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Market Awareness, Consumer Perception, Preferences and Food Safety Concerns in Organic Food Products: A Legal and Commercial Analysis

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Abstract

Organic food products have an increased demand over the years due to a global shift towards a healthier life style organic foods are perceived by the consumers as more safer and nutritious. They are treated as environmentally sustainable also. India, with its rich agricultural heritage and diverse farming practices, has seen a growing interest in organic food products over the past decade. The country is among the largest producers of organic foods in terms of land area under organic cultivation and has emerged as a significant player in the global organic market. Various Government Initiatives has encouraged traditional farming practices, free from synthetic inputs, thus boosting the organic sector. Even though the production of organic products reports a growth, the consumer awareness and market demand for organic products remain uneven across India. This research is significant for multiple stakeholders, including consumers, regulators, producers, and retailers in the organic food industry. Gaining an understanding regarding the awareness, perception, and preference of consumers about organic food products will be helpful for the business to design their marketing strategies more effectively. By investigating the knowledge of the consumers regarding food safety and related laws, effort can be taken to fill the gap and provide suggestions for improving food safety standards in organic products. Moreover, the study will offer insights into consumer preferences, which will help organic food producers and retailers, align their offerings with consumer expectations

Objectives of the Study

- To study the level of awareness among consumers regarding organic food products

- To understand the perception and preference of consumers regarding organic food products
- To understand the knowledge of consumers regarding food safety in organic food products.
- To explore the legal framework governing organic food products and identify the challenges and opportunities in the promotion of organic food products.
- To make suggestions based on the study

Research Methodology

The study adopted a descriptive research design aimed at understanding and analyzing the awareness, perception, preferences, and food safety concerns related to organic food products among the consumers of Ernakulum district. The study will also analyse the impact of legal regulations on the production and distribution of organic food products. The study covered the consumers of Ernakulum District. Convenient sampling method was employed in the study. Primary Data was collected from 218 customers by administering a questionnaire among them. Data gathered from consumer surveys was analysed using statistical software like SPSS. Descriptive statistics like mean, percentages, and frequencies will be used to summarize consumer awareness, preferences, and willingness to pay by the consumers for organic food products. Hypothesis testing was conducted using Independent sample t test, correlation, regression, ANOVA etc. to identify the influence of demographic variables on the consumer awareness, preference and perception and the effect of awareness and perception on the preference of consumers towards organic food products.

Findings and Conclusion

The study aimed to have an understanding regarding the awareness, perception and preference regarding organic food products in Ernakulum District by giving special focus on the legal regulations regarding food safety in India. The study revealed that the consumers possess high level of awareness regarding organic food products and they have awareness regarding food safety aspects provided there is room for improvement in their understanding of specific food safety aspects and certifications. The influence of demographic factors like awareness, perception, and preference on various demographic variable like gender, age, educational qualification, employment status and area of residence of the respondents. Educational qualification of the respondents has created a difference in the awareness level of the respondents. Also the analysis showed that both awareness and perception are significant predictors of consumer preference for organic products. Interestingly, perception emerged as a slightly stronger driver of preference than awareness alone, highlighting the importance of shaping positive consumer perceptions about the quality, safety, and benefits of organic food. These findings align with the existing legal framework for organic food safety in India which emphasizes on certification and labelling standards. However, the observed variability in consumer understanding underscores the need for continued efforts to educate the public about these regulations and promote transparency in the organic food supply chain. Organic food production standards are to be specified separately by the Government. As per the regulations, the manufacture, sale and packing of organic food need to be certified and properly labelled. Such organic foods offered for sale in India have to comply with certain systems identified by the Government. The compliance may be in accordance with National Programme for Organic Production (NPOP), Participatory Guarantee System for India (PGS- India) or any other standards notified by the food authority. PGS- India focuses on participatory approach by all the stakeholders with a shared vision, transparency and trust. The system ensures responsibility

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through its core values viz shared ownership of the PGS, engaging stakeholders in both development and operational process. Further it tries to understand how the system works by encouraging direct communication between producers and consumers and other stakeholders.

Introduction

Organic food products have an increased demand over the years due to a global shift towards a healthier lifestyle organic foods are perceived by the consumers as more safer and nutritious. They are treated as environmentally sustainable also. India, with its rich agricultural heritage and diverse farming practices, has seen a growing interest in organic food products over the past decade. The country is among the largest producers of organic foods in terms of land area under organic cultivation and has emerged as a significant player in the global organic market. Various Government Initiatives has encouraged traditional farming practices, free from synthetic inputs, thus boosting the organic sector. Even though the production of organic products reports a growth, the consumer awareness and market demand for organic products remain uneven across India. The Indian consumers are becoming more and more health conscious. A shift towards organic food products is seen more in urban areas.

Indian consumers are gradually becoming more health-conscious and concerned about the safety of the food they consume, especially with the frequent reports of pesticide residue in conventionally grown crops. This has led to a shift towards organic foods, especially in urban areas. Organic products are often perceived as safer, more nutritious, and free from harmful chemicals, catering to the growing demand for clean, healthy, and ethical food options. The organic food market in Kerala is also experiencing a high growth. The Kerala Government has launched an Organic Farming Mission with an aim to improve organic farming, its certification and marketing.

