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SUSTAINABLE RESTAURANT PRACTICES: IMPACT ON CONSUMER BEHAVIOR ACROSS DEMOGRAPHICS

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Abstract

This study investigates the impact of green practices on a restaurant's ecological image and customers' intentions to revisit, considering demographic and behavioral factors such as gender, age, family size, and willingness to pay more. The findings revealed that green practices significantly influence customers' perceptions of a restaurant's ecological image and their intentions to revisit. The study also uncovered differences in these perceptions and behaviors across various demographic groups and levels of willingness to pay. The findings suggest that green restaurants can enhance customer support by implementing environmentally friendly programs, promoting environmental awards, engaging customers through various communication channels, and offering premium-priced items (without exceeding reasonable limits) to boost profitability while fostering loyalty.

Keywords: green practices, ecological image, revisit intentions, demographic, willingness to pay

1. INTRODUCTION

The adverse environmental influence of the hospitality business has garnered stakeholders' attention. The increasing recognition of environmentally friendly travel and hospitality products has a profound impact. The demand for environmentally favorable products has increased significantly (Aroonsrimorakot et al., 2022; Kwok et al., 2016; Suttiwongpan et al., 2019), and trades have become more ecologically conscious (Han et al., 2009). Products promoted for sustainability accounted for 54.7% of total market growth from 2015 to 2019 and comprised 16.8% of all purchases in 2020, a significant increase from 13.7% in 2015 (Kronthal-Sacco & Whelan, 2021). The trend in culinary selections remains consistent. In 2020, a food intelligence report indicated a 23% increase in the number of U.S. customers who prioritized sustainable food options compared to 2019 (Gelski, 2020). The waste of 1.05 billion metric tons of food in 2022 resulted in costs exceeding $1 trillion and generated up to 10% of greenhouse gas emissions. Between 2019 and 2023, 62 Member States and the EU implemented 516 policy instruments to achieve the 2030 objective of halving food waste (United Nations, 2024).

A number of hospitality companies have accepted sustainability as a key strategic concern and have made substantial investments in promotional initiatives oriented toward green

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practices. Major international hotel chains have strategically integrated sustainability into their core business models, demonstrating substantial financial commitments. Marriott hotels worldwide have implemented innovative food waste reduction initiatives, such as the London Heathrow Marriott's "Food Waste Laboratory," which repurposed nearly 400 pounds of potential waste in one month (Marriott International, 2022). Through Hilton's 'Travel with Purpose' program, the company collected unused food for delivery to local nonprofits, serving 590 meals to the community, diverting 708 pounds of food from landfills, and preventing 384 pounds of carbon dioxide emissions (Hilton, 2022). In the restaurant sector, Starbucks FoodShare has diverted 60 million pounds of food from waste streams in the U.S., providing 50 million meals. Internationally, programs are active in 10 countries, including the Dominican Republic, India, Japan, Mexico, New Zealand, the Philippines, Singapore, Thailand, the UK, and the U.S. (Starbucks, 2022). These initiatives validate the growing importance of supporting green practices across the global hospitality industry.

Customers consider themselves environmentally concerned patrons at restaurants, seeking to make environmentally positive choices when dining out (Parker, 2011). The restaurant industry recognizes that adopting environmentally friendly practices can both boost profits and improve the overall health of the environment (Han, 2020). Committing to green practices offers businesses numerous benefits including the lowering of costs for operation (Schubert et al., 2010), refining the business's image and customer evaluations (Kwok et al., 2016), and increasing consumer purchasing intentions (Barber & Deale, 2014). Consequently, it supports long-term financial success (Singal, 2014).

With the growing demand for green practices from both consumers and producers, many restaurant managers plan to adopt green practices by installing energy- and water-saving devices and offering several local and organic options on their menus, reducing food waste, minimizing single-use plastics, and promoting recycling and sustainable sourcing, they aim to lower their carbon footprint and gain a competitive edge (Kwok et al., 2016). In 2023, Chipotle donated over 327,000 pounds of food, valued at $3 million, to local charities. The company achieved a 48% waste diversion rate, with 90% of its restaurants recycling and 36% composting food waste (Chipotle, 2023). McDonald's has made progress toward sustainable packaging, achieving 86.7% renewable/recycled material sourcing, reducing plastic in Happy Meal toys by 63.7%, and implementing recycling in 88.3% of restaurants with advanced infrastructure (McDonald's, 2023). Accordingly, restaurants experience higher customer demand, and heightened brand image (Dhir et al., 2021). In response to increased consumer awareness in organic, sustainable cuisine and environmentally responsive approaches, green restaurants abound, satisfying demand while addressing the environmental impacts of the hospitality industry (González-Rodríguez et al., 2020).

Customers have become more discerning in their awareness and evaluation of marketing and brand communications that highlight the importance of sustainability. Furthermore, their behavior varies significantly due to individual factors (Perugini & Bagozzi, 2001). Demographic, sociological, and economic factors influence consumers' green buying habits and their perceptions of sustainable restaurant initiatives. Gender, age, family structure, and economic capacity, affect how consumers view and respond to sustainable restaurant practices, demonstrating the complex interplay of green purchasing behaviors. Research shows that gender plays a complex and sometimes conflicting role in the adoption of environmentally friendly practices (Madanaguli et al., 2022; TM et al., 2021). Millennials demonstrate greater ecological consciousness and sustainable behaviors compared to older patrons (Riva et al., 2022). Additionally, family structure, particularly the presence of children, significantly influences consumers' perceptions of hospitality companies' sustainability initiatives through various mechanisms. Understanding green consumer behavior demands studying willingness to pay—the maximum amount a client will spend on a product or service—because this directly

affects the feasibility of sustainable restaurants (Mahasuweerachai & Suttikun, 2023; Zare Mehrjerdi & Woods, 2024). Customers of green restaurants show increased willingness to pay premium prices due to their familiarity with sustainable businesses, health considerations, and established green purchasing habits (Namkung & Jang, 2017). This highlights the importance of understanding how age, family structure, financial capacity, and environmental awareness collectively influence consumers' willingness to pay more at sustainable restaurants.

Despite increasing scholarly attention on sustainable practices in the restaurant sector (Baloglu et al., 2022; Chaturvedi et al., 2024; Dutta et al., 2008), significant gaps remain in both theory and knowledge regarding the intricate relationship between green practices, ecological image, and customers' behavioral intentions. The current literature primarily addresses green value perception (Riva et al., 2022; Ryu et al., 2008), yet it does not provide a thorough analysis of the relationship between green practices, a restaurant's ecological image, and the resulting customer behaviors. Limited research has thoroughly examined the initiatives undertaken by restaurants to establish a green ecological image (Jeong & Jang, 2010; Rahimah & Yuliaji, 2024), which may provide strategic benefits that extend beyond superficial perceptions. Nonetheless, it is acknowledged that a favorable green image fosters customer trust and affects intentions to patronize (Mahasuweerachai & Suttikun, 2023).

Current research exhibits notable limitations in comprehending the complex interactions between green practices and customer responses across various demographic segments. Literature presents diverse and inconsistent results regarding the impact of demographic factors on behavioral intentions and preferences for green attributes (DiPietro & Gregory, 2013; Schubert et al., 2010), underscoring the need for more advanced research. Although sustainable practices in the foodservice sector have been studied (Baloglu et al., 2022; Chaturvedi et al., 2024; Rahimah & Yuliaji, 2024; Remar et al., 2022), there is a notable lack of research regarding consumers' perceptions of green restaurants. Studies evaluating the effectiveness of marketing strategies for various demographic groups and consumers' willingness to pay extra for environmentally friendly restaurant initiatives remain notably underdeveloped. Therefore, additional research is required to explore these relationships across various customer demographics and behaviors, such as gender (Madanaguli et al., 2022; TM et al., 2021), age (Jeong & Jang, 2010), family status, and willingness to pay a premium (DiPietro & Gregory, 2013; Schubert et al., 2010) for green restaurants. This will enhance understanding of how customers perceive a company's green practices, image, and behavioral intentions, which is essential to understand the complex interactions between sustainable restaurant practices and customer responses.

