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A Structural Equation Modeling Approach To Examine The Impact Of Awareness, Accessibility, And Trust Factors On Consumer Perception Of Organic Staple Foods

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Abstract
Nowadays people have become very conscious about health, sustainability and ethical shopping. But research on organic food has mostly focused on fruits and packaged goods, while less attention has been given to daily-use organic staple foods such as rice, dal, wheat and cereals. The main objective of this study is to learn how awareness, accessibility, trust in certification, health consciousness, ethics and socio-cultural factors influence people's perceptions towards organic staple foods. In this research, data was collected from 392 people via structured questionnaire. Factor analysis and Structural Equation Modeling (SEM) were used to understand the relationships between these factors. The results show that all six factors have a significant positive impact on consumer perception – the strongest influence was that of awareness. Moderation analysis also showed that the effect of awareness varies with age, health with gender and accessibility with income level. This research fills gaps that were previously overlooked in the context of organic staples. The study findings are very useful for marketers, policy makers and organic product sellers, especially those who want to develop targeted and culturally relevant strategies. Through this study, we gain a better understanding of how complex and interconnected factors consumers' perceptions depend on when it comes to sustainable food choices.
Keywords- *perception of consumer, awareness of organic food, Organic Food, Factor Analysis*

1. INTRODUCTION

In recent years, increasing awareness about sustainability, environmental concerns, and health consciousness has begun to significantly influence consumer food choices. Among various organic food categories, organic staple foods such as rice, lentils, grains, and cereals hold particular importance, as they are consumed daily and produced without synthetic chemicals or genetically modified organisms. These products cater to a growing segment of consumers seeking natural, ethically produced, and environmentally friendly alternatives. As people shift toward healthier and more responsible lifestyles, organic food consumption has expanded beyond niche markets and become a mainstream preference(Kesse-Guyot et al., 2013).While the benefits of organic food are widely acknowledged, academic research has largely focused on organic fruits, vegetables, and processed items, leaving organic staples relatively underexplored. Given their everyday consumption and critical role in nutrition and food security, organic staples deserve more focused attention, particularly in the context of evolving sustainable consumption patterns. This gap becomes more pronounced considering that modern consumers' choices are influenced not only by nutrition but also by environmental values, ethical concerns, and cultural beliefs(Keding & Sanghvi, 2019).Staple foods are essential across all income groups and reflect local food traditions and dietary norms. Despite their significance, only limited studies have examined consumer perceptions specifically regarding organic staples, even though these items make up a large portion of regular food intake(Magkos et al., 2006). For producers, retailers, marketers, and policymakers, understanding consumer attitudes toward these products is essential for developing effective marketing strategies, improving accessibility, and designing relevant policy frameworks. In many emerging markets, young consumers are playing a crucial role in driving food trends(Aschemann-Witzel et al., 2012). They are health-conscious, socially aware, and influenced by global sustainability trends. However, their drivers for organic product choice differ. While some are motivated by personal diet and health matters, others

are motivated by concerns for the environment, ethics, or food safety. Regional and cultural determinants also arise, as seen in studies which indicate that perceptions regarding organic food have the tendency to keep up with the local culture and societal norms.To explain these behaviors more effectively, the Theory of Planned Behavior with its focus on awareness, control of behavior, and social norms has been employed in some studies as a predictor of consumer intention. Evidence indicates that health-conscious consumers as well as consumers concerned about the environment are more likely to purchase organic food. For all contexts considered, values, lifestyle orientation, and confidence in product information surfaced as important influences on buying behavior. In addition, there is other factor that includes product availability, price sensitivity, conventional food culture, and information transparency influencing consumer decision. Emotional and psychological factors, such as trust by certification and labeling, also contribute to structuring consumer preference and trust. In general, organic food purchasing behavior is multifaceted and leveraged by a number of cognitive, affective, and situational factors.To investigate these interdependent dimensions, qualitative strategy with factor analysis anchor has been used in the current research. In the current study, it is proposed to investigate underlying factors influencing consumer perception of organic staple food based on variables such as awareness, accessibility, ethical orientation, trust, health beliefs, and cultural influence. This two-way approach provides deeper understanding of determinants of organic staple food consumption and offers suggestions for producing sustainable food consumption through policy and strategic marketing backed by evidence.

2. LITERATURE REVIEW

2.1. Health and Food Safety Consciousness

Customer perceptions of organic food have evolved more due to developing concerns for health, food safety, and environmental protection with perception playing at the lead in affecting purchasing behavior. A critical review conducted by Roy et al. (2023) sought to determine that base belief systems regarding food quality and health consequences are the driving motives of consumers towards organic purchasing with perceived personal utility as an important element in purchasing behavior. These motivations become more pronounced when aligned with broader values, as observed in the United States where Gundala and Singh (2021) found that one's own health and environmental conservation is likely to influence the consumption of organic food. These patterns were felt during the post-pandemic era, where more emphasis was laid on immunity as well as resistance to gaining health and thus had more interest in food intake.This harmonious mix of attitude and intention is particularly felt in emerging economies, where Nagaraj (2021) indicated that health consciousness has been found to be a successful psychological tie that encourages consumers, particularly health-conscious consumers.

