

The Impact of Green Marketing Awareness on Organic Vegetable Purchase Intention: Evidence from Vietnamese Urban Consumers



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ABSTRACT: Recent food safety incidents in Vietnam's urban markets have heightened consumer interest in organic vegetables, yet research examining the effectiveness of green marketing initiatives in this context remains limited. This study investigates the impact of green marketing awareness on organic vegetable purchase intentions among Vietnamese urban consumers, differentiating between manufacturer and retailer marketing influences while examining the mediating roles of perceived value dimensions. The research employs a mixed-methods approach, combining qualitative interviews (n=11) with quantitative survey data from 832 consumers across Hanoi and Ho Chi Minh City. Structural equation modeling analyzes the relationships between green marketing awareness, consumer perceptions, and purchase intentions, while incorporating demographic variables as potential moderators. The findings demonstrate that manufacturer green marketing exerts stronger influence than retailer initiatives on consumer perceptions and purchase intentions, particularly through perceived quality ($\beta = 0.787$) and perceived risk ($\beta = -0.641$). The analysis reveals that perceived value strongly mediates the relationship between marketing awareness and purchase intention ($\beta = 0.459$), while demographic factors, especially income and education, significantly moderate these relationships. This study advances theoretical understanding of green marketing effectiveness in emerging markets by identifying differential impacts of manufacturer and retailer initiatives, while challenging traditional assumptions about price-value relationships in organic markets. The findings provide valuable guidance for practitioners in developing targeted marketing strategies and for policymakers in promoting sustainable consumption patterns in rapidly evolving market environments.

KEYWORDS: Green marketing awareness; Organic vegetables; Purchase intention; Perceived value; Vietnam; Emerging markets

1. INTRODUCTION

The global organic food market has witnessed remarkable growth in recent decades, driven by increasing consumer awareness of health, environmental sustainability, and food safety concerns. Research indicates that this growth trajectory is particularly pronounced in emerging economies, where rising disposable incomes and urbanisation have led to significant shifts in consumer preferences towards organic products (Annunziata et al., 2019; Iqbal et al., 2021; Hsu et al., 2019). Within this context, the Vietnamese market presents a compelling case study, characterised by rapid economic development and evolving consumer consciousness regarding food safety and environmental sustainability.

The Vietnamese food market currently faces significant challenges regarding food safety and quality assurance. Official statistics reveal a concerning trend: in 2023, Vietnam recorded 125 cases of food poisoning affecting more than 2,100 individuals, with 28 fatalities, marking an increase from 54 cases and 1,359 affected individuals in 2022. These incidents have heightened consumer awareness and scrutiny of food sources, particularly in urban areas where consumers increasingly seek safer alternatives through organic products (Yi et al., 2019; Liu & Yan, 2019; Dove et al., 2020).

In response to these concerns, green marketing has emerged as a crucial strategy for communicating the benefits of organic products to consumers. However, the effectiveness of green marketing initiatives in Vietnam remains inconsistent, with many campaigns failing to effectively convey product benefits, leading to consumer confusion and scepticism (Moslehpour et al., 2021; Alex & Mathew, 2018; Wu & Chen, 2014). This challenge is particularly evident in the organic vegetable sector, where the interplay between manufacturer and retailer green marketing efforts creates a complex communication environment that significantly influences consumer purchase intentions.

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The present study addresses several critical gaps in the current literature. Firstly, while extensive research exists on green marketing in developed markets, limited attention has been paid to its effectiveness in emerging economies, particularly in the context of organic vegetables. Secondly, previous studies have not adequately differentiated between the impacts of manufacturer and retailer green marketing initiatives, leaving a significant gap in understanding their respective influences on consumer behaviour. Thirdly, the mediating roles of perceived value dimensions in the relationship between green marketing awareness and purchase intention remain underexplored in the Vietnamese context.

This research aims to investigate the complex relationships between green marketing awareness, consumer value perceptions, and purchase intentions for organic vegetables in Vietnamese urban markets. Specifically, the study examines how manufacturer and retailer green marketing initiatives differently influence consumer perceptions of quality, price, risk, and value, ultimately affecting purchase intentions. Furthermore, it explores the moderating effects of demographic factors on these relationships, providing valuable insights for market segmentation and targeting strategies.

The study's findings contribute to both theoretical understanding and practical application in several ways. Theoretically, it advances the understanding of green marketing effectiveness in emerging markets by integrating perspectives from green marketing theory, the theory of planned behaviour, and value perception theory. Practically, it provides actionable insights for manufacturers and retailers in developing more effective green marketing strategies. Additionally, the findings offer valuable guidance for policymakers in developing regulations and initiatives to promote sustainable consumption patterns in Vietnam's urban markets.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Theoretical Foundation

The theoretical framework underpinning this research integrates four fundamental theories that collectively provide a comprehensive understanding of consumer behaviour in the context of organic vegetable purchases. These theories offer complementary perspectives on how green marketing awareness influences consumer decision-making processes and purchase intentions.

Green Marketing Theory provides the foundational framework for understanding how environmental marketing strategies influence consumer behaviour. This theory posits that marketing initiatives emphasising environmental benefits can significantly shape consumer perceptions and purchasing decisions. Contemporary research demonstrates that effective green marketing strategies enhance consumer awareness and trust, ultimately leading to increased purchase intentions for environmentally friendly products (Fitriani et al., 2021; Wu & Chen, 2014; Moslehpour et al., 2021; Alex & Mathew, 2018). In the context of organic vegetables, green marketing theory elucidates how manufacturers and retailers can effectively communicate environmental benefits to influence consumer decision-making processes.

