Received 12 August 2023
Accepted 3 July 2024

The mediating role of attitude and environmental awareness in the influence of green advertising and eco-labels on green purchasing behaviors

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Abstract

Purpose – This study aims to identify whether green advertising and eco-labels influence the purchasing behaviors of organic products or whether the influence of such behaviors is presented through the mediating effect of the attitude and environmental awareness of millennials.

Design/methodology/approach – This study used a quantitative, correlational and cross-sectional design. A total of 430 millennials participated in the study. The questionnaire consisted of 20 questions, distributed across five variables. It was applied to people outside shopping centers in the city of Quito and Guayaquil, Ecuador. The results were subjected to statistical tests to determine the internal consistency of the instrument. The convergent and discriminant validity of the research model was verified through confirmatory factor analysis and structural equation modeling. SPSS 20 and AMOS 24 were used for statistical analyses.

Findings – The study identified that attitude and environmental awareness mediate the relationship between green advertising and green purchasing behaviors, as well as the relationship between eco-labels and

Conflict of interest: The authors declare no conflict of interest.

Spanish Journal of Marketing – ESIC
Vol. 29 No. 3, 2025
pp. 330-350
Emerald Publishing Limited
e-ISSN: 2444-9709
p-ISSN: 2444-9709
DOI 10.1108/SJME-08-2023-0217

green purchasing behaviors. Furthermore, it has been proven that green advertising directly influences the green purchasing behaviors of organic products among millennials, whereas eco-labels do not.

Originality/value – This study is among the initial investigations to delineate the connection between elements of green marketing and the buying patterns of organic goods among millennials in an emerging economy. The study provides answers to earlier scholarly inquiries that proposed examining the correlation among the constituents of the theorized framework.

Keywords Green advertising, Eco-labels, Environmental attitudes, Environmental awareness, Green purchasing behavior

Paper type Research paper

El papel mediador de la actitud y la conciencia ambiental en la influencia de la publicidad ecológica y las etiquetas ecológicas en los comportamientos de compra verde

Resumen

Objetivo – El presente estudio tuvo como objetivo identificar si la publicidad verde y las ecoetiquetas influyen en los comportamientos de compra de productos orgánicos, o si la influencia dentro de dichos comportamientos se presenta a través del efecto mediador de la actitud y la conciencia ambiental de los millennials.

Diseño/metodología/enfoque – La investigación fue cuantitativa, correlacional y con un diseño transversal. Participaron en el estudio un total de 430 millennials. El cuestionario constó de 20 preguntas distribuidas en cinco variables. Fue aplicado en persona fuera de los centros comerciales en las ciudades de Quito y Guayaquil - Ecuador. Los resultados obtenidos fueron sometidos a pruebas estadísticas para determinar la consistencia interna del instrumento. La validez convergente y discriminante del modelo de investigación fue verificada mediante un Análisis Factorial Confirmatorio y Modelos de Ecuaciones Estructurales. Para el desarrollo de los análisis estadísticos, se utilizaron SPSS 20 y AMOS 24.

Resultados – El estudio identificó que la actitud y la conciencia ambiental median la relación entre la publicidad verde y los comportamientos de compra, así como en la relación entre las ecoetiquetas y los comportamientos de compra. Además, se demostró que la publicidad verde influye directamente en los comportamientos de compra de productos orgánicos entre los millennials, mientras que las ecoetiquetas no.

Originalidad y valor – Este artículo se encuentra entre las investigaciones iniciales para delinear la conexión entre los elementos del marketing verde y los patrones de compra de productos orgánicos entre los millennials en una economía emergente. El estudio proporcionó respuestas a consultas académicas previas que proponían examinar la correlación entre los componentes del marco teórico propuesto.

Palabras clave Publicidad verde, Ecoetiquetas, Actitudes ambientales, Conciencia ambiental, Comportamiento de compra verde

Tipo de artículo Trabajo de investigación

态度和环境意识在绿色广告和生态标签对绿色购买行为影响中的中介作用

摘要

目的 – 本研究旨在确定绿色广告和生态标签是否影响有机产品的购买行为, 或这种行为的影响是否通过千禧一代的态度和环境意识的中介效应表现出来。

设计/方法/途径 – 本研究采用定量、相关性和横截面设计。共有430名千禧一代参与了研究。问卷由20个问题组成, 分布在五个变量上。问卷在厄瓜多尔基多和瓜亚基尔市的购物中心外分发。结果经过统计测试, 以确定问卷的内部一致性。通过验证性因素分析 和结构方程模型 验证了研究模型的收敛效度和区分效度。统计分析使用SPSS 20和AMOS 24软件完成。