Basha and Lal (2019) explained that as long as the health claims are credible and believable, the consumer would embrace organic products in their lives more, showing the significance of credible communication for health marketing. The adoption does not take place uniformly in regions because differences in psychological readiness that are always a pre-condition to intentions are always there. Abeyrathna (2021) in Sri Lanka found that psychological readiness and awareness of a human being are determining factors of their readiness to adopt organic food. This corresponds with Ahmed et al.'s (2021) research on Indian youth, where ecological awareness, typically embedded within the process of learning and socialization, is a reliable indicator of purchase intention if analyzed within the context of the Theory of Planned Behavior. These markets also generate psychological reactions that draw their roots from socio-economic inequalities. In Iraq's Kurdistan, Ali (2021) has elaborated that consumers also view organic food to be linked with enhanced health and flavor. This is a belief that holds true for people belonging to prosperous groups. While the benefits of health and taste are commonly recognized, the actual consumption of organic products remains restricted due to issues of affordability and limited access, making it more of a premium choice than a widely accessible one. Cultural factors contribute a new level to health-informed decision-making, as with the example of Mtimet et al. (2020), who identified that in Tunisia, the acceptance and interpretation of organic food are mediated by past consumption patterns and customary food habits. Altogether, these findings suggest that whereas health and food safety provide the underlying motivations, they intersect with cultural, psychological, and economic variables which together determine consumer preference for organic food in various world contexts.

2.2. Ethical Awareness

The organic food market in the growing economies has significantly transformed because there has been more trust from the consumers in authenticity as well as sustainability. This is complemented with SWOT analysis identifying greater trust, consumer awareness, especially among developing countries, as per Mania and Nedumaran (2019). The psychological causes of the same act have been examined in great detail with the Theory of Planned Behavior on the organic market. Kataria et al. (2019) found attitude, perceived behavior control, and subjective norms to strongly control consumer action in India and proved the model valid. Apart from this, awareness of product and environmental awareness were found to be enduring determinants in a systematic review by Sharma and Singhvi (2018), which had created familiarity and trust with organics. Environmental awareness is inadequate alone, with or without any intervening variables, however, to spur purchasing. Tandon et al. (2020) set that ecological consciousness boosts motivation but only becomes action when accompanied by strong faith in certification processes and supply chain genuineness. Subsequently, Tandon et al. (2020) extended their work by considering how intrinsic beliefs and extrinsic justification are both of significant influence in consumer choice, an even broader behavioral perspective from which to view organic preference. Gumber and Rana (2021) contributed further by segmenting customers up into behaviors, assuming that income and education heavily interact with ethical congruence in order to affect preferences. These findings affirm that decision-making is not only value-oriented but contextually moderated as well. The impact of perceived value and trust on the consumer was also supported by Curvelo et al. (2019), whose structural equation model indicated these dimensions have a considerable impact on willingness to purchase organic products. Usharani and Gopinath (2020) employed their targeted case study of Indian consumers to find that the intervention of focused green marketing can successfully transition tentative buyers into first time patrons of organic products. The results suggest that strategies of communication serve as a bridge connecting ethical awareness and effective purchasing behavior. Together, these set of studies offers a rich portrait of ethical awareness that interlopes trust, personal values, social pressure, and marketplace strategy to create consumption in the organic foods market.

2.3. Trust in Certification and Labeling

Consumer perceptual gaps are still under the uncertainty forces of organic labeling and varied quality standards. Uncertainty and vagueness labeling practices are the reason for customer confusion of what precisely "organic" implies, thereby compromising organic claims integrity. This was qualitatively proven by Dinçer et al. (2023), whose evidence showed that mislabeling words will reduce consumer trust in organic labeling. Trust power is far more valuable than labeling transparency. Rizwan and Asrar (2024) discussed how attitudes are directly affected by perceived trust between the sellers and their communication. Based on trust, when employed to construct behavioral intention, it serves as a mediator between statements about products and consumer confidence. In the work of Canova et al. (2020), they extended the Theory of Planned Behavior by adding trust as a moderator. Their model showed that trust not only strengthens the effect of subjective norms but also increases the effect of people's attitudes on purchase intention.Further into the complexities of building trust, Eberle et al. (2023) explored consumer typologies and illustrated that product familiarity reinforces organic label trust. The more direct the consumer engagement with product characteristics, the more confident they are of organic claim authenticity. This suggests that this kind of trust does not form in a vacuum and is inexorably bound up with country-of-origin attitudes. Zhao (2024) discovered organic fruit and vegetable buying is heavily dependent on country reliability perception of the producing nation, yet once more confirming country image and farm image influence buying. Yet another instance of organic contextual sensitivity is that of Chiciudean et al. (2019), who found in Romania rural-urban difference dictates access and preference both. Urban consumers were brand-aware, maybe because they were more exposed and accessed organics. Brata et al. (2022) took urban-rural to the level of a tree shading its branches so that there was an increasing trend in Romania to trust organics and purchase from local farmers. This would mean that while consumer confidence is established through a constellation of overlapping factors—communication clarity, product knowledge, and socio-geographical location—consumer confidence serves as a judgment and attitude-shaping aggregating anchor concerning organic food consumption.

