributes related to naturalness, vegetarian-vegan, and production locations were critical for enhancing regularity of organic food purchases. The familiarity food attribute was negatively associated with organic food purchases. The results further indicated that more females and young people bought organic on a regular basis, as did more liberal and moderately religious (who attended religious service at least once per month) respondents in the U.S.

Lea and Worsley (2001) identified that respondents were positive about organic food with regard to health (like lack of pesticide residues, vitamins, and minerals), the environment, and taste. Around 15% of the participants claimed to never purchase organic food products. Cost or price and availability were found to be the barriers to organic food consumption, and around 50% of the participants mistrusted organic labels. A retail survey indicated that organic food was priced at a premium of 80% in comparison to conventional food products. Health benefits were perceived as an attribute of organic food in this study.

Saleki, Seyedsaleki, and Rahimi (2012), in their study conducted in Iran, identified that purchase of organic food is determined by the influence of knowledge, quality, price consciousness, subjective norms, and attitude. This study applied the theory of planned behavior to search about organic buying behavior of purchasers in Iran. In this study, a sample of 150 respondents was chosen by simple random sampling technique. The results of regression analysis from this study indicated that knowledge, quality, price consciousness, and attitude had a positive and significant impact on purchase decision except for subjective norms influence on organic buying behaviors.

Kuhar and Juvancic (2008) found that purchase of organic food was most significantly influenced by their availability in retail outlets, followed by consumers' income, health and environmental considerations, and visual attractiveness of products. Based on this study, they developed an ordered probity model of consumer choice to quantify various determinants of purchase frequency for organically and integrally produced fruits and vegetables. The results showed that demand for organically and integrally produced fruit and vegetables could be further stimulated by targeted knowledge and awareness raising actions.

Atulkar and Kesari (2016) identified that a study of customer shopping experience was pertinent to identify feelings and measure customer perceptions towards purchase of products in a retail environment. Thus, it is imperative that retailers generate a positive shopping experience for customers using tangible and intangible benefits to induce purchase and consumption of organic food products. Bawa and Bathurutheen (2016) indicated

from their study that the efforts between that of store offerings and marketing communications must be synchronized to have a positive effect on consumer purchase and consumption of various products.

Need for the Study

Several studies have been conducted to understand the factors that positively contribute towards consumers' perceptions on organic food products. Most of these studies were restricted to European countries, America, and some South East Asian countries. Very few research studies have been conducted with an attempt to focus in detail on the various factors that influence consumer perception towards organic food products in India. Having reviewed several studies and having identified the gap, we felt an imperative need to undertake this present investigation.

Objectives of the Study

(1) To understand the demographic profile of consumers of organic food products,

(2) To extract the factors of consumer perception towards organic food products,

(3) To find and analyze the factors of consumer perception and association of consumer demography towards organic food products.

Research Methodology

Primary data for this study was collected using structured questionnaires from consumers who visited retail outlets from various parts of Bangalore city. Primary data collection started around January 2014 and went on for around four months. Secondary data from published materials was collected from various journals, reports, and magazines. Sample selection was done as per our discretion, focusing on consumers who were above 18 years of age and who had purchased organic food products at least once at the time when this study was conducted. This sample selection also ensured that consumers spared time and cooperated to fill the questionnaire provided to them. This study attempted to extract the factors of consumer perception towards organic food products and understand the association of demography and factors of perception.

(1) Instrument : For the present study, questionnaires were distributed to around 600 respondents, from whom 465 correctly completed questionnaires were obtained, yielding a response rate of 77.5% ; 135 questionnaires were incomplete or partially filled and hence could not be considered for analysis. Questionnaires were distributed personally to all respondents. Wherever required, the questionnaire was explained by us in vernacular language and was filled personally.

(2) Analysis : Data collected from the respondents was tested with adequate statistical techniques. Demographic background of the respondents was examined using percentage analysis. Principal component factor analysis was adopted to extract the factors of consumer perception towards organic food products. To ensure factor analysis, data was collected by presenting a 5-point Likert scale with scores ranging from 5 to 1 (5 - *Strongly Agree*, 4 - *Agree*, 3 - *Don't Know*, 2 - *Disagree*, 1 - *Strongly Disagree*).

