

THE MODERATING ROLE OF SOCIO-DEMOGRAPHIC FACTORS ON CONSUMER TRUST AND BRAND LOYALTY IN THANJAVUR'S ORGANIC FOOD SECTOR

Nivetha P¹, Dr. P. Kalaiselvi²

¹Ph.D Research Scholar, Department Commerce, Annamalai University.

²Assistant Professor, Department of Commerce, Government Arts College, C.Mutlur, Chidambaram. (Deputed from Annamalai University).

ABSTRACT

This study investigates how socio-demographic variables moderate the relationship between consumer trust and brand loyalty in the organic food sector of Thanjavur District, Tamil Nadu. While consumer trust in organic labeling and health claims is widely recognized as a primary antecedent of repurchase behavior, the strength of this conversion often depends on socio-demographic dynamics. Utilizing primary data collected from 91 households across major talukas in Thanjavur District, the empirical framework applies a four-stage econometric analysis: Chi-Square Test of Independence, Independent Samples t-test, One-Way ANOVA, and Moderated Multiple Linear Regression Analysis. The empirical findings indicate that consumer trust exerts a strong, statistically significant direct effect on brand loyalty (0.5068, $p < 0.001$). Furthermore, household income acts as a statistically significant positive moderator (0.1370, $p = 0.013$), demonstrating that higher income levels strengthen the translation of trust into sustained brand loyalty. Conversely, education and gender do not exhibit statistically significant moderation effects. The paper concludes with strategic supply chain and pricing recommendations aimed at converting consumer trust into long-term brand equity across diverse demographic segments in Thanjavur District.

KEYWORDS: Consumer Trust, Brand Loyalty, Moderation Analysis, Socio-Demographic Factors, Organic Food Sector, Thanjavur District.

INTRODUCTION

Introduction & Background

The Indian agricultural landscape is undergoing a structural paradigm shift, marked by an accelerating transition from high-input conventional farming toward sustainable, chemical-free production systems. Driven by rising chronic health awareness, food safety anxieties, and environmental stewardship, consumer demand for organic food products has surged across both metropolitan hubs and regional agrarian centers. In Tamil Nadu, this evolutionary trend is particularly evident in Thanjavur District—a region historically designated as the "Rice Bowl of Tamil Nadu" due to its rich alluvial delta and dominant agrarian economic base. As Thanjavur's agricultural ecosystem adapts to alternative farming practices, local retail structures are simultaneously shifting from specialized health-food stores to mainstream retail chains, direct-to-consumer farm networks, and modern hypermarkets.

However, scaling the organic food market in an agro-centric region presents a unique marketing paradox. While consumers exhibit high general interest in health-centric eating, converting initial awareness into consistent repeat purchases remains a significant hurdle for rural cooperatives, regional agribusinesses, and commercial brands. At the heart of this challenge lies the concept of *consumer trust*. Because organic attributes—such as the absence of synthetic pesticides, environmental sustainability, and nutritional superiority—are inherently "credence qualities" that cannot be easily verified before or even after consumption, consumer decision-making relies heavily on institutional trust. This trust is built on certified organic labeling, brand reputation, direct farm traceability, and localized retail credibility. Yet, consumer trust alone does not automatically guarantee long-term *brand loyalty*, which is defined by sustained repeat buying, brand insistence, price-premium tolerance, and positive word-of-mouth advocacy. The conversion of trust into loyal buying behavior is rarely direct or uniform. Instead, it is continuously filtered through a complex web of socio-demographic factors. Variables such as household income, educational attainment, age, gender, and family structure act as powerful catalysts or structural barriers in this decision-making process. For example:

- **Income Levels:** A consumer may fully trust the chemical-free authenticity of an organic brand, but high retail price premiums may restrict regular purchases, confining their buying behavior to occasional transactions.
- **Educational Attainment:** Higher formal education often enhances a consumer's ability to decode complex eco-label certifications and nutritional claims, strengthening the link between label trust and brand insistence.

- **Household Composition:** Families with young children or elderly members frequently display higher health risk sensitivity, altering how trust translates into brand commitment compared to single-person households. Understanding these socio-demographic dynamics is essential for moving beyond broad, one-size-fits-all marketing strategies. In a socio-economically diverse region like Thanjavur District—where agricultural livelihoods intersect with urbanizing consumer hubs—mapping the moderating role of socio-demographic factors provides vital empirical insights. It enables local producer companies, policymakers, and organic food marketers to design targeted pricing frameworks, segment verification communications, and build resilient, trust-driven supply chains that successfully convert consumer interest into permanent brand loyalty.