2.4. Awareness Level

The function of awareness for organic food purchasing behavior as a moderator variable has been focused more than ever before in the majority of studies. Awareness not only informs but also amplifies the role of principal determinants such as health value, environment concern, and ethical values to create stronger behavioral intention. A comparative study showed that people with more awareness levels will tend to associate the values with purchasing behavior, hence favoring the process of decision-making in the case of organic products as seen in the analysis performed by Asif et al. (2018). This is even more so when an awareness of the facilitation process through education is taken into consideration. Leyva-Hernández et al. (2023) supported in a systematic review that knowledge and awareness are determinants of initial conditions to act on intention, particularly where knowledge gaps still dominate markets. Also referenced was that peer support and cultural nearness mediate perception of quality effects and trust where there is presence. Eberle et al. (2022) agreed by demonstrating that trust alone is not enough unless complemented by socio-cultural resonance. In developing nations such as India, there are empirical models showing customers would like to see organic consumption as a matter of personal values and congruence of lifestyle. Kamboj et al. (2023) revealed that congruence of lifestyle is central to adopting organic food, particularly if it is congruent with self-identity. Such lifestyle dynamics also have their influences in the context of the generation. Young Vietnamese consumers show more preference towards organic goods when supported by peer group and social networks, the findings gathered by Pham et al. (2019) find. The widespread use of the Internet in shaping youth decisions accentuates the inclusion of social media in the awareness campaign. Orientation towards lifestyle based on sustainability paradigms such as LOHAS also adds another layer and is highly associated with greater organic preference. This was also unveiled by Kaur et al. (2023), which proved that all health-oriented consumers always have higher organic product purchasing intention. Psychological processing also occurs, wherein Liang and Lim (2021) employed the Stimulus Organism Response model to illustrate how mental processes in the individual act as a mediator between environmental stimulus and purchasing intention. Lastly, regional context makes these findings problematic. A case study conducted by Rushitha (2021) in Andhra Pradesh revealed socio-demographic characteristics and exposure at the site level influence not just the degree of awareness but also general perception and degree of organic take-up.

2.5. Accessibility and Availability of Products

Despite increased consciousness and shifting consumer behavior, there are number of perceptual and structural barriers to mass consumption of organic food which go unchecked. Foremost among these are myths, exorbitant prices, and lack of awareness regarding the parameters of the certification, all of which have been thoroughly dissected using a DEMATEL-based approach explaining how they interconnect to dissuade well-informed choices in India, opines Thanki et al. (2024). Purchase intention strength also differs on the basis of demographic and individual attitudes, thus in itself creates a multi-dimensional interaction that renders systematic consumer behavior difficult. In an effort to attribute meaning to these inclinations, Dangi et al. (2020) explained how economic insecurity coupled with uncertain supply and fluctuating prices reduces repeat purchase possibilities to a high level, especially where consumer confidence remains persistent.These relationships are also influenced by local market maturity and branding behavior. For instance, studies by Le-Anh and Nguyen-To (2020) proved that Vietnamese consumers react positively towards open packaging and communicative brand openness, indicating that message openness matters in trust development. In Serbia, pandemic-driven change did uncover a heightened level of online organic buying, if only out of necessity and ease of logistics rather than choice, noted Ćirić (2020). Regional difference is also a critical feature, and profiling in Brazil did actually find that while consumers have high environmental awareness, consumer spending is typically limited by financial constraints, a trend noted by Feil et al. (2020). It is more prevalent in transition economies in which the convergence of economic and culture trends prevails. Miftari et al. (2022) wrote the convergence in the Kosovo case in which unstable values of culture and income converge to produce different organic consumption belief systems. Fleșeriu et al. (2020) similarly discovered the value congruence imperative in Romania since consumer choice relies on stronger social and moral imperatives. Finally, Kushwah et al. (2019) in a study discovered that long-established resistance in terms of skepticism, high price, and unavailability, illustrates the ways moral intention ends up clashing with real constraints towards more natural food eating.

