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EFFECT OF REFERENCE GROUPS ON GREEN CONSUMPTION INTENTION: A CASE OF ORGANIC FOODS IN YUNNAN, CHINA

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Abstract

This study provides an in-depth examination of the influence of reference groups on consumers' green purchase intentions for organic food based on the Appraisal-Emotional Response-Coping Theory. By integrating utilitarian and value-expressive reference group influences, the research systematically analyzes the mediating role of product trust and supply chain trust. Additionally, the study investigates gender differences, revealing that value-expressive and utilitarian influences have no significant advantages across genders. This study employed an online survey utilizing a convenience sampling approach to gather data from 433 Chinese adult consumers with prior experience with green product consumption. Structural equation modeling (SEM) validates research hypotheses, uncovering key interdependencies and indirect effects among variables. The study's results emphasize the crucial role of product and chain trust in promoting green purchasing behavior. Value-expressive influence plays a prominent role in shaping consumers' trust and significantly enhances their sense of green consumption intention. Value-expressive and utilitarian influences similarly affect green consumption intention via chain trust and product trust, while the utilitarian influence on green consumption intention was not statistically significant. The practical implications of this study lie in providing strategies for businesses and policymakers to improve chain trust and build consumer trust, thereby promoting sustainable consumption.

Keywords: Supply Chain Trust, Green Consumption Intentions, Reference Groups, Organic Food, Product Trust

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Introduction

As a globally influential market, China plays a critical role in shaping environmental outcomes through its consumer behavior. Given that most environmental problems are directly attributable to human activities (Nielsen et al., 2021), developing a nuanced understanding of these behaviors and identifying effective strategies for mitigating their environmental impact is imperative. Nguyen et al. (2019) argued that altering personal consumption behaviors yields a more profound and far-reaching impact on sustainable development than merely enhancing the energy efficiency of specific buildings, vehicles, and other infrastructure. Purchasing and consuming organic food is recognized as an eco-friendly practice that contributes substantially to environmental quality (Taufique et al., 2017). Despite extensive research on organic products, few studies have comprehensively examined the influence of reference groups from a Chinese perspective. This study aims to address this gap by investigating the role of reference groups in shaping green consumption behaviors among Chinese consumers. By exploring these influences in the Chinese context, this research aspires to contribute meaningfully to the academic discourse on sustainable consumption practices, with an emphasis on advancing theoretical frameworks and empirical understanding in this domain.

Literature Reviews

The Appraisal-Emotional Responses-Coping Behavior framework is conceptualized as a mediation model to elucidate the dynamic relationship between emotions and behavioral responses (Lages, 2012). This framework has been extensively utilized to investigate how cognitive appraisals by customers (e.g., value perception) influence coping behaviors (e.g., loyalty, behavioral intentions) through the mediating role of emotional responses (e.g., satisfaction, trust, memorability) within tourism and hospitality settings (Ngamcharoen et al., 2025). The process involves an initial cognitive appraisal of the experience, which triggers emotional responses, culminating in specific behavioral intentions (Bagozzi, 1992).

Green consumption intention is defined as an individual's conscious decision to engage in environmentally sustainable consumption behaviors (Ajzen & Fishbein, 1980). Green consumption, which constitutes a form of environmentally responsible behavior, is characterized by its emphasis on ecological preservation and sustainability. In recent years, it has garnered significant interest from both enterprises and consumers, highlighting its relevance in contemporary discourse on sustainability (Semprebon et al., 2019; Urban et al., 2019). The adoption of green products in daily consumer practices is increasingly recognized as an effective strategy for mitigating environmental challenges (Nguyen et al., 2019; Urban et al., 2019).