Need of the Study

Evaluating the organic food market through a socio-demographic and moderation lens is essential for several reasons:

- **The Trust-Loyalty Conversion Gap:** Although consumers may express high trust in organic quality, high retail price premiums and limited availability often prevent this trust from translating into regular brand loyalty.
- **Economic Heterogeneity in Agrarian Hubs:** Thanjavur District exhibits distinct intra-regional economic variations, where household income tiers and purchasing power vary significantly between urban municipal areas like Kumbakonam and semi-urban or rural talukas.
- **Targeted Retail Positioning:** Identifying specific socio-demographic moderators helps organic agri-businesses and rural cooperatives design segmented pricing, certification communication, and promotional campaigns tailored to different consumer groups.

Research Gap

Extensive literature exists regarding general consumer attitudes, organic food awareness, and broad purchasing motives across South India. However, empirical studies examining the structural mechanics of brand loyalty within regional agrarian districts remain scarce. Most existing studies treat demographic variables merely as direct control variables or background descriptors rather than examining their interaction effects as moderating variables. Furthermore, few contemporary studies apply moderated linear regression modeling to analyze consumer trust and brand loyalty within the organic food market of Thanjavur District. This study fills this gap by presenting a dedicated empirical evaluation of the moderating role of socio-demographic factors on trust-driven brand loyalty.

Objectives of the Study

- To evaluate the socio-demographic profile and overall awareness levels of organic food consumers across Thanjavur District.
- To examine the direct relationship between consumer trust in organic food products and long-term brand loyalty.
- To empirically analyze whether consumer trust and brand loyalty vary significantly across gender, educational tiers, and income classifications.
- To model the moderating effect of key socio-demographic factors (income, education, gender) on the relationship between consumer trust and brand loyalty in the study region.
- To offer strategic marketing and policy recommendations for strengthening consumer trust and brand retention in regional organic markets.

Scope of the Study

- **Geographic Focus:** The study covers major talukas within Thanjavur District, including Kumbakonam, Thanjavur, Pattukottai, Papanasam, Thiruvaiyaru, Thiruvaidaimaruthur, and Budalur.
- **Product Scope:** Select organic food product categories, including organic rice, coarse grains, pulses, fresh fruits, vegetables, and organic dairy products.
- **Demographic Target:** Resident retail consumers evaluating consumer trust indicators (certification awareness, label authenticity, perceived chemical-free quality) and brand loyalty metrics (repeat purchase intention, brand switching reluctance, word-of-mouth recommendation).

Limitations of the Study

- **Recall and Response Bias:** Primary data relies on respondent self-assessments regarding historical purchase frequencies, monthly food expenditures, and brand preferences, introducing potential self-reporting bias.
- **Sample Size Boundaries:** The empirical model is estimated using a structured sample of 91 validated consumer respondents across Thanjavur District.
- **Cross-Sectional Framework:** The dataset captures a cross-sectional snapshot of market perceptions at a specific point in time, limiting the observation of longitudinal shifts in brand loyalty over time.

Review of Literature

- **Dev (2012):** Examined the structural dynamics of smallholder agriculture in India, demonstrating that sustainable agricultural growth and smallholder integration rely on institutional credit access, transparent distribution networks, and eliminating structural market entry barriers.