In response, this study aims to develop a framework that illustrates the impact of restaurants' green practices on ecological image perception across diverse demographic and behavioral segments. The study conducts a thorough analysis of the relationships between gender, age, family size, and willingness to pay, in relation to perceptions of green practices, addressing the gap between the adoption of green practices and consumer reactions. The research objectives focus on analyzing the impact of green practices on a restaurant's ecological image, the influence of this image on customers' revisit intentions, and the effect of consumer demographic and behavioral variations on preferences for these practices. This approach seeks to clarify the theoretical mechanisms of green image formation, identify demographic and behavioral specific responses to environmental initiatives, and develop predictive models for sustainable marketing strategies within the restaurant sector. This study provides empirical insights to help restaurant operators in strategic decision-making, focusing on initiatives relevant to their target customers and leveraging sustainability as a competitive advantage within the developing green restaurant industry.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Green Restaurant Practices

Recent research in the hospitality sector has increasingly emphasized environmental sustainability, highlighting green restaurants as a significant area of study. Research conducted by Hu et al. (2010) and Schubert et al. (2010) examined ecological practices in restaurant management, emphasizing the industry's capacity to mitigate environmental impact via strategic operational changes. The distinctiveness of green restaurant practices is rooted in their comprehensive approach to sustainability. Green establishments differ from traditional restaurants by incorporating environmental considerations throughout their operations, including design, construction, daily function, and eventual decommissioning. The Green Restaurant Association (GRA) has played a significant role in advancing practical and cost-effective ecological solutions in the restaurant sector (Namkung & Jang, 2017).

A green restaurant is defined as an environmentally conscious food service establishment that systematically incorporates ecological principles into its operations. Green restaurant practices emphasize the principles of reducing, reusing, and recycling, while prioritizing energy efficiency, sustainable food sourcing, waste management, and a minimal environmental footprint. Common environmental practices encompass energy efficiency, water conservation, waste management, sustainable food procurement, pollution reduction, utilization of non-toxic materials, and sustainable building design (Tan et al., 2019). Green restaurants reduce greenhouse gas emissions and can alter consumer views on sustainable dining through the adoption of eco-friendly consumption practices and the implementation of transparent sustainability strategies (Visschers & Siegrist, 2015). These practices address environmental concerns and may enhance competitive advantage, customer satisfaction, and overall business performance (Jeong & Jang, 2010; Namkung & Jang, 2017).

2.2 Impact of Green Restaurant Practices on the Perception of Ecological Image

A restaurant's ecological image is formed by its customers' beliefs of the restaurant's ecological practices (Jeong & Jang, 2010). In general, image is the overall impression left in customers' minds, formed by cumulative feelings, thoughts, attitudes, and experiences with an organization (Bravo et al., 2009). This image is the result of a communication process in which organizations convey a specific message that is indicative of their strategic objective, mission, vision, goals, and reputation. All of these elements encompass their core values. The organization's image is imprinted in the memories of customers, where it is converted into either a favorable or adverse interpretation, and then retrieved when the organization's name is expressed (Wu et al., 2021). Therefore, the ecological image of a restaurant develops from customers' perceptions of green value derived from the restaurants' messages embodying their green values, including customers' assessment of the environmental acts of the restaurant's products and services.

The perceived ecological image of a restaurant can also be affected by the effectiveness of the restaurant's green practices, which are crucial for evaluating its overall greenness (Ryu et al., 2008). In the study of Namkung and Jang (2017), green practices have a substantial influence on customers' impression of a brand's environmental image and their willingness to participate in eco-friendly actions. The research findings of Remar et al. (2022) suggested that consumer ecological perception has no effect on the formation of restaurant image, but it does impact consumers' perception of menu information; additionally, the perception of menu information subsequently impacts the restaurant image. Moreover, the study results of Jeong and Jang (2010) indicated that the green image of a restaurant is positively impacted by its

consumers' perceptions of green practices. Consequently, the first hypothesis is stated as follows:

H1: A restaurant's green practices have a positive effect on customers' perceptions of ecological image.

2.3 Impact of the Perception of Ecological Image on Revisit Intentions

Revisit intention refers to a customer's intention to return to the focal establishment (Kim et al., 2017). It represents a behavior related to repeated purchases, aiding in the establishment of long-term relationships and loyalty by reducing decision-making time and exploration for alternatives (Gregoriades et al., 2023; Ru-zhe et al., 2023). According to the Theory of Planned Behavior (TPB), a consumer intention is a key indicator that reflects an individual's preparedness to take action, with intention being derived from attitude (Ajzen, 1991). The TPB has been employed to assess the attitudes of environmentally conscious consumers and their inclination to endorse eco-friendly restaurants. Intentions, being a robust indicator of human conduct, are widely regarded as the most accurate predictor of planned behavior (Riva et al., 2022).

Consumers' perceptions of product value often reflect in their evaluations, leading to word-of-mouth effects that significantly impact purchase intentions (Eren et al., 2023; Kitjaroenchai & Chaipoopiratana, 2022). Restaurants adopt environmentally friendly practices to build a positive brand image and inspire customers to become more environmentally conscious. The restaurant's provision of eco-friendly amenities, including reusable takeout containers, organic alternatives, and recycling receptacles, along with the overall effectiveness of the restaurant's green initiatives, can influence a customer's choice to patronize a green establishment. Additionally, customers' sincere concern for the environment or their desire for status-enhancing benefits might motivate them to patronize a restaurant with superior environmentally friendly policies (Jeong & Jang, 2010).

Researchers have shown a positive relationship between green perceived value and green purchase intentions. Riva et al. (2022) confirmed that revisit intentions are significantly and positively impacted by ecological consumerism. Hu et al. (2010) also found that awareness of sustainable restaurant practices and environmental concerns substantially influence Taiwanese consumers' intentions to patronize green restaurants. Chaturvedi et al. (2024) confirmed that food quality, environmental responsibility, sustainability initiatives, and food safety comprise sustainable practices that significantly affect customer satisfaction and loyalty.

Although several studies have examined the impact of customers' perceived value of green restaurants, instead, this study focuses on the image of green restaurants, as it holds greater significance than perceived value. While perceived value requires customers to experience a service or product before making a judgment, an image can shape opinions even before any visit is made. Customers can form a positive impression of a green restaurant solely based on its image, without needing to experience the service. When selecting a dining establishment, clients frequently depend on the restaurant's reputation and tend to select places with a more favorable reputation (Rahimah & Yuliaji, 2024). A few studies support this assumption. Jeong and Jang (2010) found that the perception of an ecological image positively influences their intention to choose an environmentally responsible establishment. Hence, from the above findings, the perception of a restaurant's ecological image can be assumed to affect customers' revisit intentions for the restaurant. The following hypothesis has been developed accordingly:

H2: The perception of ecological image has a positive effect on customers' revisit intentions.

2.4 Moderating Role of Customers' Demographic and Behavioral Characteristics

Customers have a vital role in the process of promoting restaurants' green practices as they influence the demand side of the restaurant system by recognizing and frequently using restaurants that implement green initiatives, thereby contributing to the success of green restaurants (Kim & Hall, 2019). However, the survival of a restaurant that implements green measures may hinge on navigating dual risks, jeopardizing both its financial investment and customer base (Madanaguli et al., 2022). Based on empirical evidence, several studies have yielded varying results regarding customers' perceptions of the image and/or value of green restaurants. For example, Trafialek et al. (2019) discovered that customers value reusable cutlery and locally sourced ingredients. However, some customers, particularly in luxury restaurants, may be reluctant to adopt green practices due to concerns on functionality, cost, enjoyment, and self-image, leading them to perceive green initiatives as less luxurious and not fully aligned with their preferences (Peng, 2020). Moreover, customers sometimes overlook backstage green investments, such as environmentally safer energy, alternative protein sources, or initiatives to reduce food wastage (Trafialek et al., 2019). This lack of awareness may discourage restaurants from investing in these less visible green initiatives, leading them to prioritize other conspicuous elements such as reusable cutlery (Baloglu et al., 2022). Therefore, customers' differing perceptions of a restaurant's environmental efforts can significantly influence its overall business performance. The following studies have focused on investigating demographic and behavioral factors that impact the relationship among perceptions of green practices, image, and intentions to purchase in restaurant businesses.