Hypotheses

- **H_1:** There is no significant difference between gender and perception of health component of organic food products among the respondents.
- **H_2:** There is no significant difference between gender and consumer ideology towards consumption of organic food products.
- **H_3:** There is no significant difference between gender and perception of chemical-free component of organic food products among the respondents.
- **H_4:** There is no significant difference between age group and factors of perception among respondents towards organic food products.
- **H_5:** There is no significant difference between monthly household income and perception of health component of organic food products among the respondents.
- **H_6:** There is no significant difference between monthly household income and ideology towards consumption of organic food products among the respondents.
- **H_7:** There is no significant difference between monthly household income and perception of chemical-free component of organic food products among the respondents.
- **H_8:** There is no significant difference between average spend and perception of health component of organic food product among the respondents.
- **H_9:** There is no significant difference between average spend and ideology of the respondents towards consumption of organic food products.
- **H_{10}:** There is no significant difference between average spend and perception of chemical-free component of organic food products among the respondents.

Results and Discussion

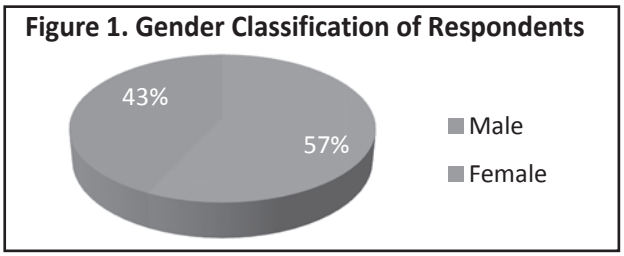
The demographic profile of the respondents was obtained by using four parameters namely gender, age group, monthly household income, and average spend on organic food products per month. The same is presented in the Table 1. From the Table 1, it is seen that males (57%) constituted majority of the respondents in the sample data when compared to females (43%). Most of the respondents belonged to the age group of less than 30 years of age (49.2%) while respondents above 50 years of age were the least (12.3%). It is also observed that majority of the respondents in the sample had a monthly household income of ₹ 30,000 - ₹ 50,000 (37.4%), while the average spend per month on organic food products belonged to the category of ₹ 500 - ₹ 1,000 (43.9%).

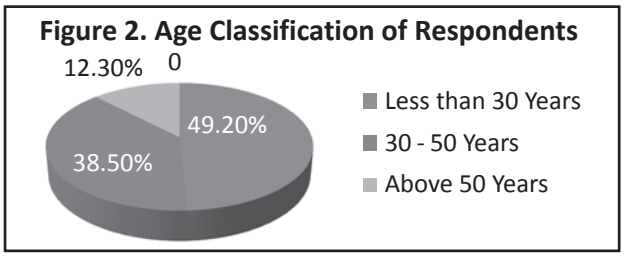
The data is presented graphically as well. The Figure 1 depicts the graphical representation of the respondents classified on the basis of gender composition. The Figure 2 depicts the graphical representation of the respondents classified on the basis of their age. The Figure 3 depicts the graphical representation of the respondents classified on the basis of their monthly household income. The Figure 4 depicts the graphical representation of the respondents based on their average spend per month on organic food products.

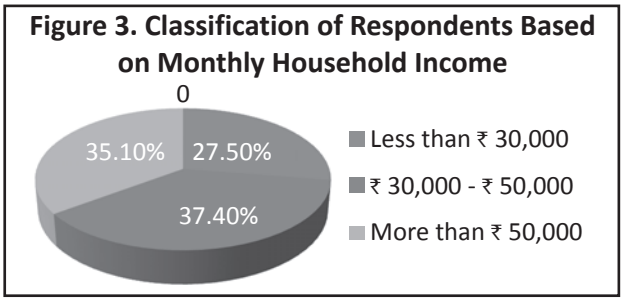
(1) Factor Analysis : Factor analysis is a data reduction tool. The main objective of using factor analysis is to determine the minimum number of common factors from the observed variables. Exploratory factor analysis was used for this purpose. Varimax rotation technique was applied to simplify the factor structures and to increase the