2.6. Social and Cultural Influence

The emergence of the global pandemic seriously altered the way customers interact with online platforms, especially where exposure to conventional organic products was not readily available. This was seen to be the case in Serbia, where consumers increasingly viewed digital platforms as safer and more convenient options during lockdown periods, as noted by Ćirić et al. (2021) who demonstrated that perceived risk reduction significantly influenced this openness. Such increasing facilitation of web-based doing business has been paralleled by increasing city-centric consciousness of environmental product awareness, for example, in India where Umadevi and Usha (n.d.) noted measurable increases in consumer education and premium willingness to pay for products carrying eco-labels. This trend is also being driven by psychological forces in the home, particularly among young consumers, with Pandey et al. (2019) citing altruism and curiosity as the main drivers of organic shopping behavior. Such psychological undertows are not exclusive to a particular market, and cross-country research further identifies that sociodemographic characteristics provide varying motivations. A comparative study between Greece and Sweden by Diagourtas et al. (2022) had shown a surprising contrast in consumer taste between Swedish consumers whose first concern was environmental concerns and Greek consumers whose first concern was the health benefit. These are some of the mechanisms by which food choice as organic is linked to cultural models and personal value ordering governing individual choice processes. Developing further into the depth of understanding on intention, Eyinade et al. (2021) provided depth to the research by examining the nexus of income, values, and access and concluded that willingness to consume organic food is not so much attitude-driven as it is affordability and access. Since these discoveries overall show, changing consumer behavior—whether driven by needs, technological interconnectivity, cultural value systems, or material resources—are reconceptualising the terrain of organic food consumption across various contexts throughout the world on an ongoing basis.

3. Research Gap

Most existing research focuses on organic fruits, vegetables, and packaged goods, overlooking consumer attitudes toward daily-consumed organic staples like rice and lentils. Given their central role in household diets, especially in emerging economies, this gap limits understanding of habitual and culturally rooted food choices. Existing studies often miss the complex interplay of socio-cultural beliefs, accessibility, health concerns, and trust in certification that influence staple food consumption. Moreover, few studies have holistically examined these factors using qualitative methods supported by factor analysis. Since motivations for staple foods differ from occasional organic purchases, this study aims to explore the underlying dimensions shaping consumer attitudes toward organic staples, addressing an overlooked yet vital area in sustainable food research.

4. Objective

1. To identify key latent factors influencing consumer perception of organic staple foods.
2. To analyze the effect of independent constructs (awareness, accessibility, ethics, trust, health, social influence) on consumer perception.
3. To explore the moderating effect of demographic variables (age, gender, income) on these relationships.

5. Conceptual framework

The conceptual model illustrates six key factors influencing consumer perception of organic staple food: awareness level, accessibility, ethical awareness, trust in certification, health and food safety consciousness, and social-cultural influence. Each factor is hypothesized to have a direct impact, highlighting the multidimensional nature of consumer attitudes toward sustainable food choices.

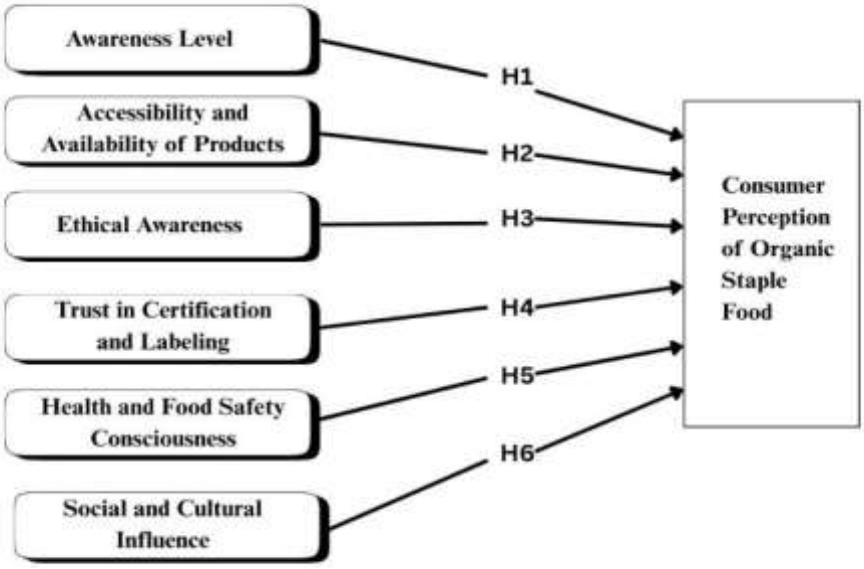


Fig 1: Conceptual Model

6. Hypothesis

H1: Consumer attitude towards organic staple foods is influenced positively by the level of awareness.
H2: Accessibility & Availability positively influence consumer perception.
H3: Ethical awareness has a positive influence on consumer perception towards organic staple foods.
H4: Consumer attitude is positively influenced by trust in certification and labeling
H5: Food safety and health awareness has a positive influence on consumer attitude towards organic staple foods.
H6: Consumer perception is positively influenced by social and cultural factors.
(Moderator Hypotheses)
H7a: Age moderates the impact of awareness level on consumer perception.
H7b: Gender moderates the impact of health and safety issues on consumer perception.
H7c: Income level moderates the impact of accessibility on consumer perception.