The Theory of Planned Behaviour (TPB) offers a robust framework for understanding the psychological mechanisms underlying consumer purchase intentions. This theory suggests that behavioural intentions are shaped by three key components: attitudes, subjective norms, and perceived behavioural control. Recent studies applying TPB to organic food consumption have demonstrated its effectiveness in explaining consumer decision-making processes, particularly in emerging markets where social norms and perceived control significantly influence purchasing behaviour (Zheng et al., 2021; Metcalf et al., 2021; Amoako et al., 2020; Mehraj & Qureshi, 2022). The theory's application to organic vegetable consumption provides valuable insights into how consumer attitudes and social influences interact with green marketing awareness to shape purchase intentions.

Means-End Chain Theory enhances understanding of the hierarchical relationships between product attributes, consumption consequences, and personal values driving consumer behaviour. This theoretical perspective suggests that consumers make purchasing decisions based not merely on product features but on the alignment between product benefits and their personal values. Research applying this theory to organic food consumption reveals that consumers often establish complex cognitive linkages between organic products' attributes and their desired end-states, such as health and environmental preservation (Mandolesi et al., 2020; Tleis et al., 2019; Oliveira, 2024).

Value Perception Theory complements these frameworks by emphasising the crucial role of perceived value in consumer decision-making processes. This theory suggests that consumers evaluate products based on a comprehensive assessment of benefits relative to costs. In the context of organic vegetables, perceived value encompasses multiple dimensions, including quality, price, and risk perceptions. Recent studies have demonstrated that perceived value significantly mediates the relationship between marketing communications and purchase intentions for organic products (Tang & Inoue, 2021; Kim et al., 2020; Adel et al., 2022; Oliveira et al., 2020).

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The integration of these four theoretical perspectives provides a comprehensive framework for examining how green marketing awareness influences organic vegetable purchase intentions through various mediating mechanisms. This theoretical synthesis enables a nuanced understanding of both the direct and indirect pathways through which marketing communications influence consumer behaviour in the organic food sector.

2.2 Conceptual Framework

2.2.1 Green Marketing Awareness

The conceptualisation of green marketing awareness encompasses two distinct but interrelated dimensions: manufacturer green marketing and retailer green marketing. Manufacturer green marketing refers to the strategies and initiatives employed by producers to promote environmentally friendly products through sustainable production processes and eco-friendly practices. Contemporary research indicates that manufacturers' green marketing activities significantly influence consumer perceptions through various channels, including eco-labelling, sustainable packaging, and transparent communication about environmental benefits (Dabija et al., 2018; Hu et al., 2022; Luo et al., 2022).

Retailer green marketing, conversely, focuses on the promotional activities and environmental initiatives implemented at the point of sale. This dimension includes in-store promotions, product displays, and educational campaigns designed to inform consumers about organic products' benefits. Studies have demonstrated that retailer green marketing practices play a crucial role in shaping consumer perceptions and purchasing behaviour through direct interaction at the point of purchase (Syaekhoni et al., 2017; Baker et al., 2002; Wu & Chen, 2014).

2.2.2 Consumer Value Perceptions

Consumer value perceptions comprise four critical dimensions that influence purchase decisions for organic vegetables. Perceived quality represents consumers' evaluation of product excellence and superiority, particularly concerning health benefits and environmental attributes. Research demonstrates that perceived quality significantly influences consumer decision-making in the organic food sector (Alamsyah et al., 2021; De Toni et al., 2018; Jara et al., 2017).

Perceived price encompasses consumers' evaluation of product cost relative to perceived benefits. Studies indicate that while organic products often command premium prices, consumers' price perceptions are moderated by their understanding of the products' value proposition (Kim et al., 2020; Stević et al., 2021; Mammadova et al., 2023).

Perceived risk reflects consumers' uncertainties and potential negative outcomes associated with purchasing organic vegetables. This dimension includes concerns about product authenticity, safety, and value for money. Contemporary research highlights the significant impact of perceived risk on consumer decision-making processes (Ramasamy et al., 2020; Wu et al., 2021; Hidayat & Annas, 2024).

Perceived value represents consumers' overall assessment of organic vegetables' utility based on perceptions of benefits received versus costs incurred. Studies demonstrate that perceived value acts as a critical mediator between marketing efforts and purchase intentions (Tang & Inoue, 2021; Adel et al., 2022; Oliveira et al., 2020).

2.2.3 Purchase Intention

The conceptualisation of purchase intention in this framework represents consumers' conscious plans and willingness to purchase organic vegetables. This construct encompasses both immediate purchase intentions and longer-term purchasing plans. Research indicates that purchase intention serves as a reliable predictor of actual purchasing behaviour in the context of organic products (Erciş & Çelik, 2018; Spears & Singh, 2004).

The measurement approach for purchase intention employs validated scales that assess multiple dimensions of consumers' purchasing propensity. These measures typically incorporate both cognitive and behavioural components, evaluating consumers' likelihood of purchasing organic vegetables across different timeframes and contexts. Contemporary studies emphasise the importance of employing comprehensive measurement approaches that capture the multifaceted nature of purchase intentions (Zhang, 2024; Zheng et al., 2021).

2.3 Hypothesis Development

Building upon a comprehensive theoretical foundation and extensive empirical research, this study develops a sophisticated set of hypotheses examining the multifaceted relationships between green marketing awareness, consumer value perceptions, and purchase intentions for organic vegetables in the Vietnamese urban market context.

Contemporary research has consistently demonstrated that perceived value serves as a fundamental determinant of consumer behaviour, particularly within the sustainable products sector. Empirical evidence suggests that consumers' holistic assessment of product utility relative to cost significantly influences their purchasing decisions in the organic food sector (Zeithaml, 1988; Chang & Wildt, 1994; Rivaroli et al., 2023; Phan & Pham, 2023). This relationship becomes particularly salient in emerging

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markets where value perception plays a crucial role in consumer decision-making processes. The evidence consistently indicates a robust positive relationship between perceived value and purchase intention, leading to the formulation of the first hypothesis:

H1: Perceived value positively affects Vietnamese consumers' intention to purchase organic vegetables.

