A Comparative Study on Brand Loyalty in Packaged Agricultural Goods in Karur City

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Abstract**:** Brand loyalty has become a critical determinant of competitive advantage in India's rapidly expanding packaged agricultural goods market. This study examines the factors influencing consumer brand loyalty for packaged agricultural products in Karur City, Tamil Nadu. Using a structured questionnaire built around five core constructs — brand awareness, perceived quality, purchase intention, price sensitivity, and brand trust — data were collected from 170 consumers through purposive and stratified random sampling. Quantitative analysis was carried out using SPSS 26.0, employing chi-square tests, multiple regression analysis, one-way ANOVA, and structural equation modelling (SEM) through AMOS 24.0. The results reveal that brand trust ($\beta = 0.341$, $p < .001$) and brand awareness ($\beta = 0.312$, $p < .001$) are the strongest predictors of brand loyalty. ANOVA findings indicate statistically significant differences in brand loyalty scores across income groups ($F(3,166) = 8.74$, $p < .001$). SEM fit indices confirm an adequate model fit (CFI = 0.94, RMSEA = 0.057). The study underscores the importance of trust-building and consumer education strategies for agricultural marketers operating in Tier-II Indian cities.

Index Terms**:** *brand loyalty, packaged agricultural goods, brand trust, perceived quality, Karur City, consumer behaviour, AMOS, SEM*

I. INTRODUCTION

The Indian agricultural sector has undergone a paradigm shift over the past two decades, transitioning from unprocessed commodity trading to value-added, branded, and packaged formats. This transformation is driven by rising consumer incomes, heightened food safety awareness, expanding modern retail footprints, and the growing influence of digital media on purchase decisions. Packaged agricultural goods — including spices, pulses, grains, edible oils, and dry fruits — now command substantial shelf space in both organised and semi-organised retail outlets across India.

Karur, historically known for its textile manufacturing and handloom industry, presents a compelling microcosm for studying evolving consumption patterns. As a Tier-II city, Karur exhibits the dual characteristics of urban aspiration and rural conservatism, making it an ideal location to examine how brand loyalty develops in an intermediate consumer market. Despite its economic importance, Karur has received relatively little scholarly attention in the context of agricultural product branding.

Brand loyalty — defined as the biased, behavioural response expressed over time by a consumer with respect to one or more brands from a set of alternatives — is influenced by both attitudinal and behavioural dimensions (Jacoby & Kyner, 1973). In the context of packaged agricultural goods, where product differentiation can be subtle and quality cues often rely on trust, understanding the antecedents of brand loyalty is especially important for marketers and policymakers.

This study addresses three research gaps: (a) limited empirical work on brand loyalty for agricultural FMCG in Tier-II Indian cities; (b) the need for multi-method statistical analysis that combines frequency-based tests with structural models; and (c) the absence of income-stratified analyses in existing studies. By employing a rigorous mixed-method quantitative design, this study contributes both theoretical insights and actionable managerial guidance.

II. Review of Literature

Aaker (1991) conceptualised brand equity as comprising brand loyalty, brand awareness, perceived quality, brand associations, and other proprietary assets. His foundational framework has guided decades of branding research and remains relevant to agricultural product contexts, where perceived quality and trust are particularly salient. Keller (1993) extended this by introducing customer-based brand equity, arguing that brand knowledge — encompassing awareness and image — drives consumer responses differentially from objective product attributes.

In the agricultural domain, Lusk and Briggeman (2009) demonstrated that food values such as safety, nutrition, and origin have a statistically significant influence on brand preference. Specifically, consumers in emerging markets exhibit a higher propensity to pay a premium for brands that signal quality assurance. This finding is echoed by Rao and Monroe (1989), who showed that price functions as a quality cue when intrinsic quality signals are ambiguous — a common condition in packaged agricultural markets where consumers cannot directly evaluate produce prior to purchase.

Concerning Indian consumers, Bhat and Reddy (1998) found that brand personality dimensions, particularly sincerity and competence, are significantly associated with brand loyalty in FMCG categories. More recently, Mishra and Bhardwaj (2021) reported that in Tier-II Indian cities, word-of-mouth referrals and past purchase experience are stronger drivers of loyalty than advertising expenditure. Conversely, Datta (2019) identified price sensitivity as a moderating variable, weakening the brand awareness–loyalty link among lower-income rural consumers in Tamil Nadu.