7. RESEARCH METHODOLOGY

The research design relies on six fundamental constructs derived from a broad literature review: level of awareness, availability and access to the product, ethical awareness, label and certificate trust, health and food safety consciousness, and cultural and social influence. These constructs are multi-dimensional predictors of consumer attitude and behavior towards organic staple food consumption. It was developed through a self-report questionnaire, which had over one statement per construct per each on a five-point Likert scale from "strongly disagree" (1) to "strongly agree" (5). Items were adapted from highly validated item scales of items used in existing research into organic food consumption for relevance and reliability in content. 392 valid responses were received for analysis. The respondents were drawn from various demographic segments to incorporate variability and enhance results' representativeness to the desired consumer population.To ensure the robustness of the data, reliability was first tested using Cronbach's alpha. Subsequently, factor analysis was conducted using SPSS software to identify the underlying factor structure. The suitability of the data for factor analysis was confirmed through the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity. Principal Component Analysis (PCA) with Varimax rotation was used to extract meaningful factors. Additionally, CFA and SEM modelling were applied to verify the relationship between dependent factor (Consumer perception) and independent factors (Health and Food Safety Consciousness, Ethical Awareness, Trust in Certification and Labeling, Awareness Level, Accessibility and Availability of Products, Social and Cultural

Influence).To assess the moderating effects of demographic variables—age, gender, and income—on the relationship between selected independent constructs and consumer perception of organic staple food, this study employed moderated regression analysis using the PROCESS Macro (Model 1) in SPSS. Each moderation model included the independent variable, moderator, and their interaction term (created using mean-centered variables). The statistical significance of the interaction coefficient ($p < 0.05$) was used to confirm moderation. Additionally, conditional effects at different levels of the moderator (e.g., low, moderate, high) were analyzed to interpret the nature and strength of the moderating influence.

8. Data analysis

7.A. Factor Analysis and interpretation for Consumer Perception

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value is 0.905. The KMO statistic indicates the proportion of variance among variables that might be common variance. A value closer to 1.0 suggests that patterns of correlations are compact and factor analysis should yield distinct and reliable factors. As the obtained value is above the recommended threshold of 0.6, it confirms that the sample is adequate for factor analysis. Bartlett's Test of Sphericity shows a Chi-Square value of 20556.542 with 595 degrees of freedom and a significance value of 0.000. This test checks whether the correlation matrix is an identity matrix, which would indicate that variables are unrelated and unsuitable for structure detection. The significance level below 0.05 indicates that correlations between items are sufficiently large for factor analysis. Together, the KMO and Bartlett's Test results support the application of exploratory factor analysis (EFA) to the collected dataset.

Table 1: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.905
Bartlett's Test of Sphericity	Approx. Chi-Square	20556.542
	df	595
	Sig.	0.000

The Total Variance Explained table shows that seven components with eigenvalues above 1 were extracted using Principal Component Analysis, accounting for 87.800% of the total variance—well above the 60% benchmark. Initially, the first three components explained 24.219%, 14.236%, and 12.970% of the variance, respectively. After applying varimax rotation for better interpretability, the variance was more evenly distributed across the seven factors, ranging from 9.698% to 13.793%. This balanced distribution indicates no single factor dominates, supporting a multidimensional structure. Overall, the results confirm the data's suitability for factor analysis and that the seven extracted factors effectively represent the dataset.

Table 2: Total Variance Explained

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.477	24.219	24.219	8.477	24.219	24.219	4.828	13.793	13.793
2	4.982	14.236	38.455	4.982	14.236	38.455	4.809	13.739	27.532
3	4.540	12.970	51.425	4.540	12.970	51.425	4.656	13.304	40.836
4	4.024	11.498	62.924	4.024	11.498	62.924	4.647	13.279	54.115

5	3.713	10.608	73.532	3.713	10.608	73.532	4.497	12.848	66.962
6	3.359	9.596	83.128	3.359	9.596	83.128	3.899	11.140	78.102
7	1.635	4.673	87.800	1.635	4.673	87.800	3.394	9.698	87.800

The rotated component matrix shows strong and consistent factor loadings for all latent variables, confirming the reliability and validity of each construct. Health and Food Safety Consciousness has very high loadings ranging from 0.958 to 0.969, indicating strong agreement among items. Trust in Certification and Labeling also displays excellent loadings between 0.954 and 0.969, highlighting its importance in shaping consumer perception. Awareness Level and Social and Cultural Influence show similarly high loadings, suggesting these are well-understood and influential factors. Ethical Awareness maintains strong loadings from 0.923 to 0.974, reflecting consistent responses regarding ethical concerns. Accessibility and Availability of Products has slightly lower but still acceptable loadings, ranging from 0.841 to 0.956, indicating some variability in perceptions of access. Consumer Perception items load moderately between 0.706 and 0.829, showing that consumer attitudes are shaped by a combination of multiple factors. Overall, the results support a well-defined factor structure.