研究结果 – 研究表明, 态度和环境意识在绿色广告与绿色购买行为之间以及生态标签与绿色购买行为之间起到中介作用。此外, 已证明绿色广告直接影响千禧一代对有机产品的绿色购买行为, 而生态标签则没有直接影响。

原创性/价值 – 本研究是最初探讨绿色营销元素与千禧一代在新兴经济体中有机产品购买模式之间关系的研究之一。该研究回答了早期学术研究提出的关于理论框架各组成部分相关性的探讨。

关键词 绿色广告, 生态标签, 环境态度, 环境意识, 绿色购买行为

文章类型 研究型论文

1. Introduction

The increase in the consumption of products worldwide has led to problems such as the devastation of the environment and the generation of waste, leading to global warming, which is currently one of the main causes of concern worldwide (Jaiswala and Kant, 2018; Carrión *et al.*, 2023). The levels of environmental deterioration have grown rapidly during the past decades (Yuhan *et al.*, 2019; Opoku *et al.*, 2020; Yela Aránega *et al.*, 2022), to such an extent that public concern about environmental problems and the need to know the influencing factors in purchasing behaviors, aligned with sustainability, have become topics of high interest for the academic community and for the food-producing sector (Kautish *et al.*, 2019; Nosi *et al.*, 2020).

The academic literature has used words such as "green consumption," "adoption of ecological or organic products" or "green purchasing" to the different purchasing behaviors that are aligned with the protection of the environment (Joshi and Rahman, 2015; Carrión *et al.*, 2023). Green consumption refers to the pro-environmental attitude and awareness of people about environmental problems (Sun, *et al.*, 2019). According to Liobikiene and Bernatoniene (2017), this type of consumption does not focus on decreasing the acquisition of products by consumers, and its main objective is to reduce the environmental impact.

Several studies agree that environmental concerns have led consumers to actively support green consumption (Lacy and Hayward, 2011; Wang *et al.*, 2016; Kautish *et al.*, 2019; Kashif *et al.*, 2021; Carrión *et al.*, 2023), which has increased the need to acquire these types of products. For this reason, today's companies must adapt to the competitive demands of the contemporary market, and think in a "greener" way (Wang *et al.*, 2018; Sun *et al.*, 2020).

Marketers continually use promotional strategies to incentivize consumers to purchase products (Sun *et al.*, 2020). According to Jäger and Weber (2020), within ecological contexts, green advertising is an indispensable tool for publicizing the characteristics and benefits of a product and persuading consumers to purchase a product with environmental protection. On the other hand, eco-labels have also become a crucial marketing tool, because they are widely used to provide consumers with knowledge about the ecological aspects of a product (Sharma and Kushwaha, 2019; Riskos *et al.*, 2021).

Green advertising and eco-labels have become communication tools used by companies to encourage the purchase of green products (Murali *et al.*, 2019; Jäger and Weber, 2020; Riskos *et al.*, 2021). However, consumers' desire to purchase environmentally identified products is hampered by their lack of credibility and trust in advertising (Sun *et al.*, 2020). Likewise, the low acceptance of the term "environmental truth" by consumers has created widespread skepticism about green advertising and eco-labels, making communication efforts used by organizations sometimes unnoticed (Carrión and Arias-Bolzmann, 2022).

Several studies have determined that attitudes and environmental awareness are factors that determine the intention to purchase green products (Taufique and Vaithianathan, 2018; Woo and Kim, 2019; Amalia *et al.*, 2020; Carrión and Arias-Bolzmann, 2022; Hoyos-Vallejo *et al.*, 2023). According to Jaiswala and Kant (2018), environmental attitude is defined as a positive or negative assessment that a consumer has regarding the development of a

behavior aligned with environmental protection. Environmental awareness is a cognitive construction that has an individual based on the conditions that can generate behaviors in the environment (Woo and Kim, 2019).

Although several authors support that attitudes and environmental awareness are predictive factors for green consumption, the literature review provides evidence of the presence of gaps regarding the influence of the aforementioned factors on purchasing behaviors. Riskos *et al.* (2021) determined that the gap between environmental attitudes and the purchasing behavior of organic products is a challenge that must be addressed by marketers. However, Malik *et al.* (2019) state that there is little evidence on the link between environmental awareness and green purchasing behavior (GPB).