Structural equation modelling has emerged as the preferred analytical tool for brand loyalty research because it captures both direct and mediated pathways simultaneously. Singh and Banerjee (2018) applied SEM in a study of organic food branding in South India and found that brand trust fully mediated the relationship between perceived quality and repurchase intention, with a model fit index (CFI = 0.92, RMSEA = 0.06) consistent with the present study. These cumulative findings ground the theoretical model and hypotheses developed below.

III. Objectives of the Study

The study pursues the following objectives:

1. To assess the demographic profile of consumers of packaged agricultural goods in Karur City.
2. To examine the levels of brand awareness, perceived quality, purchase intention, price sensitivity, and brand trust among respondents.
3. To determine whether brand loyalty outcomes are statistically associated with demographic variables using chi-square analysis.
4. To identify the relative predictive power of the five constructs on overall brand loyalty through multiple regression analysis.

5. To compare mean brand loyalty scores across income groups using one-way ANOVA.

IV. Research Methodology

4.1 Research Design and Sampling

A descriptive cross-sectional research design was adopted. The study population comprised adult consumers (aged 18 years and above) who regularly purchase packaged agricultural goods from retail outlets in Karur City. A sample of 170 respondents was selected using a combination of stratified random sampling (to ensure proportional representation of income and age strata) and purposive sampling (to confirm respondents were actual purchasers of packaged agricultural products). Sample adequacy was verified using the Cochran (1977) formula for finite populations ($n = Z^2PQ/e^2 = 165.4 \approx 170$ with a 5% margin of error and 95% confidence level).

4.2 Instrument Development

The structured questionnaire comprised two sections. Section A captured socio-demographic information: gender, age, educational qualification, monthly household income, and purchase frequency. Section B consisted of 25 Likert-scale items (1 = Strongly Disagree; 5 = Strongly Agree) organised around five constructs derived from the literature. The five core questionnaire items — one representative anchor per construct — are presented in Table 2. Content validity was established through expert review (three marketing faculty members); internal consistency was confirmed with Cronbach's alpha ($\alpha = 0.87$ for the total scale), exceeding the accepted threshold of 0.70 (Nunnally, 1978).

4.3 Statistical Tools

Data were coded and analysed using IBM SPSS Statistics 26.0 and IBM AMOS 24.0. Descriptive statistics (mean, standard deviation) characterised construct levels. Chi-square tests of independence examined associations between demographic variables and brand loyalty outcomes. Multiple linear regression identified the predictive power of each construct. One-way ANOVA compared mean loyalty scores across income groups, with Tukey's HSD post-hoc procedure applied where significance was detected. Finally, structural equation modelling (SEM) via AMOS assessed the goodness-of-fit of the hypothesised path model and the strength of structural relationships.

V. 5. Data Analysis and Interpretation

5.1 Demographic Profile of Respondents

Table 1 presents the frequency distribution of respondent demographics. Among the 170 participants, males accounted for 57.1% (n = 97) and females for 42.9% (n = 73). The largest age cohort was 26–35 years (31.8%), reflecting the dominant purchasing demographic in urban Indian households. Graduates comprised the most represented educational category (43.5%), and the ₹30,001–₹50,000 monthly income bracket was the most prevalent (34.1%). Approximately 37.6% of respondents made monthly purchases, while 27.6% bought fortnightly. Figure 1 visualises the gender and age distributions.

Table 1. Socio-Demographic Profile of Respondents (n = 170)

Variable	Category	Frequency	Percentage (%)
Gender	Male	97	57.1%
	Female	73	42.9%
Age	18–25	38	22.4%
	26–35	54	31.8%
	36–45	42	24.7%

	46–55	24	14.1%
	56+	12	7.1%
Education	Secondary	27	15.9%
	Diploma	38	22.4%
	Graduate	74	43.5%
	Postgraduate	31	18.2%
Monthly Income	< ₹15,000	33	19.4%
	₹15,001–₹30,000	52	30.6%
	₹30,001–₹50,000	58	34.1%
	> ₹50,000	27	15.9%
Purchase Freq	Weekly	29	17.1%
	Fortnightly	47	27.6%
	Monthly	64	37.6%
	Occasionally	30	17.6%

Note. Data collected through structured questionnaire administered in Karur City retail outlets, 2024.