Utilitarian influence pertains to the modification of an individual's consumption behavior in response to social pressure, aligning with the preferences, standards, and norms established by a reference group (Farrow et al., 2017). The influence of this social pressure is heightened when consumers are aware that others are observing their behaviors. Empirical research has demonstrated that consumer perceptions of products are significantly influenced by the broader social context of the group to which they belong (Sun et al., 2019), and the utilitarian influence of reference groups is particularly significant in products that must be consumed publicly (Bearden & Etzel, 1982). Therefore, the following hypotheses are proposed.:

H1: The utilitarian influence of the reference group can significantly affect green consumption intention.

The expressive influence of value refers to the influence of reference groups on individuals to establish a positive self-image, strengthen self-concept, and realize self-value (Shi & Jiang, 2023). The expressive influence of reference groups on individual value is shown in the following two aspects. On the one hand, individuals hope to promote self-image and realize self-value by maintaining the consumption behavior of eager groups (Bearden et al., 1989). On

the other hand, from the individual's own point of view, the individual psychologically wants to be subordinate to an ideal group and expresses his love for the group through consistency with the members of the group in consumer behavior. Reference groups exert a particularly strong influence on luxury-brand consumption, as luxury items often symbolize social status, and value-expressive influences from reference groups positively affect personal and social purchase values, contributing to brand loyalty (Jiang et al., 2009). Hence, we propose the following hypotheses:

H2: The value-expression influence of the reference group can significantly affect green consumption intention.

The utilitarian influence exerted by reference groups can serve as a catalyst for encouraging organic food consumption, potentially affecting consumer adoption behavior indirectly through various mediators. Organic food, as a credence good, has qualities that consumers cannot directly verify before or after the purchase (Fernqvist & Ekelund, 2014). In green supply chains, chain trust and product trust are crucial. Consumers are more inclined to purchase sustainable products from a trustworthy supply chain. Research shows that trust in green supply chains enhances consumers' environmental awareness and directly influences their green consumption intentions. For instance, consumers' trust in green certification labels, supply chain transparency, and the eco-friendliness of products encourages them to choose higher-priced eco-friendly products, thereby boosting the potential of the overall green consumption market (Nuttavuthisit & Thøgersen, 2017). Furthermore, consumer trust partially mediates the relationship between acceptance of green advertising on social media and the intention to purchase green products. (Bunchapattanasakda et al., 2023). Overall, consumers' trust is an important mechanism for strengthening their trust in products. Hence, we propose the following hypotheses:

H3: Utilitarian influence can affect consumers' green consumption intention via the serial mediation effect of chain trust and product trust.

H4: Value expression influence can affect consumers' green consumption intention via the serial mediation effect of chain trust and product trust.

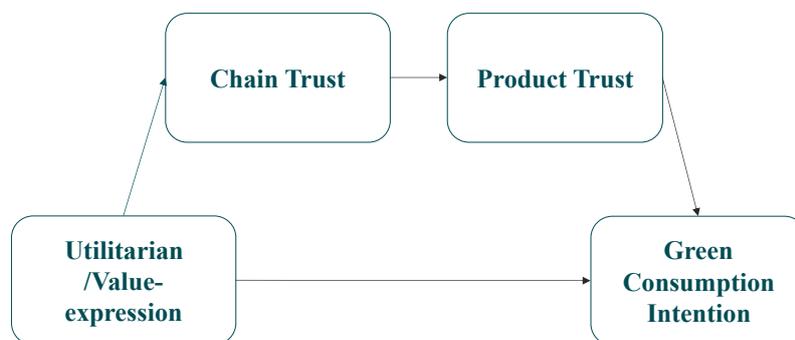


Figure 1 Conceptual Framework

Research Methodology

This study explores the influence of reference groups on green consumption intentions among Yunnan Province residents over 20 years old who have previously purchased green products. Since the population size is unknown, the study employs the Cochran and Talwani (1977) formula for sample size calculation. As a result, the sample size is 385. However, for a more effective calculation, the author adds 15 percent more to 443 samples in total.