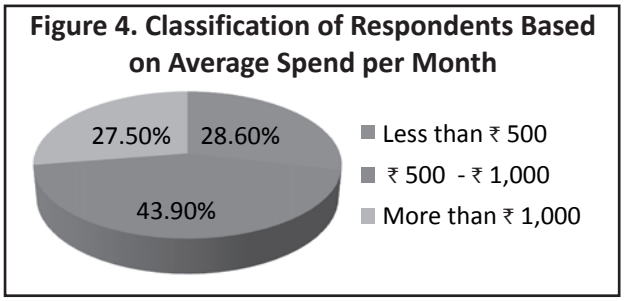
Table 1. Demographic Profile of the Respondents

Descriptive Statistics		Frequency	%
Gender	Male	265	57
	Female	200	43
	Total	465	100
Age Group	Less than 30 years	229	49.2
	30 - 50 years	179	38.5
	Above 50 years	57	12.3
	Total	465	100
Monthly Household	Less than ₹ 30,000	128	27.5
Income	₹ 30,000 - ₹ 50,000	174	37.4
	More than ₹ 50,000	163	35.1
	Total	465	100
Average spend	Less than ₹ 500	133	28.6
per month	₹ 500 - ₹ 1,000	204	43.9
	More than ₹ 1,000	128	27.5
	Total	465	100









interpretability of the factor solution obtained.

Bartlett's test of sphericity ($\chi^2 = 1680.846$, $p < 0.05$) indicates that it has not generated identity matrix and the value of Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.888, which is greater than 0.5 and this shows that it was feasibile to undertake factor analysis of the 20 items in the scale.

Principal component analysis was (PCA) was run on the 20-question questionnaire that measured the desired characteristics of organic food products from 465 respondents. The overall value of Kaiser-Meyer-Olkin (KMO) measure is 0.888. Bartlett's test of sphericity is statistically significant ($p < .0005$), indicating that the data was factorizable. PCA revealed three components, as has been indicated in the graphical representation in the Figure 5, that has Eigen values greater than one used for extracting the factors. Three factors were retained upon Eigen

Table 2. KMO and Bartlett's Test of Sampling Adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.888
kBartlett's Test of Sphericity	Approx. Chi-Square	1680.846
	Df	78
	Sig.	0

Figure 5. Scree Plot

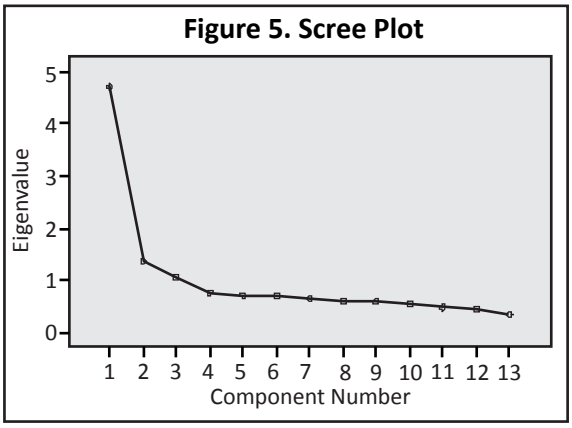


Table 3. Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.702	36.167	36.167	4.702	36.17	36.17	2.938	22.596	22.596
2	1.363	10.483	46.65	1.363	10.5	46.7	2.252	17.323	39.919
3	1.066	8.203	54.854	1.066	8.203	54.854	1.942	14.935	54.854
4	0.77	5.923	60.777						
5	0.726	5.585	66.362						
6	0.695	5.343	71.705						
7	0.652	5.015	76.72						
8	0.614	4.725	81.445						
9	0.591	4.549	85.995						
10	0.543	4.18	90.175						
11	0.478	3.674	93.849						
12	0.451	3.47	97.319						
13	0.349	2.681	100						

values of more than one, and the Eigen values represent the total variance explained by each factor. Varimax rotation was used to measure the individual factor loadings, and the results suggest that the Eigen value, for the extracted three factors, is greater than the recommended level of 1 (Table 2). This reveals that from the 13 items included in the factor analysis, three dimensions were extracted and emerged with a cumulative variance of 54.854 %. Hence, the three component solution explains 54.854 % of the variance. Visual inspection of the scree plot indicates that the three components should be retained. As such, three components were retained. Component loadings and communalities of the rotated solution are presented in the Table 3.