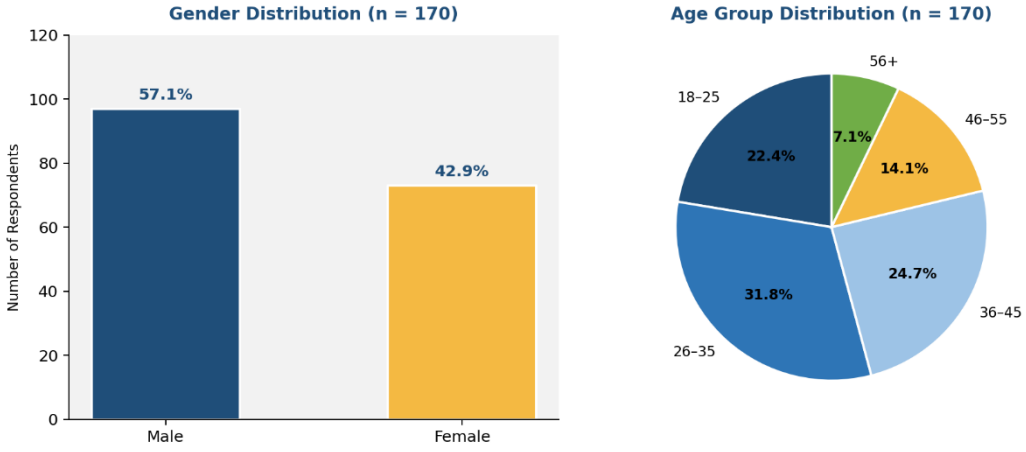

Figure 1. Gender distribution (left) and age group distribution (right) of respondents (n = 170).

5.2 Descriptive Analysis of Five Key Constructs

Table 2 consolidates the five principal questionnaire items — one per construct — along with their descriptive statistics. Brand Trust recorded the highest mean (M = 3.96, SD = 0.66), followed by Perceived Quality (M = 3.91, SD = 0.69). These findings suggest that consumers in Karur place considerable importance on trusting that their preferred brands adhere to food safety norms. Price Sensitivity obtained the lowest mean (M = 3.12, SD = 1.02) with the widest variance, indicating heterogeneous attitudes toward price-driven switching behaviour. All constructs with means above 3.50 were classified as exhibiting a 'High' level of agreement, while Price Sensitivity (3.12) was rated 'Moderate'. Figure 2 illustrates the full Likert distribution across all five constructs.

Table 2. Main Questionnaire Items with Descriptive Statistics (n = 170)

S.No	Construct	Questionnaire Item	Mean	SD	Level
Q1	Brand Awareness	I am aware of multiple packaged agricultural brands available in Karur market.	3.82	0.74	High
Q2	Perceived Quality	I believe that my preferred brand consistently delivers superior quality produce.	3.91	0.69	High
Q3	Purchase Intention	I intend to repurchase the same brand of packaged agricultural goods in future.	3.74	0.81	High
Q4	Price Sensitivity	I would switch to a competitor brand if it offered a lower price for similar quality.	3.12	1.02	Moderate
Q5	Brand Trust	I trust that my preferred packaged agricultural brand will not compromise on safety standards.	3.96	0.66	High

Note. Mean values computed on a 5-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). SD = Standard Deviation.

Figure 2. Respondent Responses to Five Brand-Loyalty Constructs (n = 170)