However, there are several challenges like lack of consumer trust due to problems of mislabelling and false claims made by marketers. Consumers are often unsure of the authenticity of organic labels, which results in lack of confidence in organic products. Also, the higher price of organic foods compared to other alternatives is also a major reason for the low popularity of organic food products among middle- and low-income group people.

Review of Literature

Hughner et al. (2007) provided a comprehensive review of existing literature on organic food consumer motivations. They identify several key themes. They had identified that consumers perceive organic food as healthier and safer due to the absence of synthetic pesticides and fertilizers. Many consumers are motivated by the belief that organic agriculture is better for the sustainability of the environment. The focus on animal welfare and fair trade practices also drive the consumers towards organic food products. The authors also highlighted the influence of socio-demographic factors like age, income, and education on organic food consumption. Smith & Marsden (2004) explored the factors that might limit the growth of the organic food market in the UK. They argue that while consumer demand is increasing, many organic products are not readily available in mainstream supermarkets of UK. Also the expensive nature of the organic products put a restriction on it. Confusion among the consumers regarding the labelling is another problem highlighted in the paper. The authors suggest that addressing these challenges is crucial for the continued growth of the organic sector. Zanoli & Naspetti (2002) has identified the motivating factors for the purchase of organic products by the consumers in their paper. The factors identified were Naturalness, Healthiness and Environmental friendliness. These attributes are linked to personal values like security, health, and self-esteem. Mishra et al. (2019

found that many of the consumers are aware of the term "organic" but lack detailed knowledge about organic products. The people with awareness are always ready to pay a premium price for the product. Trust regarding the source and certification of organic products are a key factor. The authors also highlighted the need for consumer education and awareness campaigns to promote organic consumption in India. Das et al. (2021) explored the consumer behaviour in a specific region of India. They found that consumers are primarily concerned about pesticide residues and health risks associated with conventional food. Consumers also recognize the environmental benefits of organic agriculture but the high price restrict the consumers from purchasing organic products regularly. The authors also suggested that government support and initiatives are needed to make organic food more affordable and accessible.Yadav et al. (2017) used a survey to identify the key factors influencing organic food purchases in Delhi. They found that consumers perceive the organic products to be healthier and nutritious and have good quality. The authors emphasised on the need for improving the organic supply chain and distribution network. Padel & Foster (2005) explored the factors that restrict the customers with positive attitude to purchase organic food products regularly. The barriers identified were price, availability; habit and the lack of trust among consumers. The authors suggest that addressing these barriers through targeted marketing and communication strategies is crucial to bridge the gap between attitudes and behaviour. Tregear et al. (2007) had done an economic analysis to understand the demand for organic produce. They find that the consumers are more likely to buy organic products when the price premium is lower. Demand for certain organic products, like fruits and vegetables, is higher than for others. Awareness plays a key role in the purchase organic products. Lockie et al. (2002) explored the motivations behind organic food consumption in Australia. They find that health, environmental and ethical concerns lead the consumers to purchase organic food products

Significance of the Study

This research is significant for multiple stakeholders, including consumers, regulators, producers, and retailers in the organic food industry. Gaining an understanding regarding the awareness, perception, and preference of consumers about organic food products will be helpful for the business to design their marketing strategies more effectively. By investigating the knowledge of the consumers regarding food safety and related laws, effort can be taken to fill the gap and provide suggestions for improving food safety standards in organic products. Moreover, the study will offer insights into consumer preferences, which will help organic food producers and retailers, align their offerings with consumer expectations

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Research Methodology

Research Design

The study adopts a **descriptive research design** aimed at understanding and analysing the awareness, perception, preferences, and food safety concerns related to organic food products among the consumers of Ernakulum district. The study will also analyse the impact of legal regulations on the production and distribution of organic food products.

Population and Sampling Design

Population: The study covers the consumers of Ernakulum District

Sampling Method: Convenience sampling method was used for the study.

Sample Size: 218

Sources of Data: Primary data was directly collected from the consumers of Ernakulum District by administering a questionnaire among them. Secondary data was gathered from various Government Reports, research articles on organic food products and the consumer response towards it and laws and regulations regarding food security and organic food

Tool of Data Collection

Primary data was collected using a structured questionnaire to collect data from consumers. The questionnaire will consist of a mix of multiple-choice questions which include likert scale questions, and demographic related questions to gather information on the awareness, perception, and preferences of the consumers as well as their willingness to pay for organic food products. The survey will be administered among respondents across rural and urban areas using a combination of online and offline surveys.

Data Analysis

Data gathered from consumer surveys was analysed using statistical software like **SPSS**. Descriptive statistics like mean, percentages, and frequencies will be used to summarize consumer awareness, preferences, and willingness to pay by the consumers for organic food products. Hypothesis testing was conducted using Independent sample t test, correlation, regression, ANOVA etc. to identify the influence of demographic variables on the consumer awareness, preference and perception and the effect of awareness and perception on the preference of consumers towards organic food products.

Limitations of the Study

There is a restriction in the sample size chosen for the study

There is chance for bias in the response of consumers

Results and Discussions

Demographic Profile

59% of the respondents were female. About 50% of the respondents resided in urban areas and the other half of the respondents belong equally to rural and semi urban areas. Age representation was

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prominently from 46-60 age groups. The educational qualification was mainly PG (26.6%) and UG (33%). Majority (65%) of the respondents belong to employed category and 26.6% of them were professional.