Constructs in the research model were assessed using multi-item scales validated in the literature, with minor modifications for face validity. Each construct used a 5-point Likert scale from "1 = Strongly Disagree" to "5 = Strongly Agree." Participants were pre-screened for awareness of organic food products. Data was collected via online surveys, with a pilot of 30

participants to refine the design. Formal data collection used the Wenjuanxing platform (<https://www.wjx.cn>) to ensure data quality. The sample targeted were Yunnan residents with experience purchasing organic foods using purposive sampling.

This study employed Harman's single-factor test along with the marker variable technique to mitigate common method bias (CMB) and ensure data reliability. The exploratory factor analysis (EFA) results indicated that the maximum variance accounted for by a single unrotated factor was 32.758%. According to Harman's single-factor analysis, a single factor should explain less than 40% of the variance in observed variables in principal component analysis. This limit helps reduce common method bias (Podsakoff et al., 2003), suggesting that CMV is not a major concern in the study. In addition, A comparison between the congeneric Common Method Variance (CMV) model, also referred to as the Method-U model, and the restricted Method-R model revealed that incorporating the marker construct did not lead to significant alterations or biases in the correlations among the substantive constructs. Consequently, these findings indicate that CMV does not pose a significant issue within this dataset (Lindell & Whitney, 2001).

Research Findings

Measurement Model

Confirmatory factor analysis (CFA) was conducted to assess the measurement model, employing multiple fit indices in accordance with the guidelines proposed by Jackson (2009). The model consisted of 9 dimensions and 45 indicators. Fit indices included chi-square (χ^2), degrees of freedom (df), χ^2 /df ratio, comparative fit index (CFI), root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), and Tucker-Lewis's index (TLI), as recommended by Jackson (2009). Acceptable model fit criteria were defined as χ^2 /df < 3.0, RMSEA \leq 0.08, TLI and CFI \geq 0.90, and GFI \geq 0.80, based on Hu & Bentler (1999) and Chau & Hu (2001). The resultant model exhibited an adequate fit to the empirical data, with fit statistics of $\chi^2 = 189.506$, df = 165, χ^2 /df = 1.149, CFI = 0.995, GFI = 0.957, TLI = 0.994, and RMSEA = 0.019, all meeting the established thresholds.

Table 1 Fit Indices for the CFA Model

Structural Model	χ^2	DF	χ^2 /df	GFI	AGFI	TLI	CFI	RMSEA
First-order	189.506	165	1.149	0.957	0.945	0.994	0.995	0.019

Confirmatory factor analysis (CFA) was conducted on the nine constructs to assess the proposed model's internal consistency reliability, convergent validity, and discriminant validity (Table 2). The results indicated that all constructs had Cronbach's alpha and composite reliability (CR) values exceeding 0.7, suggesting satisfactory internal consistency reliability (Nunnally, 1978). Furthermore, factor loadings for all items in the five-construct model were significant (all $p < 0.001$), supporting convergent validity (Diamantopoulos et al., 2008). Additionally, the average variance extracted (AVE) for all constructs exceeded the recommended threshold of 0.5 (Fornell & Larcker, 1981; Bagozzi & Yi, 1989), confirming the adequacy of convergent validity.

Table 2 Confirmatory Factor Analysis Results and Validity Values of Each Research Construct