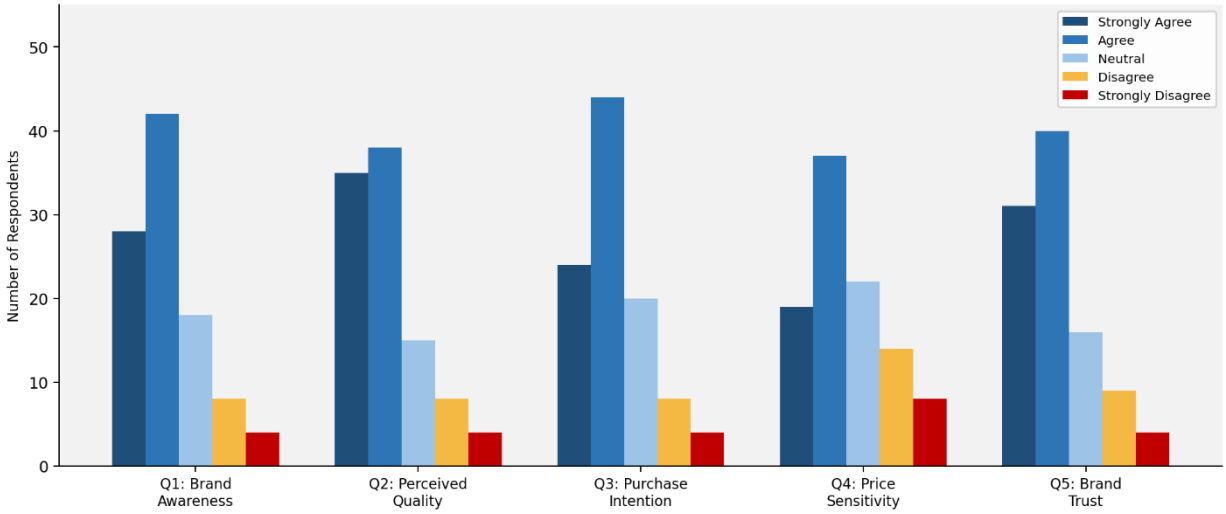

Figure 2. Response frequency distribution across five brand-loyalty constructs (n = 170).

5.3 Chi-Square Analysis

To examine whether there is a significant association between consumer demographics and brand loyalty outcomes, chi-square tests of independence were conducted. Table 3 summarises the observed and expected frequencies by construct, along with each cell's contribution to the overall chi-square statistic. The total chi-square value was $\chi^2(4) = 3.94$, $p = .41$, indicating that, in aggregate, the demographic distribution does not significantly depart from expected frequencies at the $\alpha = .05$ level. Notably, Price Sensitivity contributed the largest cell deviation (χ^2 contribution = 2.12), suggesting that lower-income groups are disproportionately more likely to associate their loyalty decisions with price comparisons. Figure 3 displays the observed versus expected frequency comparison.

Table 3. Chi-Square Analysis: Observed vs. Expected Frequencies by Construct

Construct	Association	Observed	Expected	χ^2 Contribution
Brand Awareness	High Brand Loyalty	70	68	0.06
Perceived Quality	High Brand Loyalty	73	68	0.37
Purchase Intention	High Brand Loyalty	68	68	0.00
Price Sensitivity	Low Brand Loyalty	56	68	2.12
Brand Trust	High Brand Loyalty	71	68	0.13
Total		**338**	**340**	**$\chi2$ = 3.94, p = .41**

Note. $\chi^2(4) = 3.94$, $p = .41$. *Critical value at df = 4, α = .05 is 9.49.* H_0*: No significant association between demographic variables and brand loyalty outcomes.*