On the other hand, it is clear that consumers identified with environmental protection are most attracted to the consumption of green products (Yuhan *et al.*, 2019; Kautish *et al.*, 2019; Nosi *et al.*, 2020, Carrión *et al.*, 2023). However, academic literature has not fully determined whether consumers' attitudes and environmental awareness are the result of green advertising developed by companies or eco-labels on products. Song *et al.* (2019) determined that it is necessary to investigate how eco-labels can affect GPB, considering attitude and environmental awareness as mediating elements in this process. Agarwal and Kumar (2021) state that it is necessary to understand whether green advertising promotes environmental awareness among consumers who consume green products.

As a result, the research problem addressed in this study is framed as the need to identify whether green advertising and eco-labels affect consumers' adoption of environmental attitudes and increase awareness about the importance of buying green products as an alternative to balance consumption and environmental protection. Given this, the research question that this research seeks to answer is: Does attitude and environmental awareness mediate the relationship between green advertising and eco-labels on GPB?

2. Literature review

2.1 Green purchasing behavior

The propensity of consumers to purchase food products with ecological characteristics and certifications has increased in recent decades (Ricci *et al.*, 2018; Hazaea *et al.*, 2022). Therefore, understanding the drivers of GPB has become a research topic widely addressed in the scientific field (Joshi and Rahman, 2015; Taufique and Vaithianathan, 2018; Testa *et al.*, 2019; Carrión and Arias-Bolzmann, 2022; Carrión *et al.*, 2023).

Within the academic field, there is also a need to know the factors that influence the GPB of millennials (Song *et al.*, 2019; Amalia *et al.*, 2020; Kashif *et al.*, 2021; Carrión *et al.*, 2023). Millennials are considered to be the largest generation of consumers (Naderi and Van, 2018; Carrión and Arias-Bolzmann, 2022), and include all people born between 1979 and 2000 (Wang *et al.*, 2018). Their attitudes and consumption habits are characterized by an inclination toward products identified in the environment (Bedard and Tormie, 2018; Nosi *et al.*, 2020). Environmental awareness concerns are issues that they assume as their own responsibilities (Jaiswala and Kant, 2018).

2.2 Environmental attitude

The environmental attitude (EAT) is a positive assessment that an individual has regarding the behavior that must be adopted so as not to generate negative impacts within the environment (Woo and Kim, 2019). Several studies have determined that consumers who have positive attitudes toward organic foods believe that buying this type of product is important and is a good option (Carrión and Arias-Bolzmann, 2022).

The study developed by Kumar *et al.* (2017) determined that a favorable attitude toward environmental and sustainable products mediates the relationship between environmental knowledge and purchase intention. Jaiswala and Kant (2018) determined that consumers are stimulated by cognitive factors that directly and indirectly influence their intention to buy green through the mediating function of attitude. Taufique and Vaithianathan (2018) determined that attitudes toward the environment have a significantly direct and positive influence on purchase intention as well as ecologically conscious consumer behavior.

However, recent studies have identified a positive relationship between green purchasing attitudes and intentions (Carrión and Arias-Bolzmann, 2022; Carrión *et al.*, 2023). However, Sharma and Kushwaha (2019) and Ahmad *et al.* (2022) found an attitude–behavior gap, because although consumers have attitudes in favor of the environment, their purchasing behaviors are not always aligned toward organic products. Therefore, the gap between the EAT and GPB of organic products is a challenge that must be addressed by marketers (Riskos *et al.*, 2021). In view of the above, the following hypothesis is developed:

H1. Environmental attitudes positively influence the green purchasing behavior of millennials who consume organic products.

2.3 Environmental awareness

Environmental awareness (EAW) is a cognitive construct that influences a person's concern and stimulates their behavior toward behaviors aligned with environmental protection (Jaiswala and Kant, 2018; Woo and Kim, 2019). According to Bülbül *et al.* (2020), EAW is made up of two dimensions: (a) the sensitivity dimension, which refers to the fact that consumers are sensitive to the problems that arise in the environment, and (b) the willingness dimension, which refers to the predisposition to acquire products identified with environmental protection despite the high prices of the products and their low availability.