Gender serves as a crucial moderating variable in the adoption of environmental consciousness and sustainable practices. Studies demonstrate that gender differences are evident in multiple aspects of environmental behavior, intentions for green purchasing, and participation in sustainable practices (Madanaguli et al., 2022; TM et al., 2021). The literature reveals contradictory findings concerning the influence of gender on engagement in sustainable practices. Research indicates that women exhibit reduced engagement with sustainable practices in restaurants (Shapoval et al., 2018). Lang et al. (2020) found that female restaurant owners in northwestern China demonstrated lower awareness of green initiatives compared to their male counterparts. This contrasts with existing literature that generally suggests women typically demonstrate greater pro-environmental intentions than men, with their behaviors significantly shaped by altruistic and egoistic values (Yang et al., 2022). Females are more environmentally conscious, with indications that the female gender positively influences the relationship between export intensity and green innovations, with absorptive capacity also serving as a positive moderator in this context (Galbreath, 2019). The study of Wang (2016) indicated that females exhibit greater sensitivity to environmental issues and a heightened sense of ecological responsibility. These varying findings suggest that gender's influence on environmental behavior may be more nuanced than previously understood, particularly in specific contexts such as restaurant settings. Building on this literature and acknowledging the generally stronger environmental consciousness among females documented in broader sustainability research, it is hypothesized that:

H3a: Green practices have a significantly higher-level effect on the perception of ecological image among female customers.

H3b: The perception of ecological image has a significantly higher-level effect on revisit intentions among female customers.

Age has been a central focus in ecology and green marketing research (Hu et al., 2010). Different age groups exhibit varying green supportive behaviors. Han et al. (2011) found that typical green consumers are often younger (pre-middle-aged). Gifford and Nilsson (2014)

highlighted that the younger age group exhibited more ecological concerns than the older one. Millennials tend to prioritize environmental issues and are more likely to implement sustainable consumption behaviors (Kim & Park, 2020). Schubert et al. (2010) discovered that younger consumers were more likely than older ones to prioritize the use of organic foods and green practices in restaurants. Similarly, Diamantopoulos et al. (2003) found that younger individuals generally have more positive attitudes toward environmental issues. Namkung and Jang (2017) explored the differences between the age groups of customers who exhibit core green behavior. The primary demographic of the green group consisted of younger consumers who exhibited considerably higher levels of engagement in green restaurant practices, self-perceived health consciousness, and self-perceived green consumerism. Atzori et al. (2018) found that, when choosing a restaurant, millennials place greater importance on factors such as sustainable food sourcing, in-store recycling, and the use of eco-friendly materials for packaging compared to the restaurant's overall green design or energy efficiency. In addition, younger customers are more likely to engage in green purchasing because of their superior information processing abilities and tendency to seek innovative and different information (Evanschitzky & Wunderlich, 2006). Younger individuals may be encouraged to make purchasing decisions according to this environmental behavior, as they are more informed about the advantages of supporting green establishments and the practices and functions that are associated with them. This study aims to understand how age differences affect customer attitudes and intentions. By investigating these differences, green restaurant managers can develop targeted marketing strategies to influence perceptions and boost patronage among specific demographic groups. Hence, the following hypothesis is proposed:

H4a: Green practices have a significantly higher-level effect on perceptions of ecological image among younger customers.

H4b: Perceptions of ecological image have a significantly higher-level effect on revisit intentions among younger customers.

Family structure, defined in this study as whether a family includes children or not, can significantly impact consumers' attitudes toward a hospitality company's sustainability efforts due to the different influences acting upon these groups. In households with children, adults' consumption decisions are influenced by social factors related to children and their concern for their children's well-being (Kwok et al., 2016). Families with children reported their child's influence on restaurant choices. This group is related to adults' generativity (Agostinho & Paço, 2012), which describes variations in ecological consciousness and consumption preferences between households with and without children (Labrecque & Ricard, 2001). Consumers expressing generativity through ecologically conscious behavior involves sustainably conserving the environment and its resources for future generations (Urien & Kilbourne, 2011). Furthermore, numerous adults view dining at green restaurants as a healthier option (Schubert et al., 2010). Therefore, families with children may choose the food provided by green restaurants for the good health of their children. While the studies mentioned confirm the differing impacts among family groups, a profound understanding of the factors that impact customer considerations will benefit green restaurant managers in planning strategies to attract a more diverse group of customers and increase the competitive advantage of their business. The hypotheses are proposed as follows:

H5a: Green practices have a significantly higher-level effect on customers' perceptions of ecological image among families with children.

H5b: Customers' perceptions of ecological image have a significantly higher-level effect on revisit intentions among families with children.

Willingness to pay is defined as the greatest amount of money a customer is prepared to spend on a product or service (Mahasuweerachai & Suttikun, 2023; Zare Mehrjerdi & Woods, 2024). Consumers' perceptions of healthy food products and restaurant pricing significantly affect their purchasing intentions, influencing their actual behavior in purchasing nutritious meals at restaurants (Suttikun, 2023). The study of Hu et al. (2010) demonstrated that consumers with higher income levels have the ability to afford the slight rise in prices related to supporting environmentally friendly activities and a preference for eco-friendly products. Green consumers often possess above-average socioeconomic status (Han et al., 2011). Namkung and Jang (2017) found that customers are more likely to be willing to pay extra money for environmentally friendly practices in restaurants when they have had more extensive previous experiences with green restaurants, are actively involved in supporting green restaurants, or have a strong sense of health concern as well as devotion to green purchasing.

Previous studies have found differing amounts regarding the percentage increase in price that customers are willing to pay. The study of Hu et al. (2010) revealed that the majority of Taiwanese consumers were willing to pay 2% to 6% extra to dine at a green restaurant, while a minority were willing to pay more than 10% extra. In the study of DiPietro and Gregory (2013), customers agreed they were willing to pay up to 1% more for green practices in restaurants. However, support decreased when the amount increased to 5%, 10%, and over 10%. Notably, in their studies, customers were statistically significantly less willing to pay these higher amounts. Most results found a lower percentage and a negative relationship between the magnitude of the percentage increase and customers' willingness to pay. This could imply that although green restaurant customers are willing to pay more, they are not likely to be willing to pay significantly higher prices than usual. Different levels of willingness to pay extra can be expected among green customers. A comprehensive understanding of customer perceptions and intentions to support green practices will allow restaurant managers to develop pricing strategies that maximize profit while maintaining customer loyalty. Thus, the following hypotheses are proposed:

H6a: Green practices have a significantly higher-level effect on customers' perceptions of ecological image among customers less willing to pay extra.

H6b: Customers' perceptions of ecological image have a significantly higher-level effect on revisit intentions among customers less willing to pay extra.