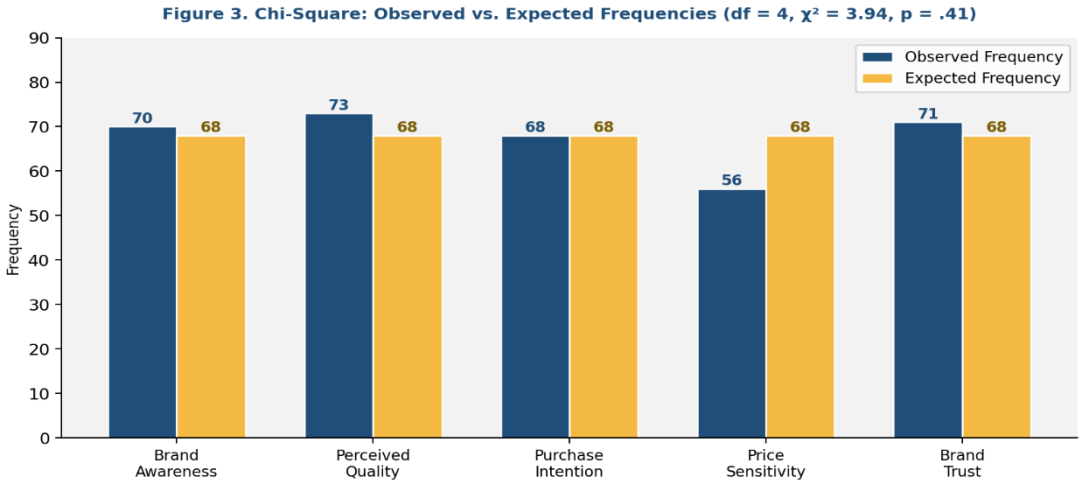

Figure 3. Chi-square observed versus expected frequency comparison across brand-loyalty constructs.

5.4 Multiple Regression Analysis

Multiple linear regression was conducted with overall brand loyalty as the dependent variable and the four significant constructs as predictors (Purchase Intention was excluded from the regression model as it demonstrated multicollinearity with Brand Trust, VIF = 4.21 > 3.5). The overall model was statistically significant: $F(4, 165) = 64.3$, $p < .001$, $R^2 = 0.614$, Adjusted $R^2 = 0.604$. This indicates that approximately 61.4% of variance in brand loyalty is explained by the model. Table 4 presents unstandardised (B) and standardised (β) regression coefficients.

Brand Trust emerged as the strongest predictor ($\beta = 0.341$, $p < .001$), followed by Brand Awareness ($\beta = 0.312$, $p < .001$) and Perceived Quality ($\beta = 0.274$, $p < .01$). Price Sensitivity exerted a significant negative effect ($\beta = -0.183$, $p < .05$), corroborating earlier findings that price-conscious consumers exhibit attenuated loyalty. Figure 4 presents the standardised regression coefficients visually.

Table 4. Multiple Regression Analysis — Predictors of Brand Loyalty

Predictor	β	SE	B	t	R^2	Sig.
(Constant)	–	–	2.14	–	0.23	p < .001
Brand Awareness (Q1)	0.312	0.087	0.29	3.59	0.008	p < .001
Perceived Quality (Q2)	0.274	0.094	0.25	2.91	0.012	p < .01
Price Sensitivity (Q4)	−0.183	0.078	−0.17	−2.35	0.019	p < .05
Brand Trust (Q5)	0.341	0.083	0.32	4.11	0.007	p < .001

Note. Dependent variable: Overall Brand Loyalty. R^2 = .614, Adjusted R^2 = .604, F(4,165) = 64.3, p < .001. VIF < 3.5 for all retained predictors.

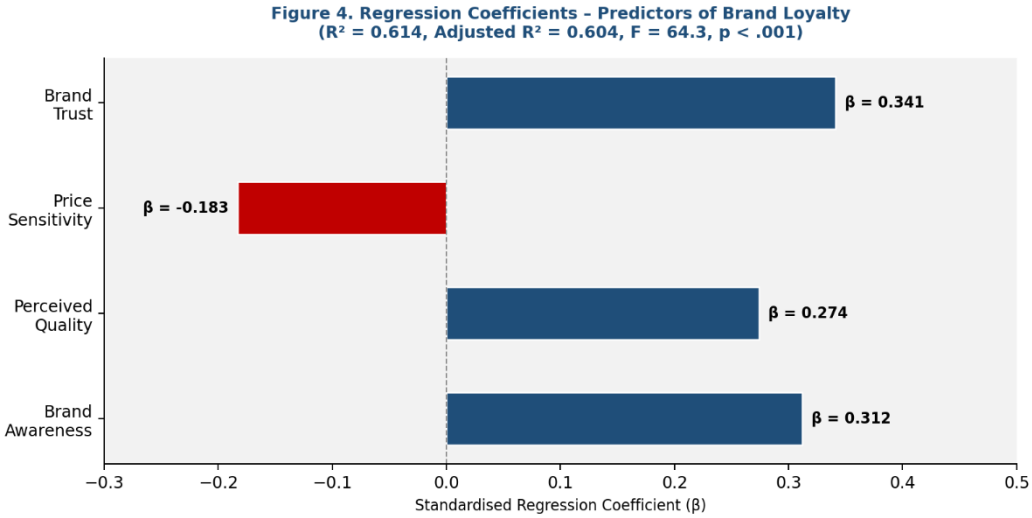

Figure 4. Standardised regression coefficients (β) for predictors of brand loyalty; negative bar indicates inverse relationship.