Several studies have determined that EAW is not always exhibited through the purchase of environmentally friendly products and that there are people who are conscious of the ecosystem and demonstrate this through recycling (Suárez *et al.*, 2016). Therefore, EAW has become a significant predictor of pro-environmental behaviors (Shelest *et al.*, 2017), which are not only shown through the consumption of organic products, but are also manifested by recycling, air protection, soil conservation and water preservation (Aliman and Astina, 2019).

Recent studies support the influence of EAW within behaviors aligned with environmental protection, determining that the higher the level of environmental awareness in a person, the higher the level of concern for environmental problems (Hansmann *et al.*, 2020; Carducci *et al.*, 2021) and consequently. This causes individuals to behave in an ecological manner and have a predisposition to buy products that do not pollute the environment (Yuriev *et al.*, 2020).

Although academic literature has shown that some studies have included EAW within extended frameworks that have sought to identify its influence on green purchasing (Jaiswala and Kant, 2018; Woo and Kim, 2019; Hansmann *et al.*, 2020; Carducci *et al.*, 2021; Yuriev *et al.*, 2020), there are some authors who suggest that this relationship must be further investigated, arguing that there is little evidence on the link between EAW and GPB (Malik *et al.*, 2019). In view of the above, the following hypothesis is developed:

H2. Environmental awareness positively influences the green purchasing behavior of millennials who consume organic products.

2.4 Green advertising

Green advertising (GAD) refers to advertising messages used by companies to highlight the characteristics of their products in relation to environmental protection (Nyilasy *et al.*, 2014; Sun *et al.*, 2020). According to Nguyen (2022), GAD emphasizes the dissemination of attributes and ecological attractions through which a product helps preserve the environment. Faced with this, consumers exposed to GAD shape their judgments and attitudes in favor of the environment, aligning their purchasing behaviors toward products that have the least possible impact on the ecosystem (Kim *et al.*, 2019).

Several studies on green consumption have included GAD within their research models, through which they have determined the influence of advertising messages on purchasing decisions (Nguyen, 2022). Given this, it could be deduced that GAD is positively related to consumers' intentions to buy green products (Rahbar and Wahid, 2011; Chang *et al.*, 2015; Sun *et al.*, 2020); however, other authors object to the above.

According to do Paço and Reis (2012), as companies tout the environmental benefits of their products, consumers become more skeptical. Giving way to the generation of a negative perception of a brand and distrust the attributes offered by a product (Matthes *et al.*, 2014). Similarly, Pittman *et al.* (2022) determined that the attractiveness of GAD can sometimes be perceived as misleading. The distrust generated by consumers as a result of green advertising has been conceptualized as "green washing" (Schmuck *et al.*, 2018).

The literature review allowed the authors to show the discrepancies regarding the influence of GAD within the field of green consumption. However, it was possible to verify the scarcity of information regarding the influence of GAD within the EAT, EAW and GPB of millennials who consume green products. Considering the above and following the recommendation of Agarwal and Kumar (2021), who indicated that it is necessary to understand whether GAD promotes the EAW of consumers. The following hypothesis was proposed:

H3. Green advertising directly influences the green purchasing behavior of millennials who consume organic products.

H3a. Green advertising positively influences the environmental attitudes of millennials who consume organic products.

H3b. Green advertising positively influences the environmental awareness of millennials consuming organic products.

H3c. Environmental attitude mediates the relationship between green advertising and green purchasing behaviors of millennials who consume organic products.

H3d. Environmental awareness mediates the relationship between green advertising and green purchasing behaviors of millennials who consume organic products.

2.5 Eco-label

The eco-label (ECL) is a communication tool used by companies to explain to consumers the specific characteristics of products in relation to environmental protection (Nguyen, 2022). According to Panopoulos *et al.* (2023), this promotional tool has functioned as a strategic method that organizations use to positively influence consumers seeking to purchase products that reduce the environmental impact.

Recent research has determined that conscious consumption depends on consumers' level of knowledge of the environmental impact generated by consumption. Consequently,

ECL is the main source of information on the ecological characteristics of a product (Hameed and Waris, 2018; Song *et al.*, 2019; Nguyen and Le, 2020; Sun *et al.*, 2020; Riskos *et al.*, 2021; Panopoulos *et al.*, 2023). According to Fuerst and Shimizu (2016), ECL is perceived by consumers as a representation that a product within its production does not use materials harmful to the environment. Given this, an eco-label has become a value proposition that companies offer consumers (Alamsyah *et al.*, 2020).