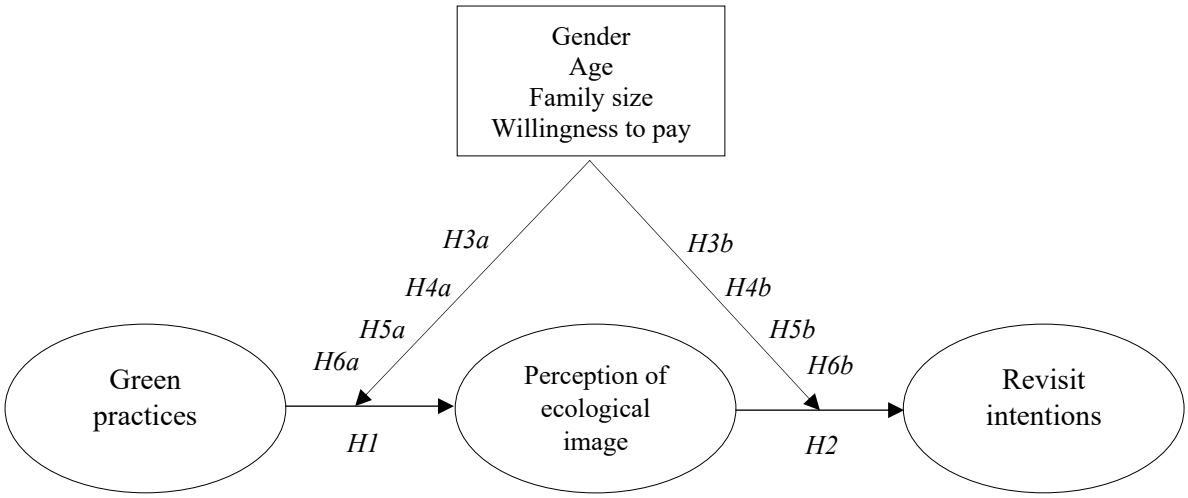
Figure 1 illustrates the hypotheses of this study, proposing that restaurants' green practices positively affect customers' ecological image perception *(H1)* and revisit intentions *(H2)*. Female customers *(H3a, H3b)*, younger customers *(H4a, H4b)*, families with children *(H5a, H5b)*, and those less willing to pay extra *(H6a, H6b),* demonstrate stronger effects from green practices on ecological image perception and revisit intentions than the alternative customer groups.

3. RESEARCH METHODOLOGY

3.1 Measurement Development and Questionnaire Design

This study measured the following three constructs: green practices, perception of ecological image, and revisit intentions, modified from prior literature. Green practices were measured using a ten-item scale adapted from Jeong and Jang (2010). The perceived ecological image items were measured based on studies by Schwaiger (2004) and developed by Jeong and Jang (2010). Revisit intentions were measured with a four-item scale revised from Riva et al. (2022). Willingness to pay was measured by a ten-item scale modified from Dutta et al. (2008).

Figure 1. Conceptual framework



To better capture green practices in restaurants, the language and focus of Jeong and Jang's (2010) measurement items were refined. A panel of experts, including two academics in the food industry and two industry practitioners from the food services industry, was consulted to ensure content validity. The discussion of contextual differences was expanded, highlighting distinctions between Starbucks and general restaurants in terms of scale, menu, and sustainability practices to justify item applicability. A comparison of original and adapted items demonstrates modifications justified by alignment with the study context. A pilot test was conducted among restaurant managers and sustainability professionals to confirm item clarity and relevance, resulting in minor refinements to improve applicability.

The questionnaire consists of the following five sections: an introduction to the project, construct measurement items (green practices, perceptions of ecological image, and revisit intentions), and demographic information. The introduction provided an outline of the study, the estimated time required for participation, and assurances regarding the confidentiality of personal data storage. The first section included construct measurements for green practices, while the second section included items for perception of ecological image, with each item using a 5-point Likert scale (0 = strongly disagree to 4 = strongly agree). The intention behind using the 5-point Likert scale was to capture respondents' perceptions of the extent to which these green practices are implemented in the restaurants they evaluated. By offering levels of agreement or disagreement, this scale allowed respondents to express how consistently they believe these practices are applied, providing deeper insights into customer evaluations and experiences. The third section included construct measurements for revisit intention using 5-point Likert scales (0 = not at all to 4 = frequently, if not always). The fourth section comprised a scale measuring customers' willingness to pay more for green restaurants according to the additional percentage in comparison to the usual price (0 = 0% to 10 = 20%). The final section collected respondents' demographic information, for instance, age, gender, education, and family size.

3.2 Data Collection

This study was conducted in green restaurants on Koh Samui (Samui Island). Data collection occurred from April to June 2024. The study sample included Thai and foreign tourists who were restaurant customers. Before distribution, the questionnaire was approved

by an ethics review committee. The sampling method employed simple random sampling to distribute questionnaires, as this approach is widely used in quantitative survey research.

Surveys were conducted with willing participants after ensuring their confidentiality and anonymity. Before starting, each participant received a brief explanation of green restaurants that highlighted environmentally sustainable practices, including waste reduction, energy efficiency, and the use of eco-friendly materials. To ensure relevant responses, potential participants were verbally screened by asking if they had previously dined at or purchased from a green restaurant. Only those who answered "yes" to this screening question were included in the study.

The questionnaires were self-administered as this is cost-effective approach which requires less administrative time than interviews (Sudman et al., 1965). Of the 1,050 questionnaires distributed, 630 were returned, representing a 60% response rate. After removing incomplete responses, 593 completed questionnaires remained for data analysis. This number surpasses the recommended sample size necessary for robust statistical analysis. In accordance with Hoe's (2008) recommendation that sample sizes should exceed 200, this sample is considered suitable for structural equation modeling (SEM).

3.3 Analysis Method

The data were analyzed using the Mplus 7.3 program, following Anderson and Gerbing (1988)'s two-step approach. First, a confirmatory factor analysis (CFA) was conducted to assess the reliability and validity of the measurement variables. Following the testing of the measurement model, structural equation modeling with a maximum likelihood method was applied to explore the relationships among the three constructs used in this study. Additionally, multiple group moderation analysis was employed to capture the moderating effects of gender, age, family size, and willingness to pay. Detailed results regarding the steps of data analysis are reported in the results section.

4. RESULTS

4.1 Study Sample Characteristics

Table 1 shows details of the respondent profile (n = 593). The sample consisted of 45.5% males and 54.5% females. Age distribution was as follows: 22.9% were under 25, 27.8% were 25–34, 22.8% were 35–44, 18.7% were 45–54, and 7.8% were 55 or older. Nearly half (49.1%) had no children, while 50.9% had at least one child.

Table 1. Respondent profile (n = 593)

Category Respondent profile	(%)	*Category* Respondent profile	(%)
Gender		*Age (years old)*	
Male	45.5	Below 25	22.9
Female	54.5	25–34	27.8
Family size		35–44	22.8
No children	49.1	45–54	18.7
At least one child	50.9	55 and over	7.8

4.2 Measurement Model

A confirmatory factor analysis was conducted to evaluate the measurement model (Hair et al., 2010). This analysis assessed each latent variable to verify specific relationships between indicators and latent variables. The model's fitness was validated using five criteria for models with fewer than 12 items and a sample size greater than 250: chi-square (χ^2) with insignificant *p*-value/degrees of freedom (df) < 3, comparative fit index (CFI) > 0.950, Tucker-Lewis index (TLI) > 0.950, root mean square error of approximation (RMSEA) < 0.070, and standardized root mean square residual (SRMR) < 0.080. The chi-square value evaluates the overall model fit by assessing the discrepancy between the model's covariance matrices and the sample. However, it is generally considered a poor fit measure, as it should exhibit a value that is not statistically significant at the 0.05 level (Kline, 2023). The primary limitation is that acceptable chi-square value increases in proportion to both the number of indicators and sample size (Dash & Paul, 2021). Therefore, other fit indices must be considered when evaluating model suitability (Shi & Maydeu-Olivares, 2019).

In this step, items with low factor loadings that did not meet the criteria were eliminated as these items were unsuitable for use in the specific context of the study. Thus, a total of 11 items were included within the study's model, comprising 5 items for the construct of green practices, 3 items for the construct of perception of ecological image, and 3 items for the construct of revisit intentions.

Table 2 presents the validity and reliability of the measurement scales (a total of 11 items) for the constructs of green practices (5 items), perception of ecological image (3 items), and revisit intentions (3 items). The CFA model fit indices were $\chi^2 = 111.085$ ($p = 0.000$), df = 41, CFI = 0.974, TLI = 0.965, RMSEA = 0.054, and SRMR = 0.031. Cronbach's alpha coefficients for construct reliability ranged from 0.760 to 0.841. KMO values ranged from 0.690 to 0.853, with Bartlett's test of sphericity yielding values below 0.050, confirming reliability and validity. Composite reliability (CR) scores ranged from 0.762 to 0.846, greater than the 0.600 standard (Hair et al., 2010). Average variance extracted (AVE) scores ranged from 0.516 to 0.625, meeting convergent validity criteria.