Table3: Factor Loading by Rotated Component Matrix

Latent Variable Name		Latent Variable	Loading
Health and Food Safety Consciousness	←	Health_1	0.969
	←	Health_2	0.965
	←	Health_4	0.960
	←	Health_3	0.960
	←	Health_5	0.958
Trust in Certification and Labeling	←	Trust_1	0.969
	←	Trust_5	0.966
	←	Trust_4	0.961
	←	Trust_3	0.959
	←	Trust_2	0.954
Awareness Level	←	Aware_1	0.949
	←	Aware_5	0.935
	←	Aware_2	0.933
	←	Aware_3	0.926
	←	Aware_4	0.925
Social and Cultural Influence	←	Social_1	0.975
	←	Social_2	0.954
	←	Social_5	0.951
	←	Social_4	0.949
	←	Social_3	0.945
Ethical Awareness	←	Ethics_1	0.974
	←	Ethics_4	0.940

	←	Ethics_5	0.939
	←	Ethics_3	0.939
	←	Ethics_2	0.923
Accessibility and Availability of Products	←	Access_1	0.956
	←	Access_2	0.867
	←	Access_5	0.854
	←	Access_3	0.848
	←	Access_4	0.841
Consumer Perception	←	Percep_1	0.829
	←	Percep_3	0.768
	←	Percep_5	0.754
	←	Percep_2	0.749
	←	Percep_4	0.706

The above table indicates, The rotated component matrix confirms strong factor loadings across all constructs, indicating high internal consistency and validity of the measurement model. This supports the robustness of the proposed constructs and their suitability for further structural analysis.

7.B. Model Fit Measures

The model fit summary shows an excellent fit for the confirmatory factor analysis (CFA) model. The Chi-Square value is 589.102 (df = 539), with a CMIN/DF ratio of 1.093—well within the acceptable range of 1 to 3. The CFI value is 0.998, exceeding the 0.95 benchmark, indicating a strong model fit. The RMSEA is 0.015, far below the 0.06 cutoff, suggesting a close population fit. Additionally, a PClose value of 1.000 supports the model's adequacy. Collectively, these indices confirm that the measurement model fits the data well and reliably represents the underlying constructs.

Table 4: Goodness of fit indices

Measure	Estimate	Threshold	Interpretation
CMIN	589.102	-	-
DF	539.000	-	-
CMIN/DF	1.093	Between 1 and 3	Excellent
CFI	0.998	>0.95	Excellent
RMSEA	0.015	<0.06	Excellent
PClose	1.000	>0.05	Excellent

7.C. Model Validity Measures

The table presents reliability and validity measures for all constructs, along with their inter-construct correlations. All constructs exhibit excellent internal consistency, with Composite Reliability (CR) values ranging from 0.891 to 0.989, AVE values above the 0.50 threshold, and Cronbach's Alpha values between 0.86 and 0.98. These results confirm strong construct reliability and convergent validity. Discriminant validity is also supported, as the square root of AVE (diagonal values) is higher than the corresponding inter-construct correlations. The highest correlation is between Awareness and Perception (0.502), followed by Health and Perception (0.411), indicating moderate relationships but maintaining distinctiveness among constructs.

Table 5: Validity Analysis

	CR	AVE	Alpha	Health	Trust	Aware	Social	Ethics	Access	Percep
Health	0.989	0.948	.98	0.974						
Trust	0.989	0.947	.98	0.158**	0.973					
Aware	0.979	0.905	.97	0.209***	0.180***	0.951				
Social	0.980	0.907	.97	0.029	0.109*	0.108*	0.952			
Ethics	0.971	0.870	.96	0.039	0.011	0.089†	0.036	0.933		
Access	0.929	0.724	.91	0.109*	0.120*	0.085†	-0.095†	-0.027	0.851	
Percep	0.891	0.625	.86	0.411	0.388	0.502	0.214	0.193	0.163	0.791

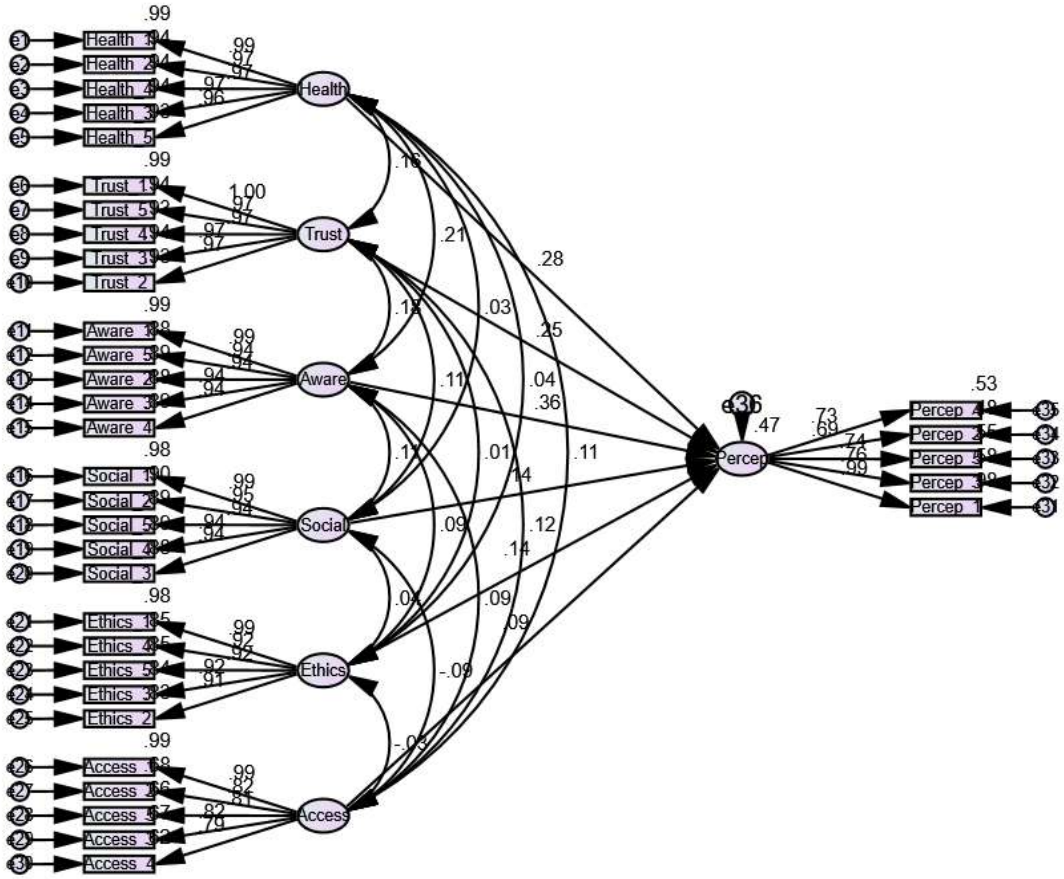
The table above concludes the convergent validity, discriminant validity, and reliability of the constructs in the measurement model.