Although several studies related to green purchasing have determined that ECL influences consumers' intentions to purchase products identified with environmental protection (Sun *et al.*, 2020; Nguyen, 2022; Panopoulos *et al.*, 2023), the academic literature on green consumption shows a lack of studies on ECL with EAT and EAW. Song *et al.* (2019) determined that it is necessary to investigate how ECL affects EAT and EAW and consequently influences GPBs. Considering the above, the following hypothesis is proposed:

H4. Eco-labels directly influence the green purchasing behavior of millennials who consume organic products.

H4a. Eco-labels influence the environmental awareness of millennials who consume organic products.

H4b. Eco-labels influence the environmental attitudes of millennials who consume organic products.

H4c. Environmental awareness mediates the relationship between eco-labels and green purchasing behaviors of millennials who consume organic products.

H4d. Environmental attitudes mediate the relationship between eco-labels and green purchasing behaviors of millennials who consume organic products.

2.6 Conceptual model

The research model presented in Figure 1 aims to identify whether GAD and ECL influence the purchasing behaviors of organic products, or whether the influence within such behaviors is presented through the mediating effect of the EAT and EAW of European millennials.

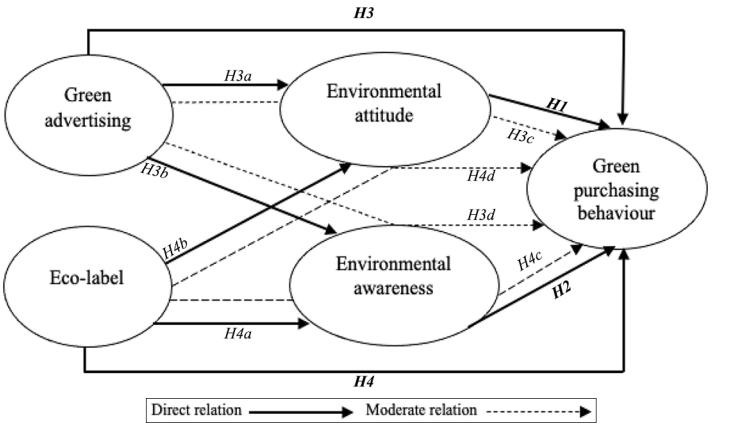

Figure 1.
Research hypothesis model

3. Methodology

3.1 Instrument design and data collection

This research was quantitative, correlational and used a cross-sectional design. A total of 430 millennials who identified themselves as consumers of organic products voluntarily participated in the study. Information was collected during January 2023, for which a face-to-face survey was conducted on the outskirts of shopping centers in Guayaquil and Quito, Ecuador.

The questionnaire was validated by a panel of experts, comprising two research specialists and two marketing specialists. A pilot test was then conducted on 30 millennials to verify the relevance and clarity of the questions. Twenty questions were included in the survey, which were extracted from academic articles related to green consumption. Four EAT and four EAW questions were adapted from Trivedi *et al.* (2018), four GPB questions from Carrión and Arias-Bolzmann (2022), four GAD questions from Sun *et al.* (2020) and four ECL questions from Riskos *et al.* (2021) and Nguyen (2022). The study questions were measured on a five-point Likert scale (see Appendix 1).

3.2 Internal consistency of the instrument

After applying the surveys, it was necessary to determine the internal consistency of the instrument, for which the statistical procedures developed in recent studies on green consumption were applied (Carrión and Arias-Bolzmann, 2022; Carrión *et al.*, 2023; Hoyos-Vallejo *et al.*, 2023). Initially, the internal consistency of the instrument was tested using the Cronbach's alpha test. This analysis determined that it was necessary to discard four questions (EAT4, EAW1, GAD1, ECL2) because these indicators showed reduced factor loading and consequently affected the alpha values, jeopardizing the convergent validity of the hypothesized model (see Appendix 2). Finally, 16 questions were used for the statistical analysis, and the Cronbach's alpha test of the instrument was calculated again, and the result was 0.824.

3.3 Description data analysis

Confirmatory factor analysis (CFA) was performed to measure the convergent and discriminant validity of the variables of the hypothesized model. Regarding convergent validity, the factorial loads of the indicator variables were calculated, followed by the composite reliability (CR) and average variance extracted (AVE) of the model constructs. For discriminant validity, the square root of the AVEs (SR AVE) was compared with the values of the correlations of the constructs. Excel and SPSS 24 were used to calculate the values.

The acceptance or rejection of the hypotheses was determined through the implementation of structural equation modeling (SEM). Multiple indices were used to ensure the model fit. For example, the relative value of χ^2 for the degree of freedom (χ^2/gl), goodness-of-fit index (GFI), comparative fit index (CFI), Tucker–Lewis index (TLI) and normalized fit index (NFI). The mean square residue and root mean square error of approximation (RMSEA) were calculated. The AMOS 24 program was used to calculate these values.

4. Findings

4.1 Demographic characteristics of respondents

This study was conducted in Guayaquil and Quito, Ecuador. A total of 430 millennials with undergraduate and graduate degrees participated in this research. Table 1 summarizes the demographic characteristics.

Table 1.
Demographics

Characteristics	Category	*N*	%
City	Quito	218	51
	Guayaquil	212	49
Education level	Postgraduate	155	36
	Undergraduate	275	64
Millennial cohort	Older Millennials (1979–1988)	185	43
	Mid Millennials (1989–1994)	130	30
	Younger Millennials (1995–2000)	115	27
Gender	Male	247	57
	Female	183	43
$n = 430$			

4.2 Estimation of the measurement model

The hypothesized model, composed of five variables (EAT, EAW, GPB, GAD and ECL), was tested using CFA. It was necessary to determine reliability and convergent validity through values of Cronbach's alpha ≥ 0.70, CR ≥ 0.70 and AVE ≥ 0.50 (Fornell and Larcker, 1981; Ping, 2004; Chión and Charles, 2016; Carrión *et al.*, 2023). When Cronbach's alpha values were greater than $\geq$0.70, CR values were $\geq$0.7 and AVE values were $\geq$0.50, lower than CR values, convergent validity could be confirmed (Fornell and Larcker, 1981; Carrión *et al.*, 2023).

The results shown in Table 2 demonstrate that Cronbach's alpha values and CR were greater than 0.70 and AVE values were greater than 0.50, and lower than CR values. This demonstrates that the factorial loadings of the indicator variables were favorable for determining that the questions of the questionnaire provided valuable information to measure each construct of the hypothesized model. However, the CR results identified the internal consistency of a latent construct, thus corroborating that the observed variables measure the same and are correlated with each other. This ensured that the observed variables adequately represented the construct and that the model's results were reliable. Finally, the AVE results show the amount of variance that each construct captures from its indicators in relation to the amount of variance due to measurement error. These analyses ensure that each construct is unique and measures what it is supposed to measure.

To determine discriminant validity, it was necessary to compare the square root of the AVE values of each construct with the values of the correlations of each pair of constructs that were part of the model. When the values of the SR AVE are greater than the correlations between each pair of constructs, discriminant validity is corroborated (Fornell and Larcker, 1981; Chin, 1998; Ping, 2004; Carrión and Arias-Bolzmann, 2022). Similarly, Fornell and Larcker (1981) suggested that discriminant validity exists between two latent variables if the shared variance between pairs of constructs is less than the extracted variance. Furthermore, Anderson and Gerbing (1988) established that if the 95% confidence interval for the correlations between constructs does not include one, discriminant validity can be claimed to exist (see Table 3).

4.3 Structural model: model adjustment and hypothesis test

After testing the criteria of convergent and discriminant validity of the research model, SEM was developed to determine the acceptance or rejection of the hypotheses. The relationships between the five variables that were part of the hypothesized model were examined, and the results determined by the maximum likelihood estimate showed that the data met the GFI: χ^2 (df) = 132.704 (96), χ^2/g = 1.382, NFI = 0.978, TLI = 0.992, CFI = 0.944 and RMSEA = 0.030 (Byrne, 2006; Hair *et al.*, 2010). After examining the relationships between the five

Measure items	Factor loading	Cronbach's alpha	CR	AVE
Environmental attitude (EAT)		0.943	0.948	0.860
Adapted from Trivedi *et al.* (2018)				
I am very concerned about the environment	0.955			
I am willing to reduce my consumption to help the environment	0.916			
I would contribute financially to help protect the environment	0.911			
Environmental awareness (EAW)		0.932	0.938	0.835
Adapted from Trivedi *et al.* (2018)				
I think that humans produce disastrous consequences in nature	0.945			
I consider that the balance of nature is very delicate and easily upset	0.871			
I think that one must live in harmony with nature in order to survive	0