Constructs	Index	Unstd.Estimate	S.E.	C.R.	Std.Estimate	CR	AVE	α
Utilitarian influence	UTI1	1			0.800			
	UTI2	0.906	0.055	16.546	0.754			
	UTI3	0.964	0.056	17.327	0.783	0.881	0.598	0.879
	UTI4	0.898	0.054	16.666	0.758			
	UTI5	0.942	0.055	16.97	0.77			
Value-expression influence	VEI1	1			0.774			
	VEI2	0.959	0.059	16.221	0.766			
	VEI3	0.977	0.06	16.155	0.763	0.88	0.595	0.877
	VEI4	0.965	0.059	16.496	0.777			
	VEI5	0.979	0.06	16.43	0.775			
Product trust	PRT1	1			0.802			
	PRT2	0.94	0.053	17.704	0.783			
	PRT3	0.986	0.054	18.392	0.807	0.895	0.631	0.892
	PRT4	0.939	0.053	17.792	0.786			
	PRT5	0.947	0.053	18.012	0.794			
Chain trust	CHT1	1			0.803			
	CHT2	0.931	0.055	16.902	0.765			
	CHT3	0.952	0.055	17.163	0.775	0.879	0.592	0.875
	CHT4	0.922	0.055	16.746	0.759			
	CHT5	0.894	0.055	16.345	0.745			
Green consumption intention	GCI1	1			0.805			
	GCI2	0.93	0.046	20.303	0.776			
	GCI3	0.954	0.045	21.113	0.794	0.891	0.62	0.875
	GCI4	0.928	0.046	20.267	0.776			
	GCI5	0.914	0.044	20.718	0.786			

Discriminant Validity

The measurement model's discriminant validity was evaluated using the Fornell and Larcker (1981) criterion. This method involves determining if the square root of the average variance extracted (AVE) for each construct is more significant than its correlations with all other constructs. The

analysis indicated that, for all constructs, the AVE values exceeded their respective highest correlations, thereby establishing discriminant validity (Table 3).

Table 3 Discriminant Validity (Fornell-Larcker Criterion)

	VEI	UTI	CHT	PRT	GCI
VEI	0.771				
UTI	0.490	0.773			
CHT	0.488	0.497	0.769		
PRT	0.501	0.506	0.55	0.794	
GCI	0.480	0.45	0.541	0.543	0.787

Note: The bold diagonal elements are the square root of AVE. VEI = Value-expression influence; UTI = Utilitarian influence; CHT = Chain trust; PRT = Product trust; GCI = Green consumption intention

Structural Model Analysis

AMOS 26.0 was employed to conduct sample data's structural equation modeling (SEM) analysis to examine the interrelationships among the research variables. Model fit indices were used to evaluate the model's overall validity, and the results from AMOS 26.0 indicated that all indices met the recommended thresholds. Specifically, the fit indices were $\chi^2/df = 1.113$, RMSEA = 0.016, CFI = 0.996, $\chi^2 = 296.178$, and TLI = 0.995. These outcomes indicate that the model demonstrated a suitable fit to the data.

Table 4 Fit Indices for CFA Model.

Structural Model	χ^2	χ^2 /df	GFI	AGFI	TLI	CFI	RMSEA
First-order	296.178	1.113	0.948	0.937	0.995	0.996	0.016

Hypothesis Testing

To evaluate the indirect effects of the independent variable through the mediator, both bias-corrected and percentile bootstrapping techniques were used with a 95% confidence interval and 5,000 bootstrap resamples (Taylor & McGuire, 2007). Following the recommendations of Preacher and Hayes (2008), confidence intervals for the lower and upper bounds were calculated to determine the statistical significance of the indirect effects. The results of the bootstrap analysis are presented in Table 5-7.

Table 5 Total Effects, Indirect Effects, and Direct Effects of the Model

	Point estimate	Product of coefficients		Bootstrapping					
				Bias-corrected percentile 95% CI			Percentile 95% CI		
				S.E.	Z	Lower	Upper	Two-tailed	Lower
Total Effect									
UTI→GCI (utilitarian influence→green consumption intention)	0.254	0.054	4.704	0.149	0.360	***	0.148	0.359	***
VEI→GCI (value-expression influence→green consumption intention)	0.317	0.056	5.661	0.210	0.241	***	0.211	0.428	***
Indirect Effect									
UTI→CHT→PRT→GCI utilitarian influence→chain trust→product trust→green consumption intention	0.025	0.010	2.5	0.011	0.050	***	0.010	0.048	***
VEI→CHT→PRT→GCI value-expression influence→chain trust→product trust→green consumption intention	0.024	0.009	2.667	0.011	0.047	***	0.010	0.043	***
Direct Effect									
UTI→GCI (utilitarian influence→green consumption intention)	0.094	0.056	1.679	-0.012	0.25	0.089	-0.013	0.204	0.095
VEI→GCI (value-expression influence→green consumption intention)	0.161	0.057	2.825	0.053	0.238	**	0.055	0.276	***