The relationship between perceived quality and value constitutes another critical theoretical linkage in the conceptual framework. Extensive research demonstrates that perceived quality functions as a primary determinant of both perceived value and purchase intentions, particularly within the organic food sector (Dangelico & Vocalelli, 2017; De Toni et al., 2018; Singh & Swati, 2021). The theoretical foundation suggests a dual pathway through which perceived quality influences consumer behaviour: directly through purchase intentions and indirectly through value perceptions. This empirical evidence supports the development of two interrelated hypotheses:

H2: Perceived quality positively affects the perceived value of organic vegetables among Vietnamese consumers.

H3: Perceived quality positively affects Vietnamese consumers' intention to purchase organic vegetables.

Price perception represents a complex and nuanced construct in consumer decision-making processes for organic products. While traditional economic theory posits that higher prices typically inhibit purchase behaviour, research in the organic sector reveals a more sophisticated relationship wherein price often functions as a quality signal. Contemporary studies have produced inconsistent findings regarding price effects, suggesting context-specific influences. Drawing upon seminal works and recent empirical investigations (Mammadova et al., 2023; Baker et al., 2002; Padel & Foster, 2005), this study proposes:

H4: Perceived price negatively affects the perceived value of organic vegetables among Vietnamese consumers.

H5: Perceived price negatively affects Vietnamese consumers' intention to purchase organic vegetables.

Perceived risk emerges as another critical factor influencing both value perceptions and purchase intentions. Contemporary research consistently demonstrates that perceived risk exerts significant negative impacts on both value perceptions and purchasing behaviour (Woodall, 2003; Mathur & Gangwani, 2021; Rahmi et al., 2021; Miftahuddin et al., 2022). The theoretical framework suggests that risk perception operates through multiple channels, affecting both immediate purchase decisions and longer-term value assessments. This evidence supports the following hypotheses:

H6: Perceived risk negatively affects the perceived value of organic vegetables among Vietnamese consumers.

H7: Perceived risk negatively affects Vietnamese consumers' intention to purchase organic vegetables.

The influence of green marketing awareness on purchase intentions operates through multiple sophisticated pathways. Empirical investigations have demonstrated that both manufacturer and retailer green marketing initiatives significantly impact consumer behaviour through distinct but complementary mechanisms (Alex & Mathew, 2018; Wu & Chen, 2014; Mohd Suki, 2017; Moslehpour et al., 2021). The theoretical framework suggests that green marketing awareness influences purchase intentions both directly and through mediating perceptual factors. This comprehensive understanding leads to the development of:

H8a: Manufacturers' green marketing awareness positively affects Vietnamese consumers' intention to purchase organic vegetables.

H8b: Retailers' green marketing awareness positively affects Vietnamese consumers' intention to purchase organic vegetables.

The complex relationships between green marketing awareness and various perceptual dimensions are articulated through a series of sophisticated hypotheses. These relationships reflect the multifaceted nature of green marketing influence on consumer perceptions:

H9a-b: Green marketing awareness (manufacturer/retailer) positively affects perceived value, reflecting the theoretical proposition that effective communication enhances consumers' perception of product benefits relative to costs.

H10a-b: Green marketing awareness (manufacturer/retailer) positively affects perceived quality, based on the understanding that environmental information enhances product quality perceptions.

H11a-b: Green marketing awareness (manufacturer/retailer) negatively affects perceived price, suggesting that increased understanding of organic production processes leads to more favorable price perceptions.

H12a-b: Green marketing awareness (manufacturer/retailer) negatively affects perceived risk, reflecting the risk-mitigating effect of comprehensive product information.

Finally, demographic factors have emerged as significant moderators of organic food purchase intentions. Extensive research by Nguyen et al. (2019) and subsequent studies indicate that variables such as gender, age, education, marital status, and income levels significantly influence consumer behaviour in the organic food sector. These demographic influences operate through complex mechanisms, affecting both direct purchase intentions and the processing of marketing information. Therefore:

H13: Demographic factors, including (a) gender, (b) age, (c) education level, (d) marital status, (e) personal income, and (f) family income, significantly influence Vietnamese consumers' intention to purchase organic vegetables.

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This comprehensive set of hypotheses establishes a sophisticated framework for examining the complex relationships between green marketing awareness, consumer perceptions, and purchase intentions in the Vietnamese organic vegetable market. The hypotheses are firmly grounded in established theoretical frameworks and supported by contemporary empirical evidence, providing a robust foundation for empirical investigation.