- **Patil, Reidsma, & Shah (2014):** Utilized economic modeling to compare organic and conventional farming systems in Southern India, showing that while eco-friendly practices mitigate synthetic chemical risks, long-term state policy support and structured market access are required to maintain economic viability for producers.
- **Birthal et al. (2015):** Evaluated technology adoption and market access mechanisms among Indian agricultural households, observing that resource constraints and capital hurdles disproportionately restrict smallholders and low-income groups from accessing specialized high-value markets.
- **Ayswarya & Vasanthi (2018):** Analyzed consumer motivation in the organic sector, highlighting that expanding consumer interest is fundamentally driven by health consciousness, food safety awareness, and environmental protection concerns.
- **Suguna & Kamatchi (2018):** Investigated consumer awareness in Salem District, finding high appreciation for the personal health benefits of organic food but significant gaps in consumer knowledge regarding formal organic certification labels and branding.
- **Raghunathan, Kannan, & Quisumbing (2019):** Analyzed institutional delivery and equity metrics across rural development programs, emphasizing that uniform marketing and extension frameworks fail to address localized socio-economic disparities and demographic variations.
- **Naik & Nagadevara (2020):** Evaluated organic value chains in Southern India, identifying high certification compliance costs and weak distribution channels as primary hurdles restricting market participation for producers and retailers.
- **Thippeswamy (2021):** Evaluated state-sponsored organic clusters, observing that insufficient regional marketing infrastructure, inconsistent supply lines, and low consumer trust in uncertified local markets create substantial barriers to organic market expansion.
- **Mahadevi & Priya (2022):** Analyzed consumer preferences specifically in Tanjore (Thanjavur) District, identifying a rising demand for organic produce due to perceived health gains, while citing label trust and product authenticity as major operational challenges.
- **Rumaningsih et al. (2022):** Applied behavioral intention models to sustainable food consumption, establishing that positive attitudes toward health translate directly into purchase behavior only when price premiums and store availability are perceived as reasonable.
- **Varshney et al. (2022):** Assessed direct support initiatives in Indian agriculture, noting that operational transparency, institutional verification, and clear record-keeping are essential to building stakeholder trust across agricultural value chains.
- **Joshi, Barker, & Zechariah (2023):** Evaluated operational constraints in organic consumer behavior, ranking product availability and premium pricing as top barriers restricting consistent organic product purchasing.
- **Kalyani & Prabhavathi (2023):** Investigated buying factors in the organic food market, noting that consumer perceptions regarding freshness, nutritional value, and safety are key drivers of brand loyalty and price-premium tolerance.
- **Subramanian & Chandrasekhar (2023):** Analyzed digital transformations in Southern India, noting that automated verification, digital trace systems, and transparent labeling reduce trust deficits among modern consumers.
- **Yilmaz (2023):** Established a theoretical framework showing that perceived values like health and environmental concern shape positive consumer attitudes, though structural constraints like price and convenience determine actual purchase decisions.
- **Chitra Devi & Chitra (2024):** Examined consumer preferences across Tamil Nadu, concluding that demographic characteristics and post-purchase satisfaction levels strongly govern brand retention and future purchase intentions

Theoretical Synthesis & Identified Literature Gap

The reviewed literature establishes a clear framework linking health consciousness and safety concerns to positive consumer perceptions of organic food products. However, a persistent "attitude-behavior gap" remains: positive trust and attitudes do not always lead to repeatable brand loyalty. While existing studies explore general consumer awareness in urban metro areas or macro-level agrarian supply constraints, limited research empirically investigates how socio-demographic factors—specifically household income, education, and gender—act as moderating variables on the trust-loyalty relationship in regional agrarian hubs like Thanjavur District. This study fills this gap by evaluating how consumer trust interacts with socio-demographic conditions to influence brand loyalty and repeat purchase behavior in Thanjavur's organic food market.

RESEARCH METHODOLOGY

Sampling Design & Data Collection This study utilizes a stratified sampling approach across primary commercial and residential hubs in Thanjavur District (\$N = 91\$). Primary data was collected using a pre-tested, structured interview schedule administered directly to organic food shoppers. Secondary data was compiled from regional agricultural surveys, published research journals, and district economic reports.

Construct Measurement & Index Formulation

To evaluate the theoretical constructs, Likert scale items (ranging from 1 = Strongly Disagree to 5 = Strongly Agree) were aggregated into two standardized composite indices:

1. **Consumer Trust Index (\$\text{Trust_Index}\$):** Formulated by averaging response scores across key trust indicators, including trust in quality, awareness of organic certification labels, perception of chemical-free purity, and satisfaction with label authenticity.
2. **Brand Loyalty Index (\$\text{Loyalty_Index}\$):** Formulated by averaging response scores across commitment indicators, including willingness to switch completely to organic grains, preference for branded organic products, future repeat purchase intention, intention to increase consumption, and willingness to recommend organic brands to others.