1. **Composite Reliability (CR):** All constructs exhibit CR values above 0.9, ranging from 0.929 to 0.989, which is significantly higher than the 0.7 threshold. This confirms high internal consistency and strong reliability of all latent constructs.
2. **Average Variance Extracted (AVE):** AVE values for all constructs are well above the recommended 0.5 threshold, with values ranging from 0.625 to 0.948. This indicates that each construct captures more than 50% of the variance in its observed indicators, thereby establishing strong convergent validity.
3. **Cronbach's Alpha:** The alpha values range from 0.86 to 0.98, exceeding the minimum requirement of 0.7. These high coefficients further confirm the internal consistency and reliability of the scale items.

SL	Hypothesis	B	SB	S.E.	C.R.	P	Label
H1	Health and Food Safety Consciousness → consumer perception	.105	.276	.015	7.06	***	Supported
H2	Trust in Certification and Labeling → consumer perception	.094	.251	.015	6.43	***	Supported
H3	Awareness Level → consumer perception	.168	.363	.018	9.20	***	Supported
H4	Social and Cultural Influence → consumer perception	.064	.143	.017	3.71	***	Supported
H5	Ethical Awareness → consumer perception	.075	.144	.020	3.79	***	Supported
H6	Accessibility and Availability of Products → consumer perception	.070	.089	.031	2.30	.022	Supported

4. **Inter-Construct Correlations vs. AVE (Discriminant Validity):** The square roots of AVE (bold diagonal values) are higher than the inter-construct correlations (off-diagonal values), ensuring discriminant validity. All correlation coefficients are below their respective AVE square roots, confirming that the constructs are distinct and not overlapping.

Fig 2: SEM Model for Consumer Purchase Intention



5. **Table 6: Regression table**

The table above presents the structural path estimates for the hypothesized relationships (H1 to H6) between various influencing factors and consumer perception of organic staple food. All proposed hypotheses are supported, indicating significant and positive relationships between each independent variable and consumer perception. Health and Food Safety Consciousness (H1) shows a strong positive effect (β = 0.276, C.R. = 7.06, p< 0.001), suggesting that consumers who are more health-conscious are likely to perceive organic staples more favorably. Similarly, Trust in Certification and Labeling (H2) significantly affects consumer perception (β = 0.251, C.R. = 6.43, p< 0.001), emphasizing the importance of credible labeling and certification in building trust. Awareness Level (H3) exhibits the strongest influence (β = 0.363, C.R. = 9.20, p< 0.001), highlighting that informed consumers tend to have a more positive perception of organic products. Social and Cultural Influence (H4) also plays a significant role (β = 0.143, C.R. = 3.71, p< 0.001), reflecting the impact of societal norms and cultural values on consumer attitudes. Ethical Awareness (H5) contributes positively (β = 0.144, C.R. = 3.79, p< 0.001), indicating that consumers who are ethically aware, particularly regarding environmental concerns, are more inclined towards organic products. Lastly, Accessibility and Availability of Products (H6) is found to be significant as well (β = 0.089, C.R. = 2.30, p = 0.022), though its influence is relatively lower compared to other factors. Collectively, these findings confirm that consumer perception of organic staple food is shaped by a combination of health concerns, trust, awareness, social influences, ethics, and product accessibility.

7.D. Moderation effect

H7a: The effect of Awareness Level on consumer perception is moderated by Age.

Awareness is a key driver in shaping consumer perception toward organic food. However, consumers' age may influence how they process and respond to information regarding organic products. Younger individuals may be more open to novel information and marketing messages, while older individuals may rely on established beliefs and practices. Thus, it is important to explore whether the effect of awareness on consumer perception varies across age groups.