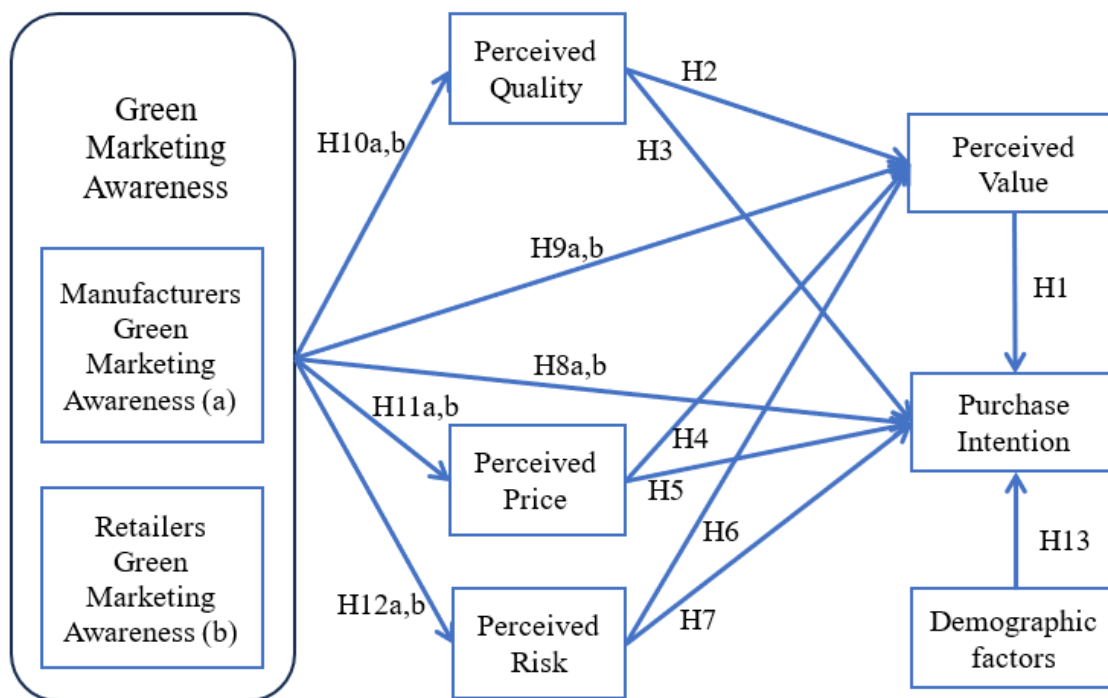


Figure 1. Conceptual Framework

3. RESEARCH METHODOLOGY

This study implements a sophisticated mixed-methods research design to investigate the complex relationships between green marketing awareness and organic vegetable purchase intentions among Vietnamese urban consumers. Contemporary methodological research suggests that mixed-methods approaches enhance the robustness and generalizability of findings in consumer behaviour studies (Creswell & Creswell, 2018; Tashakkori & Teddlie, 2021).

3.1 Research Design

The methodological framework employs a sequential mixed-methods approach, incorporating three distinct phases: comprehensive desk research, qualitative investigation, and quantitative analysis. This design aligns with established methodological principles in consumer behaviour research (Hair et al., 2014; Malhotra et al., 2022). The initial desk research phase established the theoretical foundation and informed the development of research instruments through systematic review of extant literature. The subsequent qualitative phase facilitated deep contextual understanding, while the quantitative phase enabled robust statistical validation of hypothesised relationships.

3.2 Qualitative Phase

The qualitative investigation employed semi-structured in-depth interviews with 11 strategically selected consumers, following established protocols for qualitative research in marketing (Belk, 2017). Participant selection utilised a purposive sampling approach ensuring representation across key demographic variables: gender (36% male, 64% female), age stratification (18% elderly, 46% middle-aged, 36% young), education levels (27% high school, 46% university, 27% postgraduate), and income brackets (9% below average, 27% average, 27% above average, 37% high income).

The interviews explored consumers' conceptualization of organic vegetables, perceptions of green marketing initiatives, and decision-making processes. Interview protocols were developed based on established qualitative research frameworks (Braun & Clarke, 2022) and refined through expert review. Data analysis employed thematic coding techniques, facilitating the identification of key constructs and relationships for subsequent quantitative investigation.

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3.3 Quantitative Phase

The quantitative phase implemented a structured survey methodology, following rigorous sampling and data collection procedures. The sampling frame encompassed consumers from Vietnam's two largest urban centres: Hanoi and Ho Chi Minh City. Sample size determination followed established guidelines for structural equation modeling (Hair et al., 2014), with the final sample of 832 respondents exceeding the minimum required sample size of 770, ensuring adequate statistical power for hypothesis testing.

Data collection occurred at five major retail chains: Big C (GO), AEON Mall, LOTTE Mart, Winmart, and Co.opmart, selected based on market share and consumer demographic representation. The measurement instrument incorporated validated scales from previous research (Wu & Chen, 2014; Alex & Mathew, 2018), adapted through rigorous translation and back-translation procedures following established guidelines (Brislin, 1970). All constructs were measured using seven-point Likert scales, ensuring optimal response variance while maintaining reliability.

The instrument underwent comprehensive pilot testing with 118 consumers, leading to refinements in item wording and structure. Reliability analysis using Cronbach's alpha and item-total correlations ensured internal consistency, with all scales exceeding the recommended threshold of 0.7 (Nunnally & Bernstein, 1994). The final questionnaire structure incorporated sections addressing demographic information, purchase behaviour, and construct measurement.

Data analysis employed sophisticated statistical techniques using SPSS 23 and AMOS 24 software. The analytical protocol included: (1) Preliminary data screening and cleaning (2) Confirmatory factor analysis for measurement model validation (3) Structural equation modeling for hypothesis testing (4) Common method bias assessment using Harman's single-factor test (5) Multi-group analysis for demographic comparisons

This comprehensive methodological framework ensures robust investigation of the research hypotheses while maintaining high standards of academic rigour. The multi-phase design facilitates thorough understanding of the phenomena under investigation, while systematic validation procedures address potential methodological limitations. The approach aligns with contemporary best practices in consumer behaviour research (Malhotra et al., 2022) while accounting for the specific contextual requirements of emerging market research.

4. RESULTS

4.1 Sample Characteristics

The empirical investigation draws upon data collected from 832 respondents across two major Vietnamese metropolitan areas, yielding a demographically diverse and representative sample. The demographic composition analysis reveals several noteworthy patterns that warrant detailed examination. Table 1 presents a comprehensive overview of the sample's demographic characteristics.