Consumption Habit of Organic Food Products

The purchase of organic food products by the respondents can be ranked in the following order. Fruits and Vegetables topped the list with 87.2% of the respondents buying it. The second in the list were Dairy Products (35.8%) and Grains and Pulses (33%). Spices were also purchased by 29.8% of the respondents. The least preference was for packaged snack items i.e. (21.1%). Only 21.6% of the respondents make a daily purchase of any kind of organic food products. About 40% of them made a weekly purchase. 1/3rd of the respondents were only occasional buyers. Half of the respondents procure their organic products from supermarkets and 40% of them rely on local organic shops near their residential area. 44% of the respondents get to know about the organic food products from their peers, friends and relatives. 27% of them gathered information from social media. Patanjali and Conscious food were the most known brand among the respondents.

Awareness regarding Organic Food Products

To understand the level of awareness of the respondents regarding organic food products a 9-item scale was used. The responses of these items were summed up to calculate the overall awareness. The overall awareness score was 35.24 (SD = 5.093) out of a maximum 45, this represented 78.31% of the total score. This indicates a relatively high level of awareness among the respondents regarding organic food products. The Cronbach's alpha for the scale was .843. This represents a strong internal consistency of the scale items, and they are effective in measuring the construct

Mean	*Standard Deviation*	*Cronbach's Alpha*
35.24	***5.093***	***.843***

An analysis of the individual items was done to gather further insights and it was noticed that Awareness of what organic food products are ' received the highest mean score (M = 4.21, SD = .711) the respondents could clearly recognise organic food products. The lowest mean score of 3.65 was recorded for the statement ' Awareness of how organic food producers manage soil and water to ensure food safety.' showed a lower awareness among the survey participants regarding the farming aspects of organic food products. .

Awareness regarding food safety

The awareness level of the respondents regarding food safety was analysed using a 10-item scale. The total mean score of the food safety awareness was 37.39 with a standard deviation of 6.70 out of 50 and this indicates that the participants possess an above average knowledge regarding the food safety concerns in organic food products. A Cronbach's alpha of .877 was also recorded which represent high internal consistency

Mean	*Standard Deviation*	*Cronbach's Alpha*
37.39	***6.70***	***.877***

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All most all the individual items in the scale recorded a mean score of 3.62 and above. The highest mean score was recorded for the statement that they will be cautious about the place of purchase of food products to ensure the safety. (Mean score 3.90) The respondents are doubtful regarding their ability to read organic food labels and understand regarding the safety and quality (3.62)

Analysis of perception regarding organic products

An analysis of the overall score of perception shows a high level of positive perception among the respondents towards organic farming. Out of 55, the mean score of the perception scale was 55 and it represents that a good percentage of respondents have a favourable view regarding organic food products. Analysis of the Cronbach's alpha demonstrates a very good internal consistency and it suggests that the scale is very effective in measuring the perception of the respondents. The standard deviation of 6.43 indicates that there is variability in the perception of respondents regarding organic food products and all of them do not hold the same level of positive perception towards it.

Mean	***Standard Deviation***	***Cronbach's Alpha***
43.50	***6.43***	***.888***

The highest mean score was recorded for the statement 'Consuming organic food products is better for the environment' (M = 4.11, SD = .768), indicating strong agreement among participants regarding the role of organic farming in ensuring sustainable environment. . It can be considered as an indication that the consumers perceive a clear link between organic food consumption and environmental protection. The lowest mean score of 3.66 was recorded for the statement 'Organic food products are more closely monitored for food safety than conventional products'. This shows a lower agreement among the survey participants regarding the monitoring of food safety in organic products. This can be checked using the specific questions addressing the awareness of respondents regarding food safety.

Preference of customers towards organic food products

The preference scale represented a mean score of 14.96 with a standard deviation of 2.84 out of 20. On an average, participants demonstrated a moderately high preference for organic food products, scoring approximately 75% of the total possible points. The standard deviation of 2.84 suggests a moderate degree of variability in the preferences of organic food products, i.e. some respondents have more preference towards organic products compared to the other respondents. The

Cronbach's alpha for the preference scale was .771, suggesting an acceptable internal consistency among the items in the scale.

To summarise, the descriptive analysis revealed that there is high level of awareness among the respondents regarding organic food products. They also possess very high level of food safety awareness also. Overall, a positive perception is displayed by the respondents and the preference to organic food products in also high. However, variation is observed in almost all the constructs and this requires further investigation to the matter that whether these variability is caused by the influence of demographic factors on the overall awareness, food safety awareness, perception and preference of the respondents.

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Hypothesis Testing

The analysis of descriptive statistics revealed as variability in the awareness, food safety awareness, perception, and preference for organic food products among participants (refer the standard deviation of all the constructs in the previous section). We can examine some having very high level of awareness, perception and even preference. So in order to further investigate the factors contributing to these variations, a series of hypotheses were tested to examine the influence of demographic variables, such as age, gender, education level, location, and employment status, on the awareness, food safety awareness, perception and preference of respondents towards organic food products.

Hypothesis testing on Awareness Level of the respondents regarding organic farming

Null Hypothesis 1: There is no significant difference in awareness levels based on age.

Variable	***Overall Awareness***
Age	***.087***
p-value	***.200***
Note.p > .05	

From the analysis it can be observed that there is no significant relationship between the age and the awareness level of the respondents.

Null Hypothesis 2: There is no significant difference in awareness levels based on gender.