Note: Estimation of 5,000 bootstrap samples; *p < 0.05; **p < 0.01; ***p < 0.001. Number of bootstrap samples = 5,000. Mediators: CHI and PRT

Table 6 Confirmation of the Hypotheses

Hypothesis	Path	β	S.E.	Z	P-value	Result
H1	UTI-->GCI	0.100	0.057	1.75	0.092	Rejected
Utilitarian influence-->green consumption intention						
H2	VEI-->GCI	0.167	0.057	2.93	0.005**	Accepted
Value expression-->green consumption intention						
H3	UTI-->CHI-->PRT-->GCI	0.025	0.010	4.027	***	Accepted
Utilitarian influence-->Chain trust-->Product trust-->green consumption intention						
H4	VEI-->CHT-->PRT-->GCI	0.024	0.009	5.295	***	Accepted
Value expression-->Chain trust-->Chain trust-->Product trust-->green consumption intention						

Note: *p < 0.05, **p < 0.01, ***p < 0.001

As shown in Table 5 and Table 6, this study analyzes the influence of utilitarian and value-expressive factors on consumers' green consumption intentions within the context of organic food. Value-expressive influence (H2: $\beta = 0.167$, $p < 0.01$) significantly positively impacted green consumption intention, supporting H2. Indirectly, utilitarian influence impacts green consumption intention via chain trust and product trust ($\beta = 0.025$, $p < 0.001$). Value-expressive and utilitarian influences similarly affect green consumption intention through chain trust and product trust ($\beta = 0.024$, $p < 0.001$), supporting H3 and H4. However, utilitarian influence on green consumption intention (H1: $\beta = 0.100$, $p = 0.092$) was not statistically significant, leading to the rejection of H1.

These findings highlight the roles of utilitarian and value-expressive influences in shaping green consumption intentions, particularly through chain trust and product trust. The study provides insights into consumer behavior in sustainable consumption and offers guidance for policymakers and practitioners to facilitate the adoption of environmentally responsible behaviors.

Multiple Group Structural Equation Model (MGSEM)

An invariance analysis was conducted between male and female subgroups, adhering to the guidelines provided by Van De Schoot et al. (2015) to assess structural invariance across genders. As indicated in Table 4-23, the chi-square difference (χ^2) of 5.576 with 6 degrees of freedom for model 5 was not statistically significant, nor was the chi-square difference of 6.733 with 3 degrees of freedom for model 7. These results suggest that the path coefficients and structural residuals were invariant across male and female groups.

Table 7 Invariance Analysis Across Males and Females in the Structural Model

Model description	χ^2	df	χ^2/df	TLI	RMSEA	$\Delta\chi^2$	Δdf	χ^2 Critical
Model 1: Combined baseline models (males and females)	2208.35	1890	1.168	0.968	0.02			
Model 2: Path coefficients constrained equal	2208.35	1890	1.168	0.968	0.02			
Model 3: Path coefficients and covariances constrained equal	2213.925	1896	1.168	0.968	0.02			
Model 4: Path coefficients, covariances, and residuals constrained equal	2220.658	1899	1.168	0.967	0.02			
Model 5: Path coefficients invariant (Model 2-Model 1)						0	0	
Model 6: Structural covariances invariant (Model 3-Model 2)						5.575	6	12.592
Model 7: Structural residuals invariant (Model 4-Model 3)						6.733	3	7.815

Note: $\Delta\chi^2$ = difference in chi-square values; Δdf = difference in degrees of freedom.