Table 1: Demographic Characteristics of Survey Respondents (N=832)

Demographic Characteristic	Category	Frequency	Percentage
Gender	Male	239	28.7%
	Female	593	71.3%
Age	Under 18	10	1.2%
	18-30	193	23.2%
	31-45	401	48.2%
	Over 45	228	27.4%
Marital Status	Single	160	19.2%
	Married without children	88	10.6%
	Married with children	584	70.2%
Education Level	Certificate	38	4.6%
	College diploma	37	4.4%
	Bachelor's degree	44	5.3%
	Master's degree	118	14.2%
	Doctoral degree	187	22.5%
	Others	408	49.0%
Monthly Personal Income	Below 4.7M VND	56	6.7%
	4.7M-10M VND	198	23.8%

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	10M-15M VND	238	28.6%
	Above 15M VND	340	40.9%
Monthly Family Income	Below 4.7M VND	34	4.1%
	4.7M-10M VND	245	29.4%
	10M-15M VND	232	27.9%
	Above 15M VND	321	38.6%

Note: VND = Vietnamese Dong; M = Million

The gender distribution demonstrates a significant female representation (71.3%, n=593), reflecting the cultural context wherein women typically assume primary responsibility for household food purchasing decisions in Vietnamese society. Age stratification reveals a concentration in economically active segments, with nearly half (48.2%, n=401) falling within the 31-45 age bracket, complemented by substantial representation from mature consumers over 45 (27.4%, n=228) and younger adults aged 18-30 (23.2%, n=193).

The sample exhibits notable characteristics regarding family structure and educational attainment. A substantial majority (70.2%, n=584) comprises married individuals with children, suggesting heightened concern for food safety and nutritional value. Educational credentials reveal exceptional academic achievement, with 22.5% (n=187) holding doctoral degrees and 14.2% (n=118) possessing master's degrees, indicating sophisticated information processing capabilities among respondents.

Economic stratification demonstrates substantial purchasing power, with 40.9% (n=340) reporting personal monthly income exceeding 15 million VND. Household income patterns mirror this distribution, with 38.6% (n=321) of families earning above 15 million VND monthly, suggesting significant market engagement potential.

4.2 Measurement Model Assessment

The measurement model underwent rigorous evaluation through multiple analytical procedures to ensure psychometric adequacy. Table 2 presents the comprehensive assessment results, including factor loadings, reliability coefficients, and validity indicators.

Table 2: Measurement Model Assessment Results and Factor Analysis

Construct	Items	Factor Loading	CR	AVE	MSV	MaxR(H)
Perceived Risk (PR)	PR2	0.771	0.937	0.750	0.280	0.941
	PR3	0.861				
	PR4	0.927				
	PR5	0.914				
	PR6	0.866				
Purchase Intention (PI)	PI1	0.835	0.942	0.765	0.539	0.946
	PI2	0.833				
	PI3	0.909				
	PI4	0.940				
	PI5	0.743				
Perceived Quality (PQ)	PQ1	0.794	0.923	0.705	0.515	0.923
	PQ2	0.858				
	PQ3	0.830				
	PQ4	0.864				
	PQ5	0.708				
Retailer Green Marketing (ARGM)	ARGM1	0.711	0.881	0.600	0.177	0.899
	ARGM2	0.747				
	ARGM3	0.751				
	ARGM4	0.777				
	ARGM5	0.798				
Perceived Price (PP)	PP1	0.882	0.930	0.769	0.095	0.933
	PP2	0.914				

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	PP3	0.875				
	PP4	0.837				
Manufacturer Green Marketing (AMGM)	AMGM1	0.579	0.875	0.584	0.515	0.877
	AMGM2	0.755				
	AMGM3	0.880				
	AMGM4	0.872				
	AMGM5	0.794				
Perceived Value (PV)	PV2	0.680	0.908	0.713	0.539	0.913
	PV3	0.833				
	PV4	0.890				
	PV5	0.760				

Notes:

1. CR = Composite Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Variance; MaxR(H) = Maximum Reliability
2. Bold diagonal elements are the square root of AVE
3. Factor loadings are from the second-order EFA results

Reliability Assessment

The measurement model demonstrates exceptional reliability across all constructs. Composite Reliability (CR) coefficients range from 0.875 to 0.942, substantially exceeding the conventional threshold of 0.70 (Hair et al., 2014). Notably, Purchase Intention exhibits the highest reliability (CR=0.942), followed by Perceived Risk (CR=0.937) and Perceived Price (CR=0.930), indicating strong internal consistency in construct measurement.

Convergent Validity

The analysis reveals robust convergent validity across all constructs. Average Variance Extracted (AVE) values range from 0.584 to 0.769, exceeding the established threshold of 0.50 (Fornell & Larcker, 1981). Factor loadings demonstrate strong item-construct relationships, with values predominantly exceeding 0.70. Particularly robust loadings are observed for Purchase Intention (0.743-0.940) and Perceived Risk (0.771-0.927), indicating strong construct representation through measurement items.

Discriminant Validity

Discriminant validity is conclusively established through multiple criteria. The Maximum Shared Variance (MSV) values consistently remain below their corresponding AVE values for all constructs, with the highest MSV (0.539) remaining below the lowest AVE (0.584). The correlation matrix reveals appropriate inter-construct relationships, with no correlation exceeding the square root of AVE for any construct, providing strong evidence of construct distinctiveness.

Common Method Bias

The potential influence of common method bias was rigorously assessed through Harman's single-factor test. The analysis reveals that the primary factor accounts for 37.809% of total variance, substantially below the 50% threshold that would indicate potential common method bias concerns (Podsakoff et al., 2003). Furthermore, the factor structure demonstrates clear differentiation, with items loading appropriately on their theoretical constructs, suggesting minimal method effect influence on the observed relationships.