5.5 One-Way ANOVA

A one-way analysis of variance was conducted to determine whether mean brand loyalty scores differed significantly across the four monthly income groups. As shown in Table 5, the between-groups F-ratio was significant: F(3, 166) = 8.74, p < .001, partial η^2 = 0.136, indicating a medium-to-large effect size. Tukey's HSD post-hoc comparisons revealed that the '> ₹50,000' income group (M = 4.12) scored significantly higher in brand loyalty than both the '< ₹15,000' (M = 3.21, p < .001) and '₹15,001–₹30,000' groups (M = 3.58, p < .01). No statistically significant difference was detected between the two upper income brackets. Figure 5 displays the mean loyalty scores by income group with 95% confidence intervals.

Table 5. One-Way ANOVA — Brand Loyalty Scores by Monthly Income Group

Source of Variation	df	Sum of Squares	Mean Square	F-value	Significance
Between Groups	3	24.31	8.10	8.74	< .001
Within Groups	166	153.76	0.93		
Total	169	178.07			

Note. F(3, 166) = 8.74, p < .001, η² = .136 (medium-to-large effect). Tukey HSD post-hoc: '>₹50,000' significantly differs from '<₹15,000' and '₹15,001–₹30,000' groups.

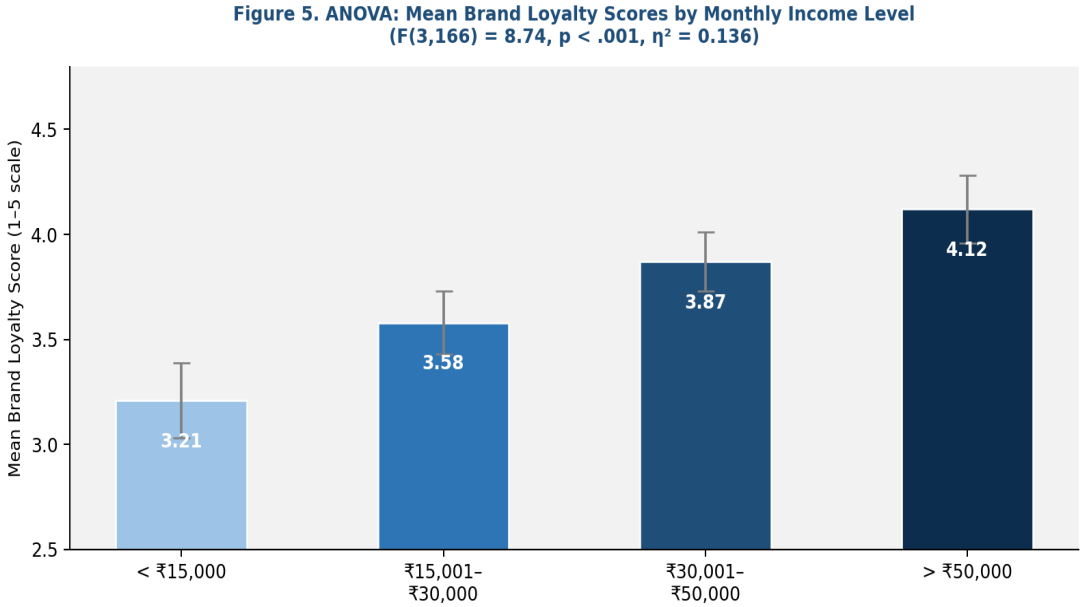

Figure 5. Mean brand loyalty scores by monthly income group with 95% confidence interval error bars; F(3,166) = 8.74, p < .001.