Table 2 Confirmatory Factor Analysis (CFA)

Variables Items	Factor Loadings	t-value	CR	AVE
Green practices (α = 0.841, KMO = 0.853)			*0.843*	*0.521*
Use of recyclable take-out containers.	0.779	37.350**		
Recycling bins are offered for plastic cups, paper cups, and cup sleeves in the store.	0.764	35.460**		
Use of energy-efficient lighting in seating areas.	0.761	34.798**		
Beverages served in reusable glasses or mugs if customer is dining in.	0.666	24.961**		
Use of environmentally friendly cleaners for tables and floor.	0.625	21.693**		
Perception of ecological image (α =0.760, KMO = 0.695)			*0.762*	*0.516*
I have the impression that restaurants are very responsive to environmental issues.	0.747	28.151**		
The restaurant(s) are concerned about the preservation of the environment.	0.711	25.483**		
I have the feeling that the restaurant(s) are not only concerned about profit but also the environment and other consumers.	0.698	24.645**		

Variables Items	Factor Loadings	t-value	CR	AVE
Revisit intentions (α = 0.825, KMO = 0.690)			*0.832*	*0.625*
I consider myself a loyal patron of the (green) restaurant(s).	0.866	50.812**		
I visit here (green restaurant(s)) frequently.	0.794	40.056**		
The probability that I will use the (green) restaurant(s) for my next dining is high.	0.703	28.463**		
Model fit indices: *χ^2 = 111.085 (p = 0.000), df = 41, CFI = 0.974, TLI = 0.965, RMSEA = 0.054, SRMR = 0.031*				

Note. AVE = average variance extracted, CR = composite reliability, and ** = p < 0.001.

Table 3 shows the discriminant validity of the measurement model using the Fornell and Larcker criterion (Fornell & Larcker, 1981) assessed by comparing the square root of AVE (the bold values at the diagonal) with the correlation coefficients for the constructs of green practices (GP), perception of ecological image (PEI), and revisit intentions (RI). These coefficients ranged from 0.465 to 0.693. The square root of the AVE for each construct (0.718–0.790) exceeded their respective correlation coefficients. Additionally, the CICFA (sys) technique-based classification system, which is better than the traditional HTMT ratio (Fakfare et al., 2021; Rönkkö & Cho, 2022) and which was used in later research (Suwannakul & Khetjenkarn, 2022), was also used to check the discriminant validity of constructs. A 0.900 cutoff value was used to classify the problem level (Rönkkö & Cho, 2022). As shown in the upper off-diagonal, the coefficients at the 97.5% upper bound ranged from 0.548 to 0.757, which did not exceed the cut-off value, indicating no high correlations among constructs. Subsequently, the data and construct were deemed suitable for continuation to the structural model analysis.

Table 3 Discriminant Validity Assessment

Variables	GP	PEI	RI
GP	**0.722**	[0.382, 0.548]	[0.557, 0.687]
PEI	0.465	**0.718**	[0.629, 0.757]
RI	0.622	0.693	**0.790**

Note: The bold numbers on the diagonal represent the square roots of AVE. The values in the lower diagonal indicate the correlations of the constructs. The values in the upper diagonal show the correlations of the constructs at the 97.5% confidence interval (CI), GP = Green practices, PEI = Perception of ecological image, and RI = Revisit intentions.

4.3 Structural Model

The structural model demonstrated an acceptable fit with the following index values: χ^2 = 105.108 (p = 0.000), df = 35, CFI = 0.974, TLI = 0.959, RMSEA = 0.058, and SRMR = 0.055.

Table 4 and Figure 2 present the results of the hypothesis testing. Green practices significantly affected the perception of ecological image (H1: β = 0.580, **p < 0.001). The green practices of restaurants positively influenced customers' perception of the restaurant's ecological image. Perception of ecological image significantly influenced revisit intentions (H2: β = 0.770, **p < 0.001). Customers' perceptions of ecological image confirmed their intentions to revisit green restaurants. Therefore, H1 and H2 were accepted.

Table 4. Hypothesis testing for the structural model

Hypotheses	β	t-values	Results
H1: GP—>PEI	0.580	15.016**	Accepted
H2: PEI—>RI	0.770	24.980**	Accepted

Note: β = Path coefficient, GP = Green practices, PEI = Perception of ecological image, and RI = Revisit intention.

4.4 Multiple Groups Analysis

A multiple-group analysis was conducted to validate hypotheses H3a through H6b. The study categorized customers into four paired groups: (1) male (n = 269) and female (n = 324), and (2) those with (n = 302) or without (n = 291) children. To ensure balanced comparisons, the cutoff points for age and willingness-to-pay were set at their respective means (age = 2.61; willingness-to-pay = 3.37). Using the mean as a demarcation point typically results in balanced group sizes (Li, 2012), enhancing the statistical validity of subsequent comparative analyses. In behavioral research, normal distributions serve as a fundamental and reliable assumption, with the midpoint of a symmetric, bell-shaped curve effectively captured by the mean (Iacobucci et al., 2015). Furthermore, this methodology aligns with established practices in the field, as evidenced by numerous studies that have successfully differentiated between high- and low-engagement groups to better understand behavioral patterns (Antohi et al., 2022; Morgan et al., 2013). Consequently, respondents were divided into younger (n = 301) and older (n = 292) groups, as well as those with lower (n = 259, 0%–6% extra) and higher (n = 334, 8%–20% extra) willingness to pay extra.

To confirm the appropriateness of these categorizations, normality tests were conducted. The results indicated that both the age group (skewness/kurtosis = 0.303/-0.957) and the willingness-to-pay group (skewness/kurtosis = 0.514/-0.604) fell within the acceptable range for normality (Hair et al., 2010), demonstrating approximately symmetric distributions and supporting the validity of the chosen cutoff points.

Testing for measurement model invariance was required for ensuring consistent instrument interpretation across groups, and the multiple group confirmatory factor analysis (MCFA) commenced with the evaluation of configural invariance. The equivalence of the number of components among groups was assessed (Byrne, 2004). The satisfactory model fit indicates that the identical number of components and the same fundamental structure were effective for all groups. The model fit indices for the male group were $\chi^2 = 74.352$ (p = 0.001), df = 41, CFI = 0.974, TLI = 0.965, RMSEA = 0.055, and SRMR = 0.034, while for the female group they were $\chi^2 = 96.986.302$ (p = 0.000), df = 41, CFI = 0.961, TLI = 0.948, RMSEA = 0.065, and SRMR = 0.040. The model fit indices for the younger age group were $\chi^2 = 94.676$ (p = 0.000), df = 41, CFI = 0.961, TLI = 0.948, RMSEA = 0.066, and SRMR = 0.037, while for the older group they were $\chi^2 = 63.302$ (p = 0.000), df = 41, CFI = 0.983, TLI = 0.977, RMSEA = 0.043, and SRMR = 0.036. For the family group, those without children showed fit indices of $\chi^2 = 82.692$ (p = 0.000), df = 41, CFI = 0.968, TLI = 0.957, RMSEA = 0.059, and SRMR = 0.046, while families with children had $\chi^2 = 79.052$ (p = 0.000), df = 41, CFI = 0.973, TLI = 0.964, RMSEA = 0.055, and SRMR = 0.032. Lastly, the less willingness to pay extra group reported $\chi^2 = 67.433$ (p = 0.000), df = 40, CFI = 0.982, TLI = 0.976, RMSEA = 0.051, and SRMR = 0.033, while the group more willing to pay extra yielded values of $\chi^2 = 92.505$ (p = 0.000), df = 41, CFI = 0.955, TLI = 0.940, RMSEA = 0.061, and SRMR = 0.045.

Tables 5, 6, 7, and 8 indicate distinct constructs across the examined groups. The square root of the AVE for each construct exceeded the corresponding correlation coefficients, demonstrating that all pairs of groups effectively met the criteria for discriminant validity.