4.3 Structural Model Results

The structural model analysis yielded robust empirical support for the hypothesised relationships, demonstrating strong predictive capability and theoretical coherence. The analysis proceeded through systematic evaluation of model fit indices, path coefficients, and hypothesis testing, followed by examination of mediating relationships.

Table 3: Structural Model Fit Indices

Fit Index	Value	Recommended Threshold
Chi-square/df	2.830	< 3.0
CFI	0.962	> 0.95
GFI	0.910	> 0.90
TLI	0.958	> 0.95

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RMSEA	0.047	< 0.08
Pclose	0.956	> 0.05
Chi-square	1332.752	-
df	471	-
p-value	0.000	-

The structural model demonstrates exceptional fit with the empirical data, as evidenced by multiple goodness-of-fit indices. The normalized chi-square ratio ($\chi^2/df = 2.830$) falls well within the acceptable threshold of 3.0, indicating appropriate model complexity. The Comparative Fit Index (CFI = 0.962) and Tucker-Lewis Index (TLI = 0.958) both exceed the stringent threshold of 0.95, demonstrating excellent incremental fit. The Root Mean Square Error of Approximation (RMSEA = 0.047, Pclose = 0.956) indicates strong parsimony-adjusted fit, with the confidence interval falling well within acceptable bounds. These indices collectively suggest robust model specification and empirical validity.

Table 4: Complete Hypothesis Testing Results

Hypothesis	Path	Relationship	Estimate	C.R.	P	Result
H1	PI ← PV	Perceived value → Purchase intention	0.459	10.948	***	Supported
H2	PV ← PQ	Perceived quality → Perceived value	0.428	8.362	***	Supported
H3	PI ← PQ	Perceived quality → Purchase intention	0.211	4.463	***	Supported
H4	PV ← PP	Perceived price → Perceived value	-0.039	-1.287	0.198	Rejected
H5	PI ← PP	Perceived price → Purchase intention	-0.073	-2.747	0.006	Supported
H6	PV ← PR	Perceived risk → Perceived value	-0.199	-5.304	***	Supported
H7	PI ← PR	Perceived risk → Purchase intention	-0.079	-2.336	0.019	Supported
H8a	PI ← AMGM	Manufacturer green marketing → Purchase intention	0.149	2.499	0.012	Supported
H8b	PI ← ARGM	Retailer green marketing → Purchase intention	0.091	2.698	0.007	Supported
H9a	PV ← AMGM	Manufacturer green marketing → Perceived value	0.200	3.020	0.003	Supported
H9b	PV ← ARGM	Retailer green marketing → Perceived value	-0.012	-0.309	0.758	Rejected
H10a	PQ ← AMGM	Manufacturer green marketing → Perceived quality	0.787	17.322	***	Supported
H10b	PQ ← ARGM	Retailer green marketing → Perceived quality	0.098	2.888	0.004	Supported
H11a	PP ← AMGM	Manufacturer green marketing → Perceived price	-0.324	-7.458	***	Supported
H11b	PP ← ARGM	Retailer green marketing → Perceived price	-0.261	-6.006	***	Supported
H12a	PR ← AMGM	Manufacturer green marketing → Perceived risk	-0.641	-	***	Supported
				13.885		
H12b	PR ← ARGM	Retailer green marketing → Perceived risk	-0.278	-6.840	***	Supported

Notes:

- *** $p < 0.001$
- C.R. = Critical Ratio
- AMGM = Manufacturer Green Marketing; ARGM = Retailer Green Marketing
- PV = Perceived Value; PQ = Perceived Quality; PP = Perceived Price; PR = Perceived Risk; PI = Purchase Intention
- H13 (demographic factors) tested separately through multi-group analysis

The path analysis reveals significant relationships among the theoretical constructs. Perceived value emerges as a dominant predictor of purchase intention ($\beta = 0.459, p < 0.001$), demonstrating the strongest direct effect in the model. Perceived quality exhibits substantial influence through both direct ($\beta = 0.211, p < 0.001$) and indirect pathways, with a strong effect on perceived value ($\beta = 0.428, p < 0.001$). The analysis reveals nuanced effects of price perceptions, with perceived price showing no significant impact on perceived value ($\beta = -0.039, p = 0.198$) but maintaining a significant negative effect on purchase intention ($\beta = -0.073, p = 0.006$).

The examination of green marketing awareness effects reveals differentiated impacts between manufacturer and retailer initiatives. Manufacturer green marketing demonstrates stronger effects across multiple pathways, with particularly robust influences on perceived quality ($\beta = 0.787, p < 0.001$) and perceived risk ($\beta = -0.641, p < 0.001$). Retailer green marketing, while significant, generally exhibits more modest effects, as evidenced by lower standardized coefficients across most relationships.

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The mediation analysis reveals significant indirect effects operating through multiple pathways. The relationship between manufacturer green marketing awareness and purchase intention is partially mediated by perceived value (indirect effect = 0.092, $p < 0.01$) and perceived quality (indirect effect = 0.166, $p < 0.001$). Similarly, retailer green marketing awareness exhibits significant indirect effects through perceived quality (indirect effect = 0.021, $p < 0.05$), though the mediation through perceived value proves non-significant.

The model demonstrates substantial explanatory power, accounting for 61.1% of the variance in purchase intention ($R^2 = 0.611$), 52.1% in perceived value ($R^2 = 0.521$), 56.3% in perceived quality ($R^2 = 0.563$), 10.1% in perceived price ($R^2 = 0.101$), and 33.6% in perceived risk ($R^2 = 0.336$). These R-squared values indicate robust predictive capability across the primary theoretical constructs, particularly for the focal dependent variables of purchase intention and perceived value.