Principal component analysis and varimax rotation resulted in the formation of three factors (Table 3) explaining

Table 4. Naming of Factors

Factor No	Name of Factors	Variables	Factor Loadings
F1	**Health Benefits**	Organic food products are potentially healthy.	0.817
		Organic food products are safe for consumption.	0.798
		Organic food products are nutrient-rich.	0.677
		Organic food products are more natural than non-organic food products.	0.585
		Organic food products are free from contamination.	0.519
F2	**Consumer Ideology**	A growing concern for the environment makes me purchase organic food products.	0.743
		A variety of organic food products are available.	0.706
		I am ready to pay a premium to buy organic food products.	0.67
		Organic food products are tastier than non organic food products.	0.547
		Organic food products are more expensive than non organic food products.	0.508
F3	**Free from Chemicals**	Organic food products do not contain any food additives.	0.748
		Organic food products are unadulterated.	0.738
		Organic food products are not toxic when compared to non-organic food products.	0.644

Table 5. Reliability Statistics

Dimensions	No. of Items	Cronbach's Alpha
Healthy	5	0.787
Ideology	5	0.723
Chemical-free	3	0.655

a cumulative variance of 54.854 % with primary loadings of all the items whose values are greater than 0.5 to form the best possible factor structure.

'Health Benefits' has emerged as the most important determinant of the factors affecting consumer preference towards purchase of organic food products with a total Eigen value of 2.938 and variance of 22.596%. The Eigen value indicates the relative importance of each factor in accounting for this particular set of variables being analyzed. Major variables constituting this factor include health, safety, rich in nutrients, natural, and food free from contamination.

'Consumer Ideology' towards the concept of organic food products has been identified as the second most important determinant of the factors affecting their preference towards purchase of organic food products with a total Eigen value of 2.25 and of variance 17.3%. Major variables constituting this factor include a growing concern for the environment, availability of variety, ready to pay premium, balanced diet, and taste.

'Free from Chemicals' aspect of organic food products has emerged as the third most important determinant of the factors affecting consumer preference towards purchase of organic food products with a total Eigen value of 1.942 and variance of 14.94%. Major variables constituting this factor include no- additives, unadulterated, and non-toxic.

The reliability scale for all the three dimensions was calculated in order to see if the items were genuine or not (Table 5). Looking at the reliability coefficients of all the three dimensions, one of them has a coefficient that is slightly below the value of 0.7, that is, Chemical-free = 0.655. This could be the result of some items under this dimension being too similar. The other two dimensions show coefficients higher than 0.7, meaning that these dimensions comprising of various items show a true measure of consumer perception towards purchase of organic food products.

(2) One Way Anova : Analysis of variance (ANOVA) is based on the assumption that homogeneity of variance can be assured on each group sample. A one-independent variable experiment is called one-way ANOVA and comprises of a set of techniques for studying the cause-and-effect of one or more factors on a single dependent variable. If differences exist among the means, post hoc tests can be used to determine which means differ. Tukey's b range test, also known as Tukey's WSD (Wholly Significant Difference), is used to identify where exactly the differences lie in groups.

From the Table 6, it is seen that the factors Health Benefits and Free from Chemicals are not statistically significant with the gender of the respondents towards purchase of organic food products as the significance of *F* - value is greater than 0.05. However, both male and female respondents did not have the same opinion towards the factor Consumer Ideology as the significance of *F* value is less than 0.05. We can therefore conclude that both male and female respondents did have the same opinion on the factors Health Benefits and Free from Chemicals with respect to their consumption of organic food products.

↳ **H_1:** Statistically, there is no significant difference between gender and health component of organic food products among the respondents with a $p > 0.05$of 0.969. Therefore, we accept the null hypothesis.

↳ **H_2:** Statistically, there is a significant difference between gender and consumer ideology towards consumption of organic food products with a $p < 0.05$ of 0.044. Therefore, we reject the null hypothesis.