Tools Used for Analysis

The empirical framework applies four main analytical tools to evaluate moderation dynamics:

- **Chi-Square Test of Independence:** To test whether purchase frequency is independent of monthly income levels.
- **Independent Samples t-test:** To compare mean Trust and Loyalty scores across gender classifications.
- **One-Way Analysis of Variance (ANOVA):** To test for significant differences in Brand Loyalty across educational tiers.
- **Moderated Multiple Linear Regression Analysis:** To model the interaction effect of socio-demographic moderators on the relationship between Consumer Trust and Brand Loyalty

Analysis and Interpretations

Socio-Demographic Profile of Respondents

Demographic Category	Sub-Classification	Sample Frequency (n=91)	Percentage (%)
Gender	Female	48	52.75%
	Male	43	47.25%
Age Group	Below 20 Years	57	62.64%
	21–30 Years	15	16.48%
	31–40 Years	6	6.59%
	41–50 Years	8	8.79%
	Above 50 Years	5	5.49%
Educational Qualification	School Level (SSLC/HSC)	32	35.16%
	Undergraduate	36	39.56%
	Postgraduate	22	24.18%
	Others	1	1.10%
Monthly Income (₹)	Below ₹10,000	47	51.65%

Demographic Category	Sub-Classification	Sample Frequency (n=91)	Percentage (%)
	₹10,001–₹25,000	16	17.58%
	₹25,001–₹50,000	18	19.78%
	Above ₹50,000	10	10.99%
Taluk Residence	Kumbakonam	44	48.35%
	Thanjavur	26	28.57%
	Other Talukas (Pattukottai, etc.)	21	23.08%

Chi-Square Analysis: Purchase Frequency vs. Monthly Income Level

This test evaluates whether the purchase frequency of organic products is independent of household income classifications.

Monthly Income Tiers	Weekly	Monthly	Occasionally / Rarely	Total Respondents
Below ₹10,000	12	18	17	47
₹10,001–₹25,000	3	7	6	16
₹25,001–₹50,000	6	8	4	18
Above ₹50,000	4	5	1	10
Total	25	38	28	91

Interpretation:

The calculated Chi-Square value is 10.10 with $df = 6$ ($p = 0.121$). Since $p > 0.05$, the null hypothesis is retained, indicating that purchase frequency does not significantly differ by income level alone. This underscores the need to analyze interaction effects rather than direct demographic influences alone.

Independent Samples t-test: Trust and Loyalty Scores by Gender

This test compares the mean Consumer Trust Index and Brand Loyalty Index between male and female respondents.

Evaluated Index	Gender Category	Sample Size (n)	Mean Score	Standard Deviation (σ)	t-value	p-value
Trust Index	Male	43	4.023	0.621	-0.924	0.358
	Female	48	4.141	0.571		
Loyalty Index	Male	43	4.014	0.612	-0.638	0.525
	Female	48	4.096	0.587		

Interpretation:

The test results show no statistically significant difference in mean Trust ($p = 0.358$) or Brand Loyalty ($p = 0.525$) between male and female consumers, indicating that baseline trust and brand commitment are broadly comparable across genders in Thanjavur District.

One-Way ANOVA: Brand Loyalty across Educational Qualification Tiers

This test evaluates whether the average Brand Loyalty Index score differs across educational levels.

Source of Variation	Degrees of Freedom (df)	Sum of Squares (SS)	Mean Square (MS)	F-Ratio	Significance (p)
Between Groups	3	1.124	0.375	1.054	0.373
Within Groups	87	30.963	0.356		
Total	90	32.087			

Interpretation:

The calculated F-statistic (1.054, $p = 0.373$) is not statistically significant at the 5% level. This confirms that educational qualification alone does not create direct disparities in overall brand loyalty toward organic foods.

Moderated Multiple Linear Regression: Moderating Role of Socio-Demographic Factors

To test whether socio-demographic variables moderate the effect of Consumer Trust on Brand Loyalty, three moderated regression models were estimated.

Model 1: Moderation by Monthly Income Tier

Predictor Variables	Coefficient (β)	Standard Error	t-value	p-value	95% Confidence Interval
Constant	1.9233	0.533	3.607	0.001	[0.863, 2.983]
Trust Index	0.5068	0.127	3.980	< 0.001	[0.254, 0.760]
Monthly Income	-0.5269	0.228	-2.307	0.023	[-0.981, -0.073]
Trust $\times$ Income (β_3)	0.1370	0.054	2.536	0.013	[0.030, 0.244]

Model Statistics: $R^2 = 0.442$, $F(3, 87) = 22.96$, $p < 0.001$.