Table 5 Discriminant Validity Assessment of the Gender Groups

Variables	GP	PEI	RI
GP	(0.735/0.710)	0.438	0.576
PEI	0.492	(0.722/0.724)	0.666
RI	0.673	0.720	(0.787/0.791)

Note. The correlations of the male group's constructs are represented by the values in the lower diagonal. The correlations of the female group's constructs are represented by the values in the upper diagonal. The numbers in parentheses on the diagonal represent the square roots of the AVE (male/female).

Table 6 Discriminant Validity Assessment of the Age Groups

Variables	GP	PEI	RI
GP	(0.711/0.724)	0.299	0.523
PEI	0.577	(0.711/0.725)	0.701
RI	0.684	0.677	(0.792/0.781)

Note: The correlations of the younger group's constructs are represented by the values in the lower diagonal. The correlations of the older group's constructs are represented by the values in the upper diagonal. The numbers in parentheses on the diagonal represent the square roots of the AVE (younger/older).

Table 7 Discriminant Validity Assessment of the Family Groups

Variables	GP	PEI	RI
GP	(0.716/0.729)	0.507	0.672
PEI	0.443	(0.734/0.701)	0.691
RI	0.569	0.705	(0.777/0.804)

Note: The correlations for the families with no children group's constructs are represented by the values in the lower diagonal. The correlations of the families with children group's constructs are represented by the values in the upper diagonal. The numbers in parentheses on the diagonal represent the square roots of the AVE (no children/with children).

Table 8 Discriminant Validity Assessment of the Willingness to Pay Groups

Variables	GP	PEI	RI
GP	(0.790/0.650)	0.407	0.465
PEI	0.511	(0.748/0.700)	0.659
RI	0.732	0.736	(0.812/0.760)

Note. The correlations of the less willingness to pay extra group's constructs are represented by the values in the lower diagonal. The correlations of the greater willingness to pay extra group's constructs are represented by the values in the upper diagonal. The bold numbers in parentheses on the diagonal represent the square roots of AVE (pay less/pay more).

Table 9 illustrates the invariance testing of the measurement model across each pair of customer groups, which was achieved by analyzing changes in both CFI and χ^2. The invariance of the measurement model was supported by non-significant χ^2 differences across the configural, metric, and scalar models (Hair et al., 2010), which are comparative, comparing between the baseline model (a) and metric model (b), and between the baseline model (a) and scalar model (c). These findings provide support for differences between the gender groups, age groups, and family groups. Non-significant differences between the baseline and metric models support the measurement model's invariance for the willingness to pay groups.

However, Cheung and Rensvold (2002) found that if the CFI difference between all compared models was less than 0.01, this suggests that the various customer groups in the study understood the questionnaire similarly. Therefore, the multiple-group path analysis can proceed further.

The path coefficients between the two groups were compared using the criterion of a significant change in the χ^2 value (Hair et al., 2010; Schumacker & Lomax, 2004). After constraining the parameters, a significant change in the χ^2 value confirms the moderator's significant role (*p < 0.05).

Table 9 Measurement Model Invariance Across Each Pair of Customer Groups

Invariance test	χ^2	df	p-value	CFI	Δ p-value	Δ CFI
Gender groups						
Baseline (a)	171.124	82	0.000	0.967		
Metric invariance (b)	177.676	90	0.000	0.968	(b) - (a) = 0.586	(b) - (a) = 0.001
Scalar invariance (c)	182.766	98	0.000	0.969	(c) - (a) = 0.768	(c) - (a) = 0.002
Age groups						
Baseline (a)	157.978	82	0.000	0.971		
Metric invariance (b)	170.418	90	0.000	0.970	(b) - (a) = 0.133	(b) - (a) = 0.001
Scalar invariance (c)	177.981	98	0.000	0.970	(c) - (a) = 0.220	(c) - (a) = 0.001
Family groups						
Baseline (a)	161.744	82	0.000	0.971		
Metric invariance (b)	171.637	90	0.000	0.970	(b) - (a) = 0.272	(b) - (a) = 0.001
Scalar invariance (c)	187.159	98	0.000	0.967	(c) - (a) = 0.062	(c) - (a) = 0.004
Willingness to pay group						
Baseline (a)	170.121	82	0.000	0.968		
Metric invariance (b)	182.865	90	0.000	0.966	(b) - (a) = 0.121	(b) - (a) = 0.002
Scalar invariance (c)	203.820	98	0.000	0.961	(c) - (a) = 0.006*	(c) - (a) = 0.007

Note. p-values were significant at *p < 0.05, CFI = comparative fit index

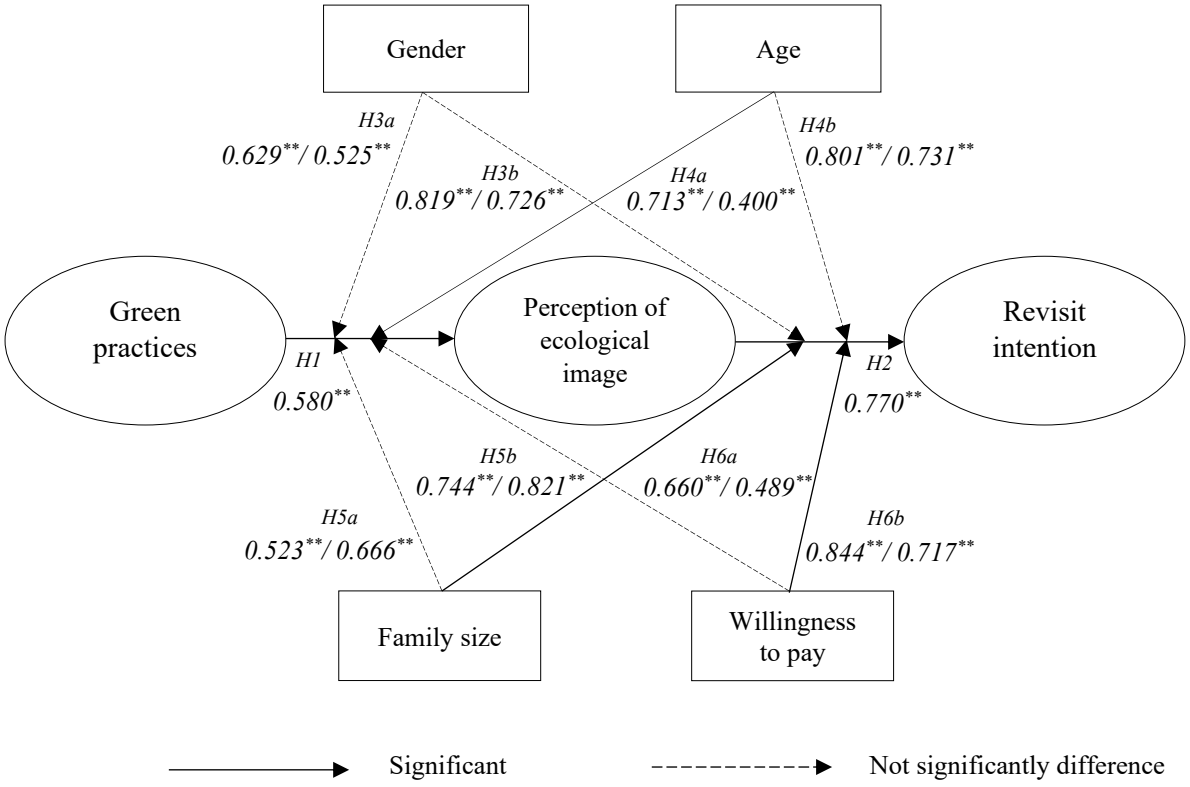
Figure 2 and Table 10 demonstrate the results of the multiple group analysis hypothesis testing. No significant difference was found between gender groups for either the effect of green practices on the perception of ecological image or the effect of ecological image perception on revisit intentions, leading to the rejection of H3a and H3b. For H4a, the younger group showed significantly stronger effects (β = 0.713, **p < 0.001) than the older group (β = 0.400, **p < 0.001). Younger customers yielded a higher-level effect for green practices on the perception of ecological image than older customers, supporting H4a. However, a significant difference between these two groups was not found for the effect of the perception of ecological image on the revisit intentions, leading to the rejection of H4b.