Table 6. Anova for Gender Group Differences and Factors of Perception

		Sum of Squares	*df*	Mean Square	*F*	Sig.
Health Benefits	Between Groups	.001	1	.001	.001	.969
	Within Groups	202.009	463	.436		
	Total	202.010	464			
Consumer Ideology	Between Groups	1.908	1	.908	4.061	.044
	Within Groups	217.498	463	.470		
	Total	219.406	464			
Free from	Between Groups	.035	1	.035	.078	.780
Chemicals	Within Groups	208.686	463	.451		
	Total	208.722	464			

Table 7. Anova for Age Group Differences and Factors of Perception

		Sum of Squares	*Df*	Mean Square
Health Benefits	Between Groups	1.600	2	.800
	Within Groups	200.410	462	.434
	Total	202.010	464	
Consumer Ideology	Between Groups	1.384	2	.692
	Within Groups	218.022	462	.472
	Total	219.406	464	
Free from Chemicals	Between Groups	1.663	2	.832
	Within Groups	207.058	462	.448
	Total	208.722	464	

↳ **H_3:** Statistically, there is no significant difference between gender and perception of chemical-free component of organic food products among the respondents with a $p > 0.05$ of 0.780. Therefore, we accept the null hypothesis.

From the Table 7, it is seen that respondents across the age group of less than 30 years, 30 - 50 years, & above 50 years were not significantly affected by the three factors of perception towards organic food products namely, Health Benefits, Consumer Ideology, and Free from Chemicals as the significance of *F* value is greater than 0.05. We can, therefore, conclude that respondents across the categories of various age groups had the same opinion on the factors of perception towards consumption of organic food products.

↳ **H_4:** Statistically, there is no significant difference between age group and factors of perception among respondents towards organic food products with a $p > 0.05$ (Brown-Forsythe). Therefore, we accept the null hypothesis.

From the Table 8, it is observed that the factors Health Benefits and Consumer Ideology are not significantly affected by the monthly household income of the respondents and their purchase of organic food products as the significance of *F* value is greater than 0.05. However, respondents across various categories of monthly household income did not have a similar opinion towards the Free from Chemicals aspect of organic food products as the significance of *F* value is less than 0.05. Therefore, marketers can adopt a single strategy when it comes to the marketing efforts aimed at respondents across different categories of monthly household income with respect to the factors Health Benefits and Consumer Ideology, but not for the factor - Free from Chemicals.

↳ **H_5:** Statistically, there is a no significant difference between monthly household income and perception of health component of organic food products among the respondents with a $p > 0.05$ of 0.092. Therefore, we accept the null hypothesis.

↳ **H_6:** There is a no significant difference between monthly household income and ideology towards consumption of organic food products among the respondents with a $p > 0.05$ of 0.218. Therefore, we accept the null hypothesis.

↳ **H_7:** There is a significant difference between monthly household income and perception of chemical-free component of organic food products among the respondents with a $p < 0.05$ of 0.043. Therefore, we reject the null hypothesis.

The post-hoc test for the factor - Free from Chemicals was done using Tukey's b to find the subsets that differ

Table 8. Anova for Monthly Household Income Group Differences and Factors of Perception

		Sum of Squares	*Df*	Mean Square	*F*	Sig.
Health Benefits	Between Groups	2.072	2	1.036	2.394	.092
	Within Groups	199.938	462	.433		
	Total	202.010	464			
Consumer Ideology	Between Groups	1.442	2	.721	1.528	.218
	Within Groups	217.964	462	.472		
	Total	219.406	464			
Free from	Between Groups	2.815	2	1.408	3.158	.043
Chemicals	Within Groups	205.906	462	.446		
	Total	208.722	464			

Table 9. Post - Hoc Test for the Factor "Free from Chemicals"

Tukey B		Subset for alpha = 0.05	
Monthly Household Income	***N***	**1**	**2**
Less than ₹ 30,000	128	3.6328	
₹ 30,000 - ₹ 50,000	174	3.7299	3.7299
More than ₹ 50,000	163		3.8303

Table 10. Anova for Average Spend per Month Group Differences and Factors of Perception

		Sum of Squares	*Df*	Mean Square	*F*	Sig.
Health Benefits	Between Groups	13.585	3	4.528	11.079	.000
	Within Groups	188.425	461	.409		
	Total	202.010	464			
Consumer Ideology	Between Groups	17.319	3	5.773	13.170	.000
	Within Groups	202.086	461	.438		
	Total	219.406	464			
Free from	Between Groups	12.560	3	4.187	9.839	.000
Chemicals	Within Groups	196.162	461	.426		
	Total	208.722	464			

from each other. The results in the Table 9 reveal that the respondent group with income less than ₹ 30,000 is grouped in subset 1 and the group with income more than ₹ 50,000 is grouped in subset 2. Therefore, we can understand that these two groups are clearly distinctive. The group with income between ₹ 30,000 – ₹ 50,000 is found in both the subsets. Therefore, it can be understood to be close to the group with income less than ₹ 30,000 and income more than ₹ 50,000.