Group	***Mean***	***SD***
Male	***36.49***	***5.481***
Female	***34.45***	***4.665***

Construct	***t***	***df***	***p***
Awareness	***2.73***	***216***	***0.007***

An independent samples t-test was conducted to examine the influence of gender on awareness of organic food products. Levene's test indicated unequal variances (p = .039), so the t-test results for unequal variances were used. The results revealed a significant difference in awareness scores between males (M = 36.39, SD = 5.481) and females (M = 34.45, SD = 4.665), t(216) = 2.732, p = .007. From the mean score comparison it can be understood that males had significantly higher awareness scores than females

Null Hypothesis 3: There is no significant difference in awareness levels based on educational qualification.

ANOVA					
Overall Awareness of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	754.880	4	188.720	8.249	.000
Within Groups	4873.235	213	22.879		
Total	5628.115	217			

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Based on the analysis, it can be understood that the p-value is less than .05, and hence the null hypothesis is rejected. This means that there is a statistically significant difference in awareness levels regarding organic farming based on educational qualification of the respondents. The higher F-statistic of 8.249 further supports this conclusion, and it suggest that the differences in awareness levels between the education groups are relatively large compared to the variability within each group.

Null Hypothesis 4: There is no significant difference in awareness levels based on employment status

ANOVA					
Overall Awareness of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	105.843	2	52.922	2.060	.130
Within Groups	5522.272	215	25.685		
Total	5628.115	217			

Since the p value is more than .05, there is no statistically significant difference in the awareness levels of organic food products based on employment status

Null Hypothesis 5: There is no significant difference in awareness levels based on area of residence

ANOVA					
Overall Awareness of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	67.721	2	33.860	1.309	.272
Within Groups	5560.394	215	25.862		
Total	5628.115	217			

Since the p value is more than .05, there is no statistically significant difference in the awareness levels of organic food products based on residential status

Hypothesis testing on Food Safety Awareness Level of the respondents regarding organic farming

Null Hypothesis 1: There is no significant difference in the food safety awareness level based on age.

Variable	***Overall Awareness***
Age	***-.001***
p-value	***.990***
Note.p > .05	

The correlation analysis indicated a very weak negative correlation exists between age and the food safety awareness of the respondents (r=.001) and also the p value of .990 confirms that the relationship is not statistically significant. So it is only by chance that the awareness level is low as the age increases

Null Hypothesis 2: There is no significant difference in food safety awareness level based on gender.

Group	Mean	SD
Male	38.74	7.338
Female	36.47	6.091

Construct	t	df	p
Awareness	2.493	216	0.013

The p value of 0.013 is less than the criteria of .05. Hence the null hypothesis is rejected and there is statistically significant difference in food safety awareness levels between males and females. The positive t-value (2.493) suggest that males has a higher mean food safety awareness score than females

Null Hypothesis 2: There is no significant difference in food safety awareness level based on educational qualification.

ANOVA					
Overall Food Safety Awareness of the Respondents					
	Sum of Squares	***df***	***Mean Square***	***F***	***Sig.***
Between Groups	***1728.680***	***4***	***432.170***	***11.462***	***.000***
Within Groups	***8031.393***	***213***	***37.706***		
Total	***9760.073***	***217***			

Since the p-value is less than .05, the null hypothesis of there is no significant difference in food safety awareness based on the educational qualification of the respondent is rejected. There is statistically significant difference based on their educational qualification. A very higher value of the F- statistic of 11.462 also suggest the same that the differences in food safety awareness levels between the education groups are relatively large compared to the variability within each group.

Null Hypothesis 2: There is no significant difference in food safety awareness based on employment status

ANOVA					
Overall Food Safety Awareness of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	433.758	2	216.879	5.000	.008
Within Groups	9326.315	215	43.378		
Total	9760.073	217			

The p-value of less than 5 i.e. .008 suggests a significant difference in the food safety awareness of the respondents based on their employment status also. The difference between the groups is much higher than the difference with in the group based on the F statistic of 5.000

Null Hypothesis 2: There is no significant difference in food safety awareness level based on area of residence

ANOVA					
Overall Food Safety Awareness of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	326.591	2	163.296	3.722	.026
Within Groups	9433.482	215	43.877		
Total	9760.073	217			

Since the p value is .026 and F statistic is 3.722 it can be concluded that area of residence has a significant impact on overall food safety awareness of organic food products. People living in different areas have varying levels of awareness regarding food safety considerations related to organic food.

Hypothesis testing on perception of the respondents regarding organic farming

Null Hypothesis 1: There is no significant difference in the perception based on age.

Variable	Overall Awareness
Age	.005
p-value	.941
Note.p> .05	

The test confirms that there is no statistically significant relationship between the age of the respondent and their perception since the p value is .941. The r value of .005 indicates a very weak correlation

Null Hypothesis 2: There is no significant difference in the perception based on gender.

Group	Mean	SD
Male	44.69	6.893
Female	42.69	5.988

Construct	t	df	p
Awareness	2.273	216	0.024

The p-value of 0.024 is less than the typical significance level of 0.05. This means that here is a statistically significant difference in the perception of organic food products between males and females. The positive t-value (2.273) indicates that males possess a positive perception than females.

Null Hypothesis 2: There is no significant difference in the perception based on educational qualification.