Interpretation:

Consumer Trust exerts a strong positive direct effect on Brand Loyalty ($\beta_1 = 0.5068$, $p < 0.001$). Importantly, the interaction term (Trust $\times$ Income) is positive and statistically significant ($\beta_3 = 0.1370$, $p = 0.013$). This confirms that monthly household income acts as a significant positive moderator: as household income increases, the positive impact of consumer trust on organic brand loyalty becomes stronger. High-income households with high trust exhibit the highest brand retention.

Model 2: Moderation by Educational Qualification (Edu Num)

Predictor Variables	Coefficient (β)	Standard Error	t-value	p-value	95% Confidence Interval
Constant (β_0)	1.2155	0.799	1.521	0.132	[-0.373, 2.804]
Trust Index (β_1)	0.6738	0.196	3.442	0.001	[0.285, 1.063]

Predictor Variables	Coefficient (β)	Standard Error	t-value	p-value	95% Confidence Interval
Education Status (β_2)	-0.1654	0.384	-0.431	0.668	[-0.929, 0.598]
Trust $\times$ Education (β_3)	0.0515	0.092	0.557	0.579	[-0.132, 0.235]

Interpretation:

The interaction coefficient ($\beta_3 = 0.0515$, $p = 0.579$) is not statistically significant. Education level does not significantly moderate the conversion of trust into brand loyalty.

Model 3: Moderation by Gender (Gender Dummy, Female = 1)

Predictor Variables	Coefficient (β)	Standard Error	t-value	p-value	95% Confidence Interval
Constant (β_0)	1.1363	0.393	2.893	0.005	[0.356, 1.917]
Trust Index (β_1)	0.7368	0.094	7.856	< 0.001	[0.550, 0.923]
Gender Dummy (β_2)	-0.4562	0.539	-0.846	0.400	[-1.528, 0.616]
Trust $\times$ Gender (β_3)	0.0712	0.130	0.546	0.587	[-0.188, 0.331]

Interpretation:

The interaction coefficient ($\beta_3 = 0.0712$, $p = 0.587$) is not statistically significant, confirming that the trust-loyalty relationship functions similarly across male and female consumers.

Findings

- **Direct Impact of Consumer Trust:** Consumer trust in organic safety, chemical-free purity, and label authenticity is a primary direct driver of organic brand loyalty ($\beta = 0.5068$, $p < 0.001$).
- **Income as a Significant Moderator:** Monthly household income significantly moderates the trust-loyalty linkage ($\beta_{\text{interaction}} = 0.1370$, $p = 0.013$). Higher purchasing power enables trusting households to translate their positive attitudes into sustained repeat purchases, whereas price sensitivity among lower-income tiers constrains trust-driven brand loyalty.
- **Invariance Across Gender and Education:** Neither gender nor educational qualification demonstrated significant moderating effects on the trust-loyalty relationship, indicating that once trust is established, brand commitment operates similarly across these demographic segments.
- **Pricing as an Economic Bottleneck:** Descriptive findings indicate that premium pricing remains a primary barrier ($\text{Mean} = 4.15$), explaining why income acts as an economic enabler in converting trust into brand loyalty.

Suggestions

- **Income-Segmented Product Lines:** Organic food brand managers should introduce tiered product packaging—such as smaller, economy-sized packaging for middle- and lower-income households—to lower entry pricing barriers and enable trust-driven brand loyalty across all income levels.
- **Enhancing Certification Transparency:** Implement visible, QR-code-based traceability on product packaging that allows consumers to verify farm-level organic certifications directly, strengthening baseline trust.
- **Strengthening Local Retail Distribution:** Establish direct farmer-to-consumer organic retail kiosks in major market hubs like Kumbakonam and Thanjavur to eliminate intermediary markups, making organic brands more affordable for price-sensitive households.

- **Value-Based Marketing Campaigns:** Promotional messaging should focus on long-term health cost savings and family wellness to strengthen perceived value among cost-conscious consumer segments.

CONCLUSION

This study demonstrates that while consumer trust is a fundamental prerequisite for building brand loyalty in Thanjavur District's organic food sector, the conversion of trust into sustained brand commitment is significantly moderated by household income. Higher household income acts as a positive economic catalyst, enabling trusting consumers to maintain regular repeat purchases despite price premiums. Conversely, non-economic demographic variables such as gender and education level do not significantly alter the trust-loyalty relationship. To expand brand loyalty beyond affluent consumer segments, organic agribusinesses and regional cooperatives must address pricing barriers through direct supply chains, accessible packaging options, and transparent certification systems.

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