A significant difference between the two groups of customers, those without children and those with children, was not found for the effect of green practices on the perception of ecological image, leading to the rejection of H5a. However, for H5b, the group of customers with children yielded significantly stronger effects (β = 0.821, **p < 0.001) than the group without children (β = 0.744, **p < 0.001). The group of customers with children exhibited a higher-level effect for the perception of ecological image on revisit intentions than the group without children, thus supporting H5b.

A significant difference between the two groups of customers, those less willing to pay extra and those more willing to pay extra, was not found for the effect of green practices on the perception of ecological image, thus leading to the rejection of H6a. However, for H6b, the

group of customers less willing to pay extra showed significantly stronger effects (β = 0.844, **p < 0.001) than the group more willing to pay extra (β = 0.717, **p < 0.001). The group of customers less willing to pay extra exhibited a higher-level effect for the impacts of perception of ecological image on revisit intentions than the group more willing to pay extra, thereby supporting H6b.

Figure 2 Structural Model



Note. Path coefficients of *H3a, b* = Male/ Female, *H4a, b* = Younger/ Older, *H5a, b* = No children family/ With children family, *H6a, b* = Less willingness to pay extra / Greater willingness to pay extra.

Table 10 Hypothesis Testing for Multiple Group Analysis

Hypotheses	Result	Customer groups		Unconstrained model χ^2 / p-value	Constrained model χ^2 / p-value	$\Delta\ \chi^2$	Δ p-value
		β	β				
		Male	Female	(df = 86)	(df = 87)		
H3a	Rejected	0.629**	0.525**	163.300/ 0.000	163.684/ 0.000	0.384	0.535
H3b	Rejected	0.819**	0.726**	163.300/ 0.000	163.354/ 0.000	0.054	0.816
		Younger	Older	(df = 86)	(df = 87)		
H4a	Accepted	0.713**	0.400**	164.506/ 0.000	172.079/ 0.000	7.573	0.006*
H4b	Rejected	0.801**	0.731**	164.506/ 0.000	168.259/ 0.000	3.753	0.053
		No Children	With Children	(df = 86)	(df = 87)		
H5a	Rejected	0.523**	0.666**	170.013/ 0.000	170.015/ 0.000	0.002	0.964
H5b	Accepted	0.744**	0.821**	170.013/ 0.000	177.685/ 0.000	7.672	0.006*

Hypotheses	Result	Customer groups		Unconstrained model χ^2 / p-value	Constrained model χ^2 / p-value	$\Delta \chi^2$	Δ p-value
		β	β				
		Pay less	Pay more	(df = 86)	(df = 87)		
H6a	Rejected	0.660**	0.489**	186.044/ 0.000	186.879/ 0.000	0.835	0.361
H6b	Accepted	0.844**	0.717**	186.044/ 0.000	190.587/ 0.000	4.543	0.033*

Note. β = Path coefficient, * = $p < 0.05$, ** = $p < 0.001$, χ^2 = chi-square, df = degrees of freedom, Pay less = less willingness to pay extra, and Pay more = greater willingness to pay extra.

5. DISCUSSION

The study's findings corroborate and expand upon current literature regarding green restaurant practices, providing detailed insights into the formation of ecological image and customer behavioral intentions across various demographic and behavioral segments. The impact of green practices on customers' perceptions of ecological image is consistent with prior studies (Jeong & Jang, 2010; Namkung & Jang, 2017).

Green practices influence customers' perceptions of a restaurant's ecological image (Jeong & Jang, 2010; Namkung & Jang, 2017; Rahimah & Yuliaji, 2024; Remar et al., 2022). In this context, customers perceive green practices—such as using recyclable take-out containers, providing recycling bins, implementing energy-efficient lighting, serving beverages in reusable glasses, and using eco-friendly cleaners—as indicators of a restaurant's environmental commitment. These practices contribute to shaping the restaurant's ecological image and enhancing its green reputation. A strong ecological image, in turn, reinforces customers' perception of the restaurant as environmentally responsible, which may encourage behaviors such as repeat visits (Jeong & Jang, 2010) and increased patron loyalty (Hu et al., 2010). Thus, the implementation of green practices plays a significant role in shaping how customers view a restaurant's environmental efforts, which can influence their intentions to return.

This study found no significant differences in the adoption of sustainable restaurant practices between male and female consumers. This outcome seems to challenge previous research (Madanaguli et al., 2022; TM et al., 2021) that has consistently identified gender as a significant moderating factor in environmental behaviors and attitudes. The absence of notable gender differences identified in this study indicates that the influence of gender on sustainable behavior may be more complex than previously thought. The variable that differentiated the conflicting findings across prior studies was the cultural context (Yucedag et al., 2018). This finding implies that a country's cultural environment may play a crucial role in shaping how gender influences environmental attitudes and behaviors.

The results of this study provide detailed demographic and behavioral insights by highlighting key distinctions that improve understanding of green restaurant practices. Younger consumers exhibited a stronger positive correlation between green practices and perceptions of ecological image. This finding corroborates previous research (Atzori et al., 2018; Diamantopoulos et al., 2003). Environmental concerns influence younger generations' green consumption behaviors. Since these younger customers are health conscious and practice green consumerism, they are inclined toward green practices (Gifford & Nilsson, 2014) due to their better information processing abilities and tendency to seek innovative and alternative information (Evanschitzky & Wunderlich, 2014). Younger customers demonstrate greater confidence in making environmentally conscious choices and show higher engagement with green restaurant practices, which shapes their perception of ecological image (Atzori et al., 2018; Namkung & Jang, 2017). The heightened environmental awareness among younger generations suggests an evolving shift in consumer behavior and necessitates adapted marketing approaches for sustainable restaurants.

Families with children demonstrated a more significant relationship between perceived ecological image and intentions to revisit. This observation builds upon prior studies by Agostinho and Paço (2012) and Kwok et al. (2016), suggesting that parental responsibilities may enhance environmental awareness. The impact of the perception of ecological image on revisit intentions was found to be greater in families with children as it involves the generativity concept (Agostinho & Paço, 2012). Concern for children's well-being influences adults' consumption choices, particularly their dining decisions and intentions (Kwok et al., 2016). This finding indicates that family dynamics play a crucial role in shaping sustainable consumption behaviors.

Customers who value a restaurant's green image are generally willing to pay more, but not significantly higher prices (Hu et al., 2010). Customers identified as ecologically aware demonstrated only a marginal willingness to pay premium prices (≤6%), thereby challenging prevailing assumptions about the economic behaviors of green consumers. This finding suggests that while green restaurant patrons support sustainability, there are limits on how much extra they will pay (DiPietro & Gregory, 2013).

However, while some studies emphasize the role of age (Atzori et al., 2018; Diamantopoulos et al., 2003), this study did not find significant differences in the impacts of the perception of ecological image on revisit intentions among different age groups, suggesting that factors beyond demographics, such as values, attitudes, and situational influences, may play a role. Family size (Schubert et al., 2010) and willingness to pay (DiPietro & Gregory, 2013) do not significantly affect the relationship between green practices and perceptions of ecological image. These results differ from those of earlier studies that focused on the link between environmental concerns and concerns for future generations (Urien & Kilbourne, 2011), as well as an increased willingness to pay for green practices (Namkung & Jang, 2017). These customer groups prioritize tangible and verifiable elements, such as restaurant certifications, awards, and food quality, over environmental practices. For these customers, the perception of ecological image carries more weight than actual environmental initiatives. This finding suggests that while environmental practices can enhance the competitive advantage, restaurants should focus on strategically promoting their awards and certifications through advertising while maintaining superior food quality.

6. IMPLICATIONS

6.1 Theoretical Implications

This study contributes to expanding the body of knowledge on green restaurant practices by offering nuanced insights into the role of demographic factors in shaping customer perceptions and behavioral intentions—an area that has been underexplored in previous research. The findings confirm that green practices influence customers' perceptions of a restaurant's ecological image (Jeong & Jang, 2010; Namkung & Jang, 2017; Rahimah & Yuliaji, 2024; Remar et al., 2022), which in turn affects their revisit intentions and loyalty (Hu et al., 2010). However, this study extends prior research by identifying key demographic and behavioral distinctions in these relationships.