ANOVA					
Overall Perception of the Respondents					
	Sum of Squares	***df***	***Mean Square***	***F***	***Sig.***
Between Groups	***814.064***	***4***	***203.516***	***5.308***	***.000***
Within Groups	***8166.431***	***213***	***38.340***		
Total	***8980.495***	***217***			

The p value is .000 which suggests a statistically significant difference in the perception of the respondents based on their educational qualification. The higher F value of 5.308 also indicates the difference of perception between various educational qualification groups.

Null Hypothesis 2: There is no significant difference in the perception based on employment status

ANOVA					
Overall Perception of the Respondents					
	Sum of Squares	***df***	***Mean Square***	***F***	Sig.
Between Groups	***452.444***	***2***	***226.222***	***5.703***	.004
Within Groups	***8528.051***	***215***	***39.665***		
Total	***8980.495***	***217***			

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The p value is .004 which suggests a statistically significant difference in the perception of the respondents based on their educational qualification. The higher F value of 5.703 also indicates the difference of perception based on the employment status of the respondents.

Null Hypothesis 2: There is no significant difference in the perception based on area of residence

ANOVA					
Overall Perception of the Respondents					
	Sum of Squares	***df***	***Mean Square***	***F***	***Sig.***
Between Groups	***139.643***	***2***	***69.821***	***1.698***	***.185***
Within Groups	***8840.853***	***215***	***41.120***		
Total	***8980.495***	***217***			

The p value is more than .05, hence we fail to reject the null hypothesis and there is no significant difference in the perception of the respondents based on their area of residence.

Hypothesis testing on preference of the respondents regarding organic farming

1. Null Hypothesis 1: There is no significant difference in preference based on age

Variable	Overall Awareness
Age	.0072
p-value	.287
Note.p > .05	

A correlation analysis was conducted to understand the relationship between age and overall perception regarding organic food products. The results showed a very weak and non-significant positive correlation between the two variables (r = 0.072, p = 0.287). This suggests that age is not a significant factor associated with awareness levels.

Null Hypothesis 2: There is no significant difference in preference based on gender.

Group	***Mean***	***SD***
Male	***15.40***	***3.323***
Female	***14.67***	***2.428***

Construct	***t***	***df***	***p***
Awareness	***1.791***	***216***	***0.075***

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From the analysis it is understood that there is no statistically significant difference in preference for organic food products between males and females.

Null Hypothesis 2: There is no significant difference in preference based on educational qualification.

ANOVA					
Overall Preference of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	203.372	4	50.843	6.980	.000
Within Groups	1551.404	213	7.284		
Total	1754.775	217			

There is statistically significant difference in the preference towards organic food products based on their educational qualification. p value is .000 and F statistic is 6.980. It indicates that there is variance in the preference of various educational groups.

Null Hypothesis 2: There is no significant difference in preference based on employment status

ANOVA					
Overall Preference of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	101.741	2	50.871	6.616	.002
Within Groups	1653.034	215	7.689		
Total	1754.775	217			

The p value is .002 which suggests a statistically significant difference in the perception of the respondents based on their educational qualification. The higher F value of 6.616 also indicates the difference of perception based on the employment status of the respondents.

Null Hypothesis 2: There is no significant difference in preference based on area of residence

ANOVA					
Overall Preference of the Respondents					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31.834	2	15.917	1.986	.140
Within Groups	1722.941	215	8.014		
Total	1754.775	217			

The p value is more than .05, hence we fail to reject the null hypothesis and there is no significant difference in the perception of the respondents based on their area of residence.

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Hypothesis testing on awareness and perception leading to preference towards organic food products

Null hypothesis: Awareness and perception of organic food products do not significantly predict preference for organic food products.

Descriptive Statistics			
	Mean	***Std. Deviation***	***N***
Overall Preference of the Respondents	***14.97***	***2.844***	***218***
Overall Awareness of the Respondents	***35.24***	***5.093***	***218***
Overall Perception of the Respondents	***43.50***	***6.433***	***218***

Correlations				
		Overall Preference of the Respondents	***Overall Awareness of the Respondents***	***Overall Perception of the Respondents***
Pearson Correlation	***Overall Preference of the Respondents***	***1.000***	***.734***	***.761***
	Overall Awareness of the Respondents	***.734***	***1.000***	***.808***
	Overall Perception of the Respondents	***.761***	***.808***	***1.000***
Sig. (1-tailed)	***Overall Preference of the Respondents***	***.***	***.000***	***.000***
	Overall Awareness of the Respondents	***.000***	***.***	***.000***
	Overall Perception of the Respondents	***.000***	***.000***	***.***
N	***Overall Preference of the Respondents***	***218***	***218***	***218***
	Overall Awareness of the Respondents	***218***	***218***	***218***
	Overall Perception of the Respondents	***218***	***218***	***218***

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Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.787[a]	.620	.616	1.761
a. Predictors: (Constant), Overall Perception of the Respondents, Overall Awareness of the Respondents				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1087.987	2	543.993	175.406	.000[b]
	Residual	666.788	215	3.101		
	Total	1754.775	217			
a. Dependent Variable: Overall Preference of the Respondents						
b. Predictors: (Constant), Overall Perception of the Respondents, Overall Awareness of the Respondents						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.088	.869		-1.252	.212
	Overall Awareness of the Respondents	.191	.040	.342	4.797	.000
	Overall Perception of the Respondents	.214	.032	.485	6.800	.000
a. Dependent Variable: Overall Preference of the Respondents						