From the Table 10, it is observed that all three factors - Health Benefits, Consumer Ideology, and Free from Chemicals are significantly affected by the average spend on organic food products by consumers as the significance of *F* value is less than 0.05. Therefore, respondents across various categories of average spend on organic food products did not have similar opinion towards all the three factors of perception towards organic food products. We can ,therefore, conclude that across factors, the marketers cannot adopt a single strategy when it comes to the marketing efforts aimed at respondents belonging to different categories of average spend on organic food products with respect to the three factors - Health Benefits, Consumer Ideology, and Free from Chemicals.

↳ **H_8:** Statistically, there is a significant difference between average spend and perception of health components of organic food product among the respondents with a $p < 0.01$ (Brown-Forsythe). Therefore, we reject the null hypothesis.

↳ **H_9:** There is a significant difference between average spend and ideology of the respondents towards consumption of organic food products with a $p < 0.01$. Therefore, we reject the null hypothesis.

↳ **H_{10} :** There is a significant difference between average spend and perception of chemical-free component of organic food products among the respondents with a $p < 0.01$. Therefore, we reject the null hypothesis.

The post-hoc test for the factor - Health Benefits was done using Tukey's b to find the subsets that differ from each other. The results in the Table 11 show that the group with an average spend of less than ₹ 500 is grouped in subset 1 along with the ₹ 500 - ₹ 1,000 category of consumers, while consumers who spent on an average more

Table 11. Post-Hoc Test for Average Spend per Month Group Differences and the Factor "Health Benefits"

Tukey B		Subset for alpha = 0.05	
Average spend per month	***N***	**1**	**2**
Less than ₹ 500	133	3.7353	
₹ 500 - ₹ 1,000	204	3.8402	
More than ₹ 1,000	128		4.1688

Table 12. Post - Hoc Test for Average Spend per Month Group Differences and the Factor "Consumer Ideology"

Tukey B		Subset for alpha = 0.05		
Average spend per month	***N***	**1**	**2**	**3**
Less than ₹ 500	133	3.2662		
₹ 500 - ₹ 1,000	204		3.5353	
More than ₹ 1,000	128			3.7766

Table 13. Post - Hoc Test for Average Spend per Month Group Differences and the Factor "Free from Chemicals"

Tukey B		Subset for alpha = 0.05	
Average spend per month	***N***	**1**	**2**
Less than ₹ 500	133	3.5539	
₹ 500 - ₹ 1,000	204	3.7042	
More than ₹ 1,000	128		3.9844

than ₹1,000 are in subset 2. Therefore, we can understand that these two groups are clearly distinctive.

Post-hoc test for the factor - Consumer Ideology was done using Tukey's b to find the subsets that differ from each other. It can be inferred from the results in the Table 12 that the group of consumers whose average spend on organic food products is in the category of ₹ 500 are in subset 1; those belonging to the category of ₹ 500 - ₹ 1,000 are in subset 2 ; and those who spent on an average of more than ₹ 1,000 are in subset 3. Therefore, we can understand that all the three groups are clearly distinctive.

The post-hoc test for the factor - Free from Chemicals was done using Tukey's b to find the subsets that differ from each other. The results in the Table 13 show that consumers whose average spend on organic food products is in the range of less than ₹ 500 are grouped in subset 1 along with the category who spent ₹ 500 - ₹1,000 , and the group with an average spend of more than ₹ 1,000 is in subset 2. Therefore, we can understand that these two groups are clearly distinctive.

(3) Multiple Linear Regression : Multiple linear regression analysis attempts to explain the level of significance of the impact of three variables on consumer preference towards the purchase of organic food products. Preference to always buy organic food products scores were regressed on three factors.

The Table 14 shows that all the considered independent variables namely, Health Benefits, Tasty, and Free from Chemicals jointly influence consumer buying as shown by the statistically significant *F*-value of 70.481 and the associated probability value (0.001). The multiple linear regression model with all the three predictors produced $R^2 = 0.314$; $F(3, 461) = 70.481$; $p < 0.001$ as can be seen in the Table 15. Therefore, 31.4% of the variation is there in the dependent variable because of changes in the independent variable, which can be explained by this model in predicting the outcome.