Table7: Moderating Effect of Age

Variable	Coeff	S.E.	t	p	LLCI	ULCI
Constant	-0.1412	0.0717	-1.9696	0.0496	-0.2821	-0.0002
Aware	0.3377	0.0560	6.0262	0.0000	0.2275	0.4479
Age	0.0754	0.0356	2.1179	0.0348	0.0054	0.1455
Int_1	-0.0554	0.0279	-1.9834	0.0480	-0.1102	-0.0005

Table8: Conditional effects of Age

Age Group	Effect	S.E.	t	p	LLCI	ULCI
Younger Adults	0.2730	0.0281	9.7257	0.0000	0.2178	0.3281
Middle-aged Adults	0.2335	0.0200	11.6860	0.0000	0.1942	0.2728
Older Adults	0.1941	0.0283	6.8525	0.0000	0.1384	0.2497

The interaction term between Awareness and Age is statistically significant (β = -0.0554, p = 0.048), indicating that age moderates the relationship between awareness and consumer perception of organic staple food. The negative coefficient suggests that as age increases, the positive impact of awareness on perception decreases. The conditional effects confirm that the influence of awareness on perception is stronger in younger individuals and weakens with age.

H7b: The effect of Health & Safety on consumer perception is moderated by Gender.

Health and food safety consciousness significantly affect how consumers evaluate and adopt organic products. Prior research has shown that health-related motivations may differ across genders due to psychological, social, and behavioral differences. Males and females may perceive food risks and health benefits differently, which can moderate the influence of health consciousness on consumer perception. This hypothesis examines whether gender alters the strength of this relationship.

Table9: Moderating Effect of gender

Variable	Coeff	S.E.	t	p	LLCI	ULCI
Constant	0.0656	0.0867	0.7559	0.4502	-0.1050	0.2361
Health	0.2904	0.0549	5.2844	0.0000	0.1823	0.3984
Gender	-0.0553	0.0551	-1.0037	0.3162	-0.1637	0.0530
Int_1	-0.0942	0.0357	-2.6378	0.0087	-0.1645	-0.0240

Table10: Conditional effects of gender

Gender	Effect	S.E.	t	p	LLCI	ULCI
Male	0.1961	0.0241	8.1368	0.0000	0.1487	0.2435
Female	0.1019	0.0264	3.8645	0.0001	0.0501	0.1537

The interaction between Health Consciousness and Gender is statistically significant (β = -0.0942, p = 0.0087), suggesting that gender moderates this relationship. The negative interaction implies that the impact of health consciousness on consumer perception is stronger for males compared to females.

H7c: The effect of Accessibility on perception is moderated by Income.

Accessibility and availability of organic products are often linked to market penetration and affordability. Income level can play a crucial role in how consumers perceive access to organic staple foods, particularly in developing markets where organic products may be priced at a premium. Higher-income consumers may be less constrained by availability and price, potentially amplifying the impact of accessibility on perception. This hypothesis investigates whether income level moderates this relationship.

Table11: Moderating Effect of income

Variable	Coeff	S.E.	t	p	LLCI	ULCI
Constant	-0.2653	0.0766	-3.4631	0.0006	-0.4159	-0.1147

Access	-0.0587	0.1030	-0.5697	0.5692	-0.2611	0.1438
Income	0.1376	0.0361	3.8079	0.0002	0.0666	0.2087
Int_1	0.1034	0.0489	2.1146	0.0351	0.0073	0.1994

Table 12: Conditional effects of income

Income Group	Effect	S.E.	t	p	LLCI	ULCI
Low	0.0622	0.0545	1.1422	0.2541	-0.0449	0.1693
Moderate	0.1446	0.0388	3.7263	0.0002	0.0683	0.2209
High	0.2270	0.0555	4.0887	0.0001	0.1179	0.3362

The interaction term between Accessibility and Income is statistically significant ($\beta = 0.1034$, $p = 0.0351$), indicating that income moderates this relationship. The positive coefficient shows that as income increases, the positive impact of accessibility on consumer perception also increases. The conditional effects confirm that this relationship is not significant at low income levels, but becomes stronger and significant for moderate- and high-income groups.

9. CONCLUSION

This study presented a detailed and scientific model that shows what people think about organic staple foods and which factors shape their thinking. Awareness, trust, health consciousness, ethics, accessibility and socio-cultural factors – all of these play important roles in consumer perception. Through SEM analysis, it was proved that awareness and trust are the most impactful factors. This means that people perceive organic staples positively only when they get proper information and can trust the certification systems. Moderation analysis also highlighted that perception of each demographic group can be different. Young consumers are more influenced by awareness, males by health consciousness and high-income group by accessibility. This suggests that a different strategy is needed for each target group; a general message will not work for everyone. This research addressed an important gap – the focus was on staple foods such as dal, rice, etc., rather than organic fruits and packaged items, which are a daily part of every household. If marketers and policy makers take these findings into account, they can run effective and focused campaigns. This study provides a strong base for future research – especially in the context of regional and behavior-based studies – and promotes sustainable and ethical food choices with real ground-level solutions.

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