Based on the multiple regression analysis, a strong positive correlation can be observed between all the three variables: awareness- perception-preference of the respondents towards organic food products. It suggests that the increase in one factor will lead to the increase in the other one as well. The r value in all the three cases clearly indicated that there exist a strong and significant relationship between preference and awareness, preference and perception and awareness and perception

Preference and Awareness: $r = .734$, $p < .001$

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Preference and Perception: $r = .761$, $p < .001$

Awareness and Perception: $r = .808$, $p < .001$

The model explains that 62% of the variability in Preference can be accounted for by Awareness and Perception. This is a substantial amount of variance explained, suggesting that the model is a good fit for the data. Also the ANOVA table indicates that the overall model is statistically significant ($F(2, 215) = 175.406$, $p < .001$), meaning awareness and perception together significantly predict preference. The coefficients also show that both awareness and perception are strong positive predictors of preference.

So it can be observed that the overall model was statistically significant as the *R*-squared value is .620 and *F*-statistic value is 175.406 with a *p*-value of .000 indicating that awareness and perception together significantly predict preference. Both awareness ($B = .191$, $\beta = .342$, $p < .001$) and perception ($B = .214$, $\beta = .485$, $p < .001$) were significant positive predictors of preference. However, perception had a slightly stronger influence on preference than awareness, as indicated by the standardized regression coefficients.

Law regulating food safety standards in India

Regulations relating to the safety standards of food in India is made through the Food Safety and Standards Act, 2006 and the allied rules. The Indian penal laws also do have some implication on the regulatory framework on food safety standards. The law replaced the old legislation in India on food adulteration. FSS Act take the control of regulation of food industry into its folds and the same is declared in the section 3 of the FSS Act. In the scheme of the Indian Constitution, the regulation of adulteration of food and trade and commerce in production and supply of food stuffs is placed in concurrent list of the seventh schedule. The legislative competency of both the state and the centre is thus possible. For having a comprehensive and nationwide scheme for regulating the affairs of food safety standards, it is ideal to have a central legislation. The statement and objectives of FSS Act with clarity points out the confusions created by multiple food laws in India and emphasis the need for having a common legislative framework. This will be highly helpful for the consumers, manufacturers, industrialists and traders. It is more than one and half decade after the introduction of FSS Act. It is high time to analyse the potential of this legislation to deal with the food safety related issues in India.

Greater concern in food safety and standards is with the consumer population. Lack of proper monitoring of food safety standards will cause economic and health related loss to the consumers. In this context, it is significant to note down the statement and objectives of the FSS (Amendment) Act, 2008. It narrates the mission of introducing scientific standards for regulating food articles and to keep proper rules for its manufacture, sale, storage, distribution and import. The prior intention to have such law is to preserve the basic right of an individual to have safe and secure food. It is not only the application of science in standard setting that matters but also the involvement of science in production and management of food articles. Technology based food production, agriculture, processing of food and storage will create considerable challenges on safety standards. For example, marketing of processed food, food substitutes, GM food, organic food and nutraceuticals may emerge with serious human rights concerns in society. The challenges created by each will be unique and a separate set of regulations may be required for safeguarding the rights of the public.

The international standards for food can be identified with the procedural manual of *Codex Alimentarius*. This should be understood as a document that facilitates as well as provides room for

food safety standards along with free trade in food. The interstate movement and the import of food articles is one of the greatest concerns for every nation. The government is entrusted with the responsibility of food safety; especially the safety of modified and imported food. They need to make sure that such food articles will not pose threat to the life of flora, fauna and the ecosystem in its entirety. Apart from assuring human rights, ensuring environmental safety is also a mission for the food safety standards. The doctrines enshrined in all international environmental law documents would have an influence on the settings of food safety standards. In addition to the documents on food safety standards jointly introduced by WHO and FAO, there are other international measures for ensuring the safety of food. The Standards and Scientific Advice on Food and Nutrition (WHO-SSA) also works for the upkeep of food safety standards among the international community. WHO-SSA works on the areas of food additives, pesticide residues, microbiological risk and nutrition. All these interventions are based on scientific standards.

All these standards are crucial in dealing with the food standards in India. India being an agricultural nation, the standards set in cultivation in tune with the international standards are of great significance for the people's health. Moreover, the export of food grains is also related with the compliance of similar standards. Safety of food articles is not only a mandate of FSS Act. The National Food Security Act, 2013. The legislation on food security in India give significance to the quality of the food. The same is well reflected in the definition clause of food grains used in the said Act. In the light of the Constitution of India, it is equally arguable right under Art. 21 to have safe and healthy food. Food articles which cause harm to public health and safety is an infringement on the fundamental right to life under Indian Constitution. Hence it is the responsibility of the State to make sure that the marketed food articles available to the public maintain the prescribed standards of safety. This is applicable to all articles which will fall within the definition of Food as per FSS Act. The definition given to food under the FSS Act is extensive and it will include all food items whether processed, partially processed or unprocessed. This makes the traders, farmers, investors and the public generally to be cautious about the compliance of standards and have proper awareness about the same.