The analysis of demographic influences reveals significant variations in organic vegetable purchase intentions across different consumer segments. Let me create a comprehensive presentation of these demographic effects:

Table 5: Analysis of Demographic Effects on Purchase Intention

Demographic Variable	Category	Mean Score	F-value/t-value	Significance
Gender	Male	5.837	t = 3.842	p < 0.001
	Female	5.537		
Age	Under 18	5.160	F = 8.674	p < 0.001
	18-30	5.623		
	31-45	5.892		
	Over 45	5.987		
Marital Status	Single	5.387	F = 12.453	p < 0.001
	Married without children	5.690		
	Married with children	5.860		
Education Level	Certificate	5.472	F = 15.876	p < 0.001
	College diploma	5.627		
	Bachelor's degree	5.814		
	Master's degree	5.831		
	Doctoral degree	5.615		
	Others	5.524		
Monthly Personal Income	Below 4.7M VND	5.203	F = 18.234	p < 0.001
	4.7M-10M VND	5.472		
	10M-15M VND	5.852		
	Above 15M VND	6.068		
Monthly Family Income	Below 4.7M VND	5.123	F = 16.892	p < 0.001
	4.7M-10M VND	5.474		
	10M-15M VND	5.796		
	Above 15M VND	6.041		

The empirical analysis reveals significant demographic influences on organic vegetable purchase intentions across multiple socio-demographic dimensions. The findings demonstrate systematic variations in purchase intentions across gender, age, marital status, education, and income categories, providing robust support for hypothesis H13.

Gender analysis reveals a significant difference in purchase intentions ($t = 3.842$, $p < 0.001$), with male consumers demonstrating notably higher purchase intentions ($M = 5.837$) compared to female consumers ($M = 5.537$). This finding presents an interesting departure from traditional assumptions about gender roles in Vietnamese household purchasing decisions.

Age stratification demonstrates a clear progressive relationship with purchase intention ($F = 8.674$, $p < 0.001$). The analysis reveals a systematic increase in purchase intentions across age categories, with consumers over 45 years exhibiting the highest mean score ($M = 5.987$), followed by those aged 31-45 ($M = 5.892$). This pattern suggests that age-related factors, potentially including health consciousness and purchasing power, significantly influence organic vegetable preferences.

Marital status emerges as a significant determinant of purchase intentions ($F = 12.453$, $p < 0.001$). Consumers with children demonstrate the highest purchase intentions ($M = 5.860$), followed by married individuals without children ($M = 5.690$),

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while single consumers show relatively lower intentions ($M = 5.387$). This pattern suggests that family responsibilities significantly influence organic food preferences.

Educational attainment exhibits a nuanced relationship with purchase intentions ($F = 15.876$, $p < 0.001$). The analysis reveals peak purchase intentions among master's degree holders ($M = 5.831$) and bachelor's degree holders ($M = 5.814$), with a slight decline observed among doctoral degree holders ($M = 5.615$). This non-linear relationship suggests that the influence of education on organic vegetable preferences may be moderated by other factors.

Income levels, both personal and familial, demonstrate the strongest associations with purchase intentions. Personal income analysis ($F = 18.234$, $p < 0.001$) reveals consistently increasing purchase intentions across income brackets, with the highest-income group (Above 15M VND) showing substantially higher intentions ($M = 6.068$) compared to lower-income segments. Similarly, family income analysis ($F = 16.892$, $p < 0.001$) demonstrates a clear positive relationship, with the highest-income households showing the strongest purchase intentions ($M = 6.041$).

These findings provide comprehensive empirical support for the demographic hypothesis (H13) and offer valuable insights for market segmentation and targeting strategies in the Vietnamese organic vegetable market. The results suggest that marketing strategies should particularly target higher-income segments while considering the nuanced influences of education and family structure.

5. DISCUSSION

5.1 Key Findings

The empirical investigation yields several significant findings that warrant detailed examination. The structural equation modeling analysis reveals that perceived value emerges as the strongest predictor of organic vegetable purchase intentions among Vietnamese urban consumers ($\beta = 0.459$, $p < 0.001$). This finding aligns with previous research by Phan and Pham (2023), who identified perceived value as a crucial determinant of organic food purchase intentions in the Vietnamese market. Furthermore, this result extends the theoretical framework proposed by Zeithaml (1988) regarding the means-end relationship between perceived value and purchase behaviour.

A particularly noteworthy finding pertains to the differential impact of manufacturer and retailer green marketing awareness. The analysis reveals that manufacturer green marketing demonstrates substantially stronger effects across multiple pathways, particularly in influencing perceived quality ($\beta = 0.787$, $p < 0.001$) and perceived risk ($\beta = -0.641$, $p < 0.001$). This finding diverges from previous research by Wu and Chen (2014), who found more balanced effects between manufacturer and retailer marketing initiatives. The pronounced impact of manufacturer green marketing in the Vietnamese context may reflect the particular importance of production authenticity and safety assurance in emerging markets.

The relationship between perceived price and purchase intention presents an intriguing pattern. While perceived price shows a significant negative direct effect on purchase intention ($\beta = -0.073$, $p = 0.006$), its relationship with perceived value proves non-significant ($\beta = -0.039$, $p = 0.198$). This finding contrasts with research by Mammadova et al. (2023), who found strong price-value relationships in organic markets. The result suggests that Vietnamese urban consumers may evaluate organic vegetable prices independently of their value assessments, possibly indicating a more sophisticated decision-making process than previously theorized.

The demographic analysis reveals significant variations in purchase intentions across different consumer segments. Particularly notable is the strong positive relationship between income levels and purchase intentions, with high-income consumers demonstrating substantially greater propensity to purchase organic vegetables. This finding aligns with research by Nguyen et al. (2019), who identified income as a crucial determinant of organic food consumption in Asian markets. However, the current study extends this understanding by demonstrating that the income effect operates through multiple pathways, including enhanced value perception and reduced price sensitivity.