First, younger consumers exhibited a stronger correlation between green practices and ecological image perception, reinforcing findings from Atzori et al. (2018) and Diamantopoulos et al. (2003). Their heightened environmental awareness and information-processing abilities (Evanschitzky & Wunderlich, 2014; Gifford & Nilsson, 2014) suggest that generational differences play a role in shaping sustainable consumption behaviors. Second, families with children demonstrated a more pronounced relationship between ecological image and revisit intentions, supporting the generativity concept (Agostinho & Paço, 2012) and prior

findings on parental environmental awareness (Kwok et al., 2016). Third, while customers generally value a restaurant's green image, their willingness to pay a premium remains limited (DiPietro & Gregory, 2013), challenging assumptions about green consumerism.

This study also addresses gaps in the literature by reconciling previous inconsistencies. While some research suggests that age (Atzori et al., 2018) and family size (Schubert et al., 2010) significantly influence green perceptions, the presented findings indicate that these factors alone may not be strong predictors of revisit intentions. Instead, values, attitudes, and situational influences are likely to play a moderating role. Additionally, the study challenges prior assumptions that customers are willing to pay significantly higher prices for sustainability (Namkung & Jang, 2017), highlighting the importance of tangible cues, such as certifications and food quality, in shaping green perceptions.

6.2 Managerial Implications

This study offers managerial insights, suggesting that green restaurants should enhance their ecological image and customer behavioral intentions by prioritizing sustainability efforts.

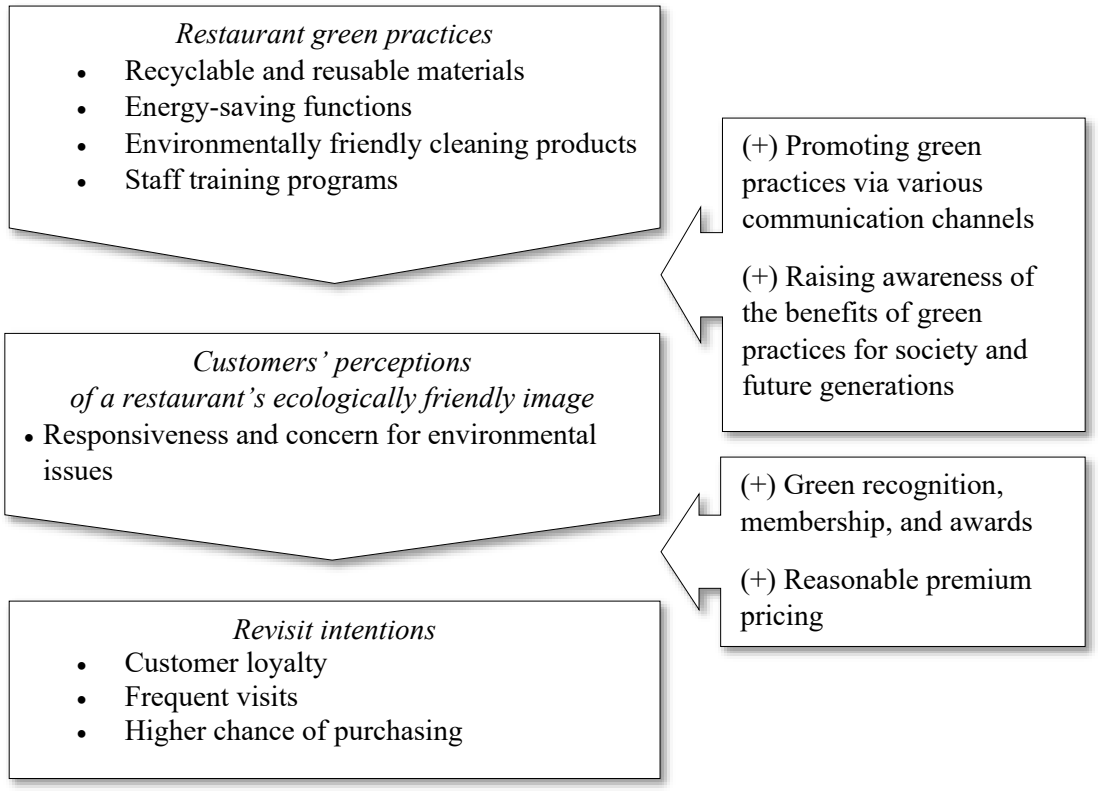
Figure 3 illustrates a model for sustainably enhancing customer support through improved green practices in restaurants. First, restaurant managers should approach the green practice policy by ensuring that all take-out containers are made from recyclable materials. Clearly labeling these containers with prominent recycling symbols can inform customers on the proper disposal methods, encouraging them to participate in recycling efforts. For customers dining in, serving beverages in reusable glasses or mugs reduces reliance on single-use containers. This minor improvement can significantly reduce waste while fostering a more environmentally friendly dining experience. To enhance this approach, restaurants can implement innovative sustainable packaging initiatives. These could include interactive takeout containers with QR codes linking to comprehensive recycling webpages, branded recycling stations featuring engaging infographics, and a creative "Bring Your Own Container" loyalty program that rewards sustainable behavior with a 10% discount for customers using reusable containers.

Second, restaurant advertising and awards are crucial for boosting consumers' view of the restaurant's commitment to environmental sustainability and reassuring them that they can actively engage in the restaurant's sustainable operations. Marketing campaigns can transform sustainability from a mere operational strategy into a compelling narrative. A multifaceted approach might include a "Sustainability Storytellers" social media series that humanizes environmental efforts, an annual "Green Impact Report" that quantifies the restaurant's ecological contributions, and carefully crafted marketing materials tailored to different customer segments. To broaden the perception of the restaurant's ecological image among younger customers, green restaurants could implement interactive social media challenges that gamify sustainable dining, making environmental consciousness both engaging and rewarding. Conversely, older demographics might prefer more detailed brochures that emphasize the community and the generational benefits of sustainable practices. This segmented approach ensures that environmental messaging resonates across different customer profiles.

Finally, since green customers are inclined to patronize restaurants with a strong ecological image, restaurants can enhance their value proposition by offering premium-priced items. However, ensuring that price increases are reasonable is crucial (Dhasan & Aryupong, 2019), as customers are willing to pay extra but not significantly higher prices. The pricing strategy can balance sustainability with customer value through a tiered pricing model with optional "green upgrades," a transparently communicated "Sustainability Surcharge" that directly funds environmental initiatives, and combo meals that include small donations to local environmental projects. A unique "Green Dining Challenge" campaign could further engage

customers by allowing them to track sustainable dining choices, earn points for eco-friendly actions, and receive monthly rewards and an annual grand prize for being the most sustainable customer. This strategy can increase profits while maintaining customer loyalty.

Figure 3 Approaches for Sustainably Enhancing Customer Support Through Improved Green Practices in Restaurants



7. LIMITATIONS AND FUTURE DIRECTIONS

Although the current study has made significant contributions to the body of knowledge on this concept, it is important to point out its shortcomings. First, it focuses on how green practices affect the perception of ecological image and revisit intentions among restaurant customers, particularly across different demographics and behaviors. However, deeply explaining how these customer groups, such as younger and older individuals, exhibit their varying perceptions remains challenging. Future research could investigate specific customer groups, such as Generation Y or Z, to understand generational behavioral concepts and provide deeper insights into this phenomenon. Furthermore, future studies should explore the moderating roles of demographic factors, including nationality, spending habits, and household size, to complement and extend this study's findings. Moreover, this study is limited by the use of a two-point range (0, 2, 4, ..., 20) to measure the willingness to pay extra. While this approach simplified decision-making and reduced response burden, it may have caused restrictions on the responses through data granularity. Future studies should consider a continuous scale to capture more precise variations in consumer preferences. Lastly, since this study focuses only on the restaurant sector, future studies should apply this model to the entire hospitality industry to enable broader application of the results.

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