The Food Safety Standards and the Organic Food Materials

Safety standards prescribed for food articles will be applicable to organic food articles. The standards for organic food in India is maintained under a special set of laws made under the FSS Act. When it comes to organic food the issue of quality control begins from the very initial stage of cultivation of raw materials. It is difficult for any legal system to draw an ideal definition for a term organic. Without an ideal definition for the same it will be difficult to set appropriate regulatory standards. Avoiding pesticides, using organic fertilizers, use of original seed varieties, using ideal agricultural lands and lot other requirements may be demanded for calling a product organic. Even though the consumer population of organic products is minimal; their expectations and requirements will be numerous and genuine. The range of reasons for choosing organic food will be from concerns for the environment to individual health and well-being.

An organic food product being chosen for health reasons the non- compliance of standards will intensely infringe the Constitutional guarantees of the consumer. It is for better health, life and other social concerns, a consumer spends more money for the purchasing organic food. Non- compliance of standards in the case of organic foods will undoubtedly cause social and economic loss. Apart from the remedies under the consumer protection laws, the State need to provide adequate standards for the production, processing and marketing of organic food. When it comes to the consumer protection laws the consumer will be struggling to prove the violation of the standards required for organic foods. The

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analysis will be largely scientific and the proof for non- organic aspects in the food article may be affected at any time during the course of production to marketing of the product. It will be really a task to fix the liability in such cases. The ideal way to ensure safety standards will be the strong implementation of regulations by the State and to have such regulation is a condition precedent.

Organic farming can be called as a sustainable way of farming to produce healthy crops or livestock without causing harm to environment. This environmental narrative can be one way of looking at the concept of organic food. Another possible narrative can be related to health of the person. Here organic may refer to a product which is totally free of chemical or biological components injurious to human health. The chemical components may be there in the form of pesticides, preservatives or colour in a food. There can be third narrative where organic can be understood as a combination of both environment and health concerns. If the international legal premise on food safety standards envisaged by the WHO/FAO is analysed, it can be seen that the presence of adulterants is not prohibited but regulated. This may give a narrative that the standard for organic food need not always demand for a pure environment or health ethics.

It is in this context the Indian regulation on organic food is to be appreciated. According to Indian regulations organic food means food products that have been produced according to the standards set for organic food production. The manufacture, distribution, sale and import of organic foods in India is to be done in accordance with FSS Act. In the context of this mandate FSS Act also try to define organic food. In the Act, organic food means those food products produced in accordance with specified organic production standards. In both the definitions, it is difficult to identify the existence of an environment or health narrative. It is to be concluded from the definitions that the organic food production standards are to be specified separately by the Government. As per the regulations, the manufacture, sale and packing of organic food need to be certified and properly labelled. Such organic food offered for sale in India must comply with certain systems identified by the Government. The compliance may be in accordance with National Program for Organic Production (NPOP), Participatory Guarantee System for India (PGS- India) or any other standards notified by the food authority. PGS-India focuses on participatory approach by all the stakeholders with a shared vision, transparency and trust. The system ensures responsibility through its core values viz shared ownership of the PGS, engaging stakeholders in both development and operational process. Further it tries to understand how the system works by encouraging direct communication between producers and consumers and other stakeholders.

There is PGS- India Standards made in tune with the National Standards for Organic Production (NSOP) prescribed under the NPOP. The object of such standards is to maintain uniformity in both organic production process as well as quality of organic products. The PGS- India Standards covers almost all the stages of organic processing and quality assurance. It comprehensively deals with aspects such as habitat management, integration of livestock, environmental concerns, fertility and nutrient management, weed management and healthcare especially under the domain of organic livestock and poultry. The understanding of organic agriculture as perceived by the NPOP includes aspects of both sustainable environment and healthcare. NPOP identifies organic agriculture on the foundation of four basic principles, namely; principles of health, ecology, fairness and care. The aspect of healthcare as visioned by NPOP is wider to sustain and enhance health of soil, plant, animal, human and planet. The principle of ecology largely focuses on environmental sustainability. Thus, the definition of organic when seen through the lenses of both the standards finds in tune with the international narratives regarding environmental aspects and healthcare.

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Organic foods are of great demand both in Indian and global market. Therefore, the probability of production and sale of compromised items are high. To tackle such a scenario the process is mandatory and such certification becomes crucial in validating the claims and thereby finding the best place in the market. The certification can be done by the bodies identified in accordance with FSS Act or NPOP. NPOP has developed a scheme of third-party certification, thus making India first few among the developing countries to have a credible third-party certification system. The NPOP has authorized twenty- nine accredited certification agencies so far for the purpose of certifying organic products. The agencies review the compliance of all the standards dealing with production, processing, handling, storage and transport of the organic food products. All the farms engaged in the organic production shall adopt NSOP and the registration of the production unit with any of the accredited certification body under NPOP. Qualified and trained inspectors are appointed to carry out inspections of the farm and the production units. ISO19011 standards are to be complied for the inspection by the certification bodies. The inspector shall not have conflict of interest in the subject matter handled. While conducting inspection of processing units the inspector shall conduct sample audit, audit trail for tracking the product from its production to the sale of finished goods. He shall also ensure compliance with quality standards of all the ingredients of the product and see whether the labelling standards are also met with. Once every year the accreditation body shall inspect storage, packing and shipment units for ensuring the compliance of requisite standards. It is very interesting to note that the scheme provides for a detailed inspection of the organic food facility at all its stages including surprise inspection. However, there is no obligation upon the accreditation of products after the final consumer package. This creates a room for tampering of products at a later stage. Having said so, the NPOP were wise enough to anticipate such a situation and thereby made it obligatory to intervene when there exist grounds to believe that standards have been violated or compromised at later stages. However, this can only be seen as a damage control mechanism rather than preventing such damage.