Table 14. ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
1	156.244	3	52.081	70.481	.000a
	340.65	461	0.739		
	496.895	464			

Table 15. Model Summary

Model	*R*	*R* Square	Adjusted *R* Square	Std. Error of the Estimate
1	.561	.314	.310	.85961

Table 16. Coefficients

Model		Un standardized Coefficients		Standardized Coefficients	*t*	Sig.
		B	Std. Error	Beta		
1	(Constant)	.064	.275		.233	.816
	Healthy	.053	.076	.034	.688	.492
	Tasty	.668	.070	.444	9.565	.000
	Chemical-free	.257	.073	.167	3.548	.000

According to the multiple linear regression analysis, *R* square for consumer preference to purchase organic food products has been found to be 0.314. This implies that 31.4% of the variance has been accounted for by the three independent variables namely, Health Benefits, Tasty, and Free from Chemicals ($F = 70.481,\ p < 0.1$).

From the Table 16, it is observed that the variables - Tasty and Chemical Free are statistically significant. The variable Health Benefits is not statistically significant. The estimated regression result shows that the taste of organic food products does have a significant positive effect on the purchase behavior of consumers. Significant at 1% (0.000) level, the result suggests that producers and marketers can concentrate their efforts in this sphere to increase consumption. The result further suggests that the "Chemical-free" factor in organic food products is also found to be a significant determinant (significant at 1% level) of consumer preference towards the purchase and consumption of organic food products.

However, we shall use the model as it is and try to predict the overall preference for purchase of organic food products, given all the independent variable values. The multiple linear regression equation is given by:

$$Y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + \ldots\ldots\ldots + b_n x_n + \text{S.E.}$$

where,

Y = dependent variable,
a = constant,
$b_1, b_2, b_3, \ldots\ldots\ldots b_n$ = regression coefficients,
$x_1, x_2, x_3, \ldots\ldots\ldots x_n$ = independent variables,
S.E. = standard error,

The final regression equation is given as:

Overall preference for purchase of organic food products = $a + b_1$ * Factor 1 + b_2 * Factor 2 + b_3 * Factor 3.

Therefore, **overall preference for purchase of organic food products = 0.064 + 0.668 * Taste + 0.257 * Chemical-free.**

Discussion and Conclusion

Fifty seven percent (57%) of the respondents in the sample data were males when compared to female respondents (43%) ; 49.2% of the respondents belonged to the age group of less than 30 years of age while respondents above 50 years age were the least at 12.3% ; 37.4% of the respondents in the sample had a monthly household income of ₹ 30,000 - ₹ 50,000 , while 43.9% of the respondents belonged to the ₹ 500 - ₹ 1,000 average spend per month on organic products category (Table 1).

Health Benefits emerged as the most important determinant of the factors affecting consumer preference towards purchase of organic food products. Major variables constituting this factor included health, safety, rich in nutrients, natural, and food free from contamination (Table 4). Consumer Ideology towards the concept of organic food products was identified to be the second most important determinant of the factors affecting their preference towards purchase of organic food products. Major variables constituting this factor included a growing concern for the environment, availability of variety, ready to pay premium, balanced diet, and taste (Table 4). Free from Chemicals aspect of organic food products emerged as the third most important determinant of the factors affecting consumer preference towards purchase of organic food products. Major variables constituting this factor included no- additives, unadulterated, and non-toxic (Table 4).

Respondents across all three age groups of less than 30 years, 30 – 50 years, & above 50 years did not have a difference of opinion towards all the three factors that affected their preference for organic food products namely - Health Benefits, Consumer Ideology, and Free from Chemicals (Table 7).

The factors - Health Benefits and Consumer Ideology were not affected by the monthly household income of the respondents and their purchase of organic food products. However, respondents across various categories of monthly household incomes did not have a similar opinion towards the factor - Free from Chemicals aspect of organic food (Table 8). Two groups are clearly distinctive. Respondents with a monthly household income of less than ₹ 30,000 are grouped in subset 1 and the group with more than ₹ 50,000 in income is in subset 2. The group with income between ₹ 30,000 - ₹ 50,000 is found in both the subsets (Table 9).