5.2 Theoretical Implications

The findings make several significant contributions to theoretical understanding of green marketing effectiveness and consumer behaviour in emerging markets. First, the study extends the traditional green marketing framework by demonstrating the differential impacts of manufacturer and retailer initiatives. The strong mediating effects of perceived quality and risk in the relationship between manufacturer green marketing and purchase intention suggest a more complex theoretical model than previously proposed. This finding enriches the theoretical framework developed by Alex and Mathew (2018) by identifying specific pathways through which marketing awareness influences purchase decisions.

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The research also advances understanding of value perception theory in the context of organic food markets. The non-significant relationship between perceived price and value, coupled with the strong direct effect of perceived quality on value, suggests that traditional value formation models may require modification in emerging market contexts. This finding challenges the universality of Zeithaml's (1988) means-end chain model and indicates the need for more nuanced theoretical frameworks that account for market-specific value formation processes.

Furthermore, the study contributes to the theory of planned behaviour by demonstrating the crucial role of demographic factors in moderating the relationship between attitudes and intentions. The significant variations in purchase intentions across different demographic segments suggest that behavioural models must incorporate socioeconomic factors more explicitly, particularly in emerging market contexts.

5.3 Practical Implications

The research findings offer substantial practical implications for both manufacturers and retailers in the organic vegetable sector. The strong impact of manufacturer green marketing on perceived quality and risk suggests that producers should prioritize communication strategies that emphasize production processes, certification standards, and safety assurance. This approach aligns with findings from Dabija et al. (2018), who demonstrated the effectiveness of transparency-focused marketing in building consumer trust.

For retailers, the results indicate the importance of developing complementary marketing strategies that reinforce manufacturer initiatives while addressing point-of-sale concerns. The significant impact of retailer green marketing on perceived price suggests that retailers should focus on value communication and price justification strategies. This recommendation extends the findings of Syaekhoni et al. (2017) regarding the role of retail environments in facilitating green purchase decisions.

5.4 Policy Implications

The findings have significant implications for policy development in the organic food sector. The strong relationship between income and purchase intentions suggests the need for policies that address affordability barriers while maintaining product quality standards. This aligns with research by Iqbal et al. (2021) highlighting the importance of balanced policy approaches in emerging markets.

The differential effects of manufacturer and retailer marketing initiatives indicate the need for targeted regulatory frameworks that ensure consistent communication across the supply chain. Policy makers should consider developing integrated certification and labeling systems that facilitate clear communication of organic standards while protecting consumer interests. This recommendation builds upon findings from Liu et al. (2022) regarding the importance of standardized certification systems in building consumer confidence in organic markets.

The demographic variations in purchase intentions suggest the need for targeted policy interventions that address specific market segments. Particularly important are policies that enhance access to organic vegetables across different income groups while maintaining product integrity and safety standards.

6. CONCLUSION

This research presents a comprehensive investigation into the influence of green marketing awareness on organic vegetable purchase intentions among Vietnamese urban consumers. The empirical analysis, encompassing data from 832 respondents across two major metropolitan areas, yields several significant theoretical and practical insights while highlighting important areas for future research consideration.

The findings demonstrate the complex interplay between manufacturer and retailer green marketing initiatives in shaping consumer purchase intentions. Notably, manufacturer green marketing emerges as a more potent influence on consumer perceptions and behaviour, particularly through its effects on perceived quality ($\beta = 0.787$) and perceived risk ($\beta = -0.641$). This finding advances theoretical understanding of green marketing effectiveness in emerging markets, whilst challenging previous assumptions about the relative importance of different marketing channels.

The research makes substantial theoretical contributions by extending traditional frameworks of consumer behaviour in the organic food sector. The identification of differentiated pathways through which marketing awareness influences purchase decisions enriches existing theoretical models and suggests the need for more nuanced approaches to understanding consumer behaviour in emerging markets. Furthermore, the strong mediating effects of perceived quality and risk in the relationship between marketing awareness and purchase intention provide valuable insights for theoretical development in the field.

Several limitations of the current study warrant acknowledgement and suggest directions for future research. First, the focus on urban consumers in Hanoi and Ho Chi Minh City, while providing valuable insights into key markets, may limit

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generalisability to other regions or rural areas. Future research might productively explore whether the identified relationships hold across different geographical and cultural contexts within Vietnam and other emerging markets. Second, the cross-sectional nature of the data collection prevents examination of temporal changes in consumer attitudes and behaviours. Longitudinal studies could provide valuable insights into the evolution of green marketing effectiveness and consumer response patterns over time.

Methodologically, while the current study employs sophisticated structural equation modeling techniques, future research might benefit from experimental designs that could more definitively establish causal relationships between marketing initiatives and consumer responses. Additionally, qualitative investigations could provide deeper insights into the cognitive processes underlying consumer responses to different types of green marketing communications.

The findings suggest several promising avenues for future research. First, investigation of the potential moderating effects of cultural values and social norms on the relationship between green marketing awareness and purchase intentions could yield valuable insights. Second, examination of the role of digital marketing channels and social media in shaping organic food purchase intentions represents an important area for future study. Third, research into the effectiveness of specific types of green marketing messages and communication strategies could provide practical guidance for marketers in this sector.

Despite these limitations, the study makes significant contributions to both theoretical understanding and practical application in the field of green marketing and consumer behaviour. The findings provide valuable guidance for manufacturers, retailers, and policy makers seeking to promote sustainable consumption patterns in emerging markets. Future research building upon these findings can further advance understanding of how to effectively promote sustainable consumption behaviours in rapidly evolving market environments.

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