India Organic- Trade Mark logo is another accreditation of compliance of NSOP by exporters, manufacturers and processors. The accreditation of such products by the accredited certification bodies are the condition precedent to obtain the India Organic logo. The provisions of FTDR Act allows export of organic products only if such product is produced, processed and packed under the certification trade mark. The trademark is issued by the accreditation certification body authorized by the national accreditation board (NAB) constituted under the NPOP. The license for the use of India Organic Trademark logo comes along with surveillance and regular review of the licensee for ensuring the provisions of NSOP. Any non- compliance will lead to suspended or cancelled or will open the need for reassessment. Thus, both the certification and the India Organic Trade Mark logo is largely depended on the function of National Accreditation Board and the agencies made thereunder as per NSOP.

The accreditation process of organic products as per the regulations is made through two agencies basically; the *accreditation body* and the *accreditation certification body.* The accreditation certification bodies as per the NPOP data includes private entities. The NPOP identifies the national level steering committee as the *national accreditation body*. The NPOP document revised in 2014 identifies accreditation body to be run by the Agricultural and Processed Food Products Export Development Authority (APEDA). The APEDA functions under the steering committee constituted by the Department of Commerce. The accreditation body consist of representative from all important government departments like department of commerce, agriculture and FSSAI among other commodity boards. This government dominated body will identify and review the certification bodies whenever required. Thus the accreditation body if properly monitors and reviews the private

participants in the accreditation certification bodies; the certification of the organic foods can be trusted.

Examining the awareness regarding the organic food among the consumers, it is important to have sufficient insight regarding the laws for safety standards. If the laws on safety standards are insufficient and appropriate mechanism for monitoring such safety standards are lacking, it will difficult to consider the public awareness on organic food. Moreover, the rights of the public to have safe and quality food will be violated. This will be equally a violation of a statutory right and a constitutional guarantee. An element of crime of cheating or committing fraud also will be present in these situations. A product is marketed with a fake claim to be organic and if the state is not ensuring its safety standard or preventing such false products; it will be a crime equally. In a properly set market for organic products the question of public consciousness on organic products seems to be relevant.

In the perspective of Indian organic market, a regulation in line with international standards are demanded. Economic interpretation of the organic food market is equally important as the environment and health perspectives. Indian potential for its contribution to organic food market is immense as noted by various reports and studies. The report on Indian organic sector indicates huge potential for its organic market due to its geographic and biodiversity potentials. The presence of organic cultivators is huge in India and the available area for cultivation is also large. Forest produces also contribute immensely to the organic food industry in India. The Indian climate and rain fed conditions also creates a favourable situation for organic farming. Some drawbacks are also to be noted down from the studies conducted. The forest production or harvest seems to be very low as per the reports. Considerable part of organic production is through cultivation. This scenario indicates some essential interference from the part of the state. State should take the lead role to increase production from both forest and cultivable lands. It is more important to monitor and prevent manipulations in such production and thereby to preserve quality of the organic products. Ultimately the regulation on organic industry is crucial in determining the fate of health, safety, environment and economy of the stakeholders.

Suggestions

The consumers need to actively seek information about organic food and food safety from trustworthy sources like official website of the Government and concerned bodies. This will help them in avoiding various misconceptions and to make informed choices. They need to take effort to understand the different organic certifications and labelling. Also, they need to emphasise on the importance of proper handling and the storage of organic food to ensure its safety as well as quality. The producers and marketers need to be transparent about their farming practices, certification and food safety standards. They should focus on clear labelling; spreading awareness through websites and using social media can make much difference. Proper communication of the food safety aspects of the organic method of production can alleviate the concerns of the consumers and build trust in organic products. The policy makes must focus on strengthening the regulations in this regard. They need to provide support to various certification bodies now in charge to ensure the proper working of the system. Awareness campaigns need to be launched for spreading awareness regarding organic food, food safety and the benefits of indulging in it.

Conclusion

The study aimed to have an understanding regarding the awareness, perception and preference regarding organic food products in Ernakulum District by giving special focus on the legal regulations

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regarding food safety in India. The study revealed that the consumers possess high level of awareness regarding organic food products, and they have awareness regarding food safety aspects provided there is room for improvement in their understanding of specific food safety aspects and certifications. The influence of demographic factors like awareness, perception, and preference on various demographic variable like gender, age, educational qualification, employment status and area of residence of the respondents. Educational qualification of the respondents has created a difference in the awareness level of the respondents. Also, the analysis showed that both awareness and perception are significant predictors of consumer preference for organic products. Interestingly, perception emerged as a slightly stronger driver of preference than awareness alone, highlighting the importance of shaping positive consumer perceptions about the quality, safety, and benefits of organic food. These findings align with the existing legal framework for organic food safety in India which emphasizes on certification and labelling standards. However, the observed variability in consumer understanding underscores the need for continued efforts to educate the public about these regulations and promote transparency in the organic food supply chain. While this study provides a valuable insight into the perspectives of the consumer, it is important to acknowledge its limitations. The sample was limited to Ernakulum District. Future research could expand upon these findings by exploring other factors influencing organic food consumption, such as price sensitivity, availability, and the impact of specific marketing or labelling strategies. Overall, this study contributes to a deeper understanding of consumer awareness, perception and preference regarding organic food products.

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