Respondents across various categories of average spend on organic food products did not have similar opinion towards all the three factors that affected their preference for organic food products (Table 10). Two distinct subsets emerged for the factor "Health Benefits" across the three categories of average spend per month namely: Respondents with an average spend of less than ₹ 500 are grouped in subset 1 along with the ₹ 500 - ₹ 1,000 category of consumers ; while consumers who spent on an average more than ₹ 1,000 are in subset 2 (Table 11).

Three distinctive subsets of consumers emerged for the factor "Consumer Ideology" wherein average spend per month on organic food products in the category of ₹ 500 is in subset 1; those belonging to the category of ₹ 500 - ₹ 1,000 are in subset 2, and those who spent on an average of more than ₹ 1,000 are in subset 3 (Table 12).

Two distinctive subsets of consumers emerged for the factor "Free from Chemicals" wherein average spend per month on organic food products in the range of less than ₹ 500 is grouped in subset 1 along with the category of respondents who spent ₹ 500 - ₹1,000 ; the group with an average spend per month of more than ₹1,000 is in subset 2 (Table 13).

All the three independent variables jointly influenced consumer buying (54.854% of the cumulative variance explained, Table 3) of which "Consumer Ideology" and "Free from Chemicals" are statistically significant (Table 4). The variable "Health Benefits" is not statistically significant.

The estimated regression result shows that "Consumer Ideology (Taste)" of consumers towards organic food products does have a significant positive effect on their purchase behavior when compared to the factor "Free from Chemicals".

Hence, the study revealed that consumers' overall preference for purchase of organic food products is primarily determined by two factors (Table 16) of perception that have emerged from the study :

Overall Preference = 0.064 + 0.668 * Taste + 0.257 * Chemical-Free

Managerial Implications

It is important to study factors that have an influence on consumer perception towards organic food products. This study would help producers and marketers of organic food products to understand the importance of various factors on the overall consumer preference towards consumption of organic food products. An understanding of consumer perception leads to the creation of clear and focused marketing strategies relevant to the chosen target group of consumers. This study will help marketers to focus on appropriate pricing and adopt the right promotional mix, and in particular, to increase the visibility of organic products and make a positive impact on consumer perception. This will further lead to an increase in potential sales for the domestic market. Consumers are both aware of the nutritional benefits of consuming organic food products and are also price sensitive at the same time. Marketers and producers should collectively work towards bringing quality produce in the market at an affordable price premium and gain market acceptance.

This study will help marketers formulate a strong communication plan in order to influence consumer perception towards organic food products. This study has identified health benefits, consumer ideology (taste), and chemical-free components to be the major influencing factors affecting consumers' preference for organic food products in Bangalore. Marketers can look into ways of increasing consumers' knowledge of organic food products and help them differentiate the benefits further.

Marketers must clearly use the "Consumer Ideology" factor of consumer perception if they have more men as the in-store walk in customers. For stores that receive customers belonging to the upper category of monthly household income, which is above ₹ 50,000, the factor "Free from Chemicals" component of organic food products must be emphasized upon. This can be done by mentioning the same on labels, pamphlets, and on in-store promotions. However, if stores receive customers belonging to an average monthly household income category of less than ₹ 30,000, then the use of the factor "Free from Chemicals" may not give the desired results. Therefore, producers and marketers of organic food products wanting to highlight the factor "Free from Chemicals" need to target consumers who belong to an average monthly household income of above ₹ 50,000. Marketers can adopt a single strategy when it comes to the marketing efforts aimed at both men and women with respect to the factors "Health Benefits" and "Free from Chemicals".

Limitations of the Study and Suggestions for Future Research

This study is based on the responses obtained from the respondents in the city of Bangalore only. Hence, the findings are not true for pan - Indian consumers. Also, the accuracy of the results is based on the assumption that all the responses given by the respondents were true.

This study has identified three factors namely - Health Benefits, Consumer Ideology (Taste), and Free from Chemicals to have a higher influence on consumers' perception towards organic food products in Bangalore. However, different geographies may be considered to check the efficacy of this study in terms of factors that have been identified. Future research can also be conducted to explore beyond perception in terms of purchase intention towards organic food products.

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