Conclusion and Discussion

Drawing on the Appraisal-Emotional-Response framework between the reference groups, green consumption intention, this study investigated the psychological mechanism behind this interaction effect- the mechanism of inducing consumer consumption intention in green products. We studied the relationships between utilitarian influence, value-expression influence, and green consumption intention under the mediating role of product trust and chain trust. The main findings of the current study are as follows:

First, the study confirms the utilitarian indirect effect on green consumption decisions. Specifically, consumers who experience social pressure from family, friends, or other significant reference groups are more likely to trust the quality of organic food and the transparency of its supply chain. This finding aligns with Kour (2024), who found that social norms and group pressures significantly shape consumers' sustainable consumption behaviors through reference group demonstrations. Second, the value-expressive influence also demonstrates a substantial effect in this study. By emulating the behavior of admired groups, consumers reinforce their positive social identity and achieve psychological alignment with these groups. Research has consistently shown that individuals use consumption to signal membership in certain social groups, and this behavior is particularly evident in green consumption (Dangelico et al., 2021). These social norms are often shaped by the value-expressive influence of admired groups within their social network. Product and supply chain trust also mediate the relationship between reference group influence and green purchase intentions. This finding is consistent with prior research. Research indicates that this trust strongly predicts consumers' willingness to pay a premium for eco-friendly goods and services. González-Rodríguez et al. (2020) found that when consumers trust green claims, they are more inclined to pay a price premium, particularly in sectors like hospitality, where environmental credentials are highly valued. This finding is supported by studies indicating that supply chain transparency and certifications enhance consumer trust in green products, thereby fostering green purchase intentions (Zhang & Dong, 2020; Alghamdi & Agag, 2024).

However, utilitarian trust may encounter limitations in more complex systems. Van Rietschoten and Van Bommel (2023) criticized utilitarian trust, arguing that it struggles to endure complex socioeconomic systems due to its reliance on cost-benefit calculations. They suggested that information asymmetry, behavioral complexity, and conflicts of interest render establishing and maintaining utilitarian trust particularly challenging in such systems. Although this study validates the positive role of utilitarian trust in the context of green consumption, its effectiveness in more complex social systems remains open to further inquiry. In addition, a gender invariance analysis was conducted to investigate whether the influence of reference groups on green consumption intentions differed between male and female consumers. The results indicate that reference groups' impact, including utilitarian and value-expressive influences, is consistent across genders. This finding supports the growing body of literature suggesting that both men and women are equally susceptible to social pressures and group norms when making environmentally conscious consumption decisions (Wang et al., 2018). The lack of significant gender differences suggests that strategies to leverage reference group influence can be broadly applied to male and female consumers without substantial modification.

Limitation

This study presents a set of findings while recognizing limitations that warrant consideration. First, the sample was exclusively composed of respondents from China, thereby constraining the generalizability of the results to the socio-cultural context of Chinese society. To enhance external validity, future research should consider extending the sample to encompass participants from various countries and cultural backgrounds, enabling cross-cultural comparisons in green consumption behavior. Such comparisons would be insightful in contrasting collectivistic versus individualistic societies concerning reference group influence and underlying motivational factors. Second, the methodological approach of this study was based on survey data collection. Future research could benefit from adopting laboratory or field experiments to establish more causal relationships between reference group influence and green purchase intentions. While surveys capture consumer attitudes and perceptions, they are susceptible to biases, such as self-selection bias. Subsequent studies could mitigate this limitation by evaluating actual purchasing behavior using empirical transaction data, such as sales records, to assess impulsive buying tendencies objectively. Finally, future research could employ Multigroup Analysis (MGA) to investigate variations in green consumption behavior across different income strata, thereby elucidating contrasts between low- and high-income groups.

In conclusion, this research contributes valuable insights into the role of social influences in shaping green purchasing behavior, offering guidance for promoting sustainable consumption. Future studies should continue to explore the intersection of trust, social influence, and green consumption across diverse consumer groups and settings.

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