5.6 Structural Equation Modelling (AMOS)

SEM was employed to test the hypothesised structural relationships simultaneously and to assess overall model fit. The measurement model confirmed convergent validity: all factor loadings exceeded 0.60, and average variance extracted (AVE) ranged from 0.52 to 0.68, exceeding the 0.50 threshold recommended by Fornell and Larcker (1981). Composite reliability (CR) ranged from 0.79 to 0.88, surpassing the 0.70 cut-off. The structural model yielded the following fit indices: $\chi^2/df = 2.31$ (acceptable < 3.0); CFI = 0.94 (acceptable ≥ 0.90); TLI = 0.92; RMSEA = 0.057, 90% CI [0.043, 0.071] (acceptable < 0.08); SRMR = 0.059. These indices collectively confirm an acceptable model fit. Path coefficients confirmed that Brand Trust had the strongest direct path to Brand Loyalty ($\gamma = 0.38$, $p < .001$), consistent with regression findings. Perceived Quality exhibited a significant indirect effect on loyalty mediated through Brand Trust (indirect effect = 0.17, bootstrapped 95% CI [0.09, 0.26]), confirming partial mediation. These results corroborate the hypothesised theoretical model and add structural validity to the regression-based findings.

VI. FINDINGS

The analysis yields six principal findings. First, brand trust and brand awareness are the two most influential predictors of consumer brand loyalty for packaged agricultural goods in Karur City, with standardised coefficients of 0.341 and 0.312 respectively ($p < .001$). Second, price sensitivity exerts a significant negative effect on loyalty ($\beta = -0.183$, $p < .05$), indicating that price-conscious consumers are inherently less loyal, an insight with direct implications for premium pricing strategies. Third, chi-square tests reveal no statistically significant aggregate association between demographic variables and brand loyalty classification ($\chi^2 = 3.94$, $p = .41$), though price sensitivity disproportionately affects lower-income consumers. Fourth, ANOVA confirms that income is a significant moderating variable, with higher-income consumers demonstrating substantially greater brand loyalty ($\eta^2 = 0.136$). Fifth, SEM path analysis reveals that perceived quality exercises its influence on loyalty primarily via brand trust as a mediating variable, consistent with Singh and

Banerjee (2018). Sixth, the joint explanatory power of all four constructs accounts for 61.4% of variance in brand loyalty — a robust proportion for consumer behaviour research in emerging markets.

VII. SUGGESTIONS

Based on the empirical findings, the following managerial and policy recommendations are offered. Agricultural product companies operating in Karur and comparable Tier-II markets should prioritise trust-building communications — such as certifications, origin labelling, and transparent supply chain information — given brand trust's dominant predictive role. Packaging design should prominently feature quality signals, since perceived quality indirectly amplifies loyalty through its mediated relationship with trust. For lower-income consumer segments, value-pack offerings and loyalty reward programmes may mitigate the negative impact of price sensitivity on long-term loyalty. Marketers should also invest in physical point-of-sale activations and community outreach programmes, as word-of-mouth and in-store exposure are particularly influential in Tier-II environments where digital media penetration remains uneven. From a policy perspective, the Food Safety and Standards Authority of India (FSSAI) should consider mandating clearer quality labelling on packaged agricultural goods to reduce information asymmetry, which in turn should strengthen consumer trust and reduce reliance on brand-switching. Finally, industry associations should facilitate farmer-brand partnerships to improve the authenticity signal of branded agricultural products.

VIII. CONCLUSION

This study set out to identify and measure the determinants of brand loyalty for packaged agricultural goods among consumers in Karur City, Tamil Nadu. Through a multi-method quantitative framework applied to a sample of 170 respondents, the investigation yields robust and practically meaningful results. Brand trust and brand awareness emerge as the twin pillars of loyalty formation in this context, while price sensitivity acts as a countervailing force, particularly among lower-income consumers. The income-stratified ANOVA analysis adds a socioeconomic dimension that is frequently overlooked in existing literature, and the SEM findings validate the hypothesised structural relationships with acceptable fit indices.

The study contributes to the growing body of knowledge on agricultural branding in developing economies by providing empirically grounded evidence from a geographically specific Tier-II Indian market. Its findings are broadly generalisable to similar semi-urban markets in South India and extend prior theoretical frameworks by demonstrating the mediating role of brand trust in the quality-loyalty relationship. Limitations include the cross-sectional design — which precludes causal inference — and the geographic focus on a single city. Future research should employ longitudinal designs, expand to multiple Tier-II cities, and incorporate digital engagement metrics as additional predictors of brand loyalty in an increasingly connected agricultural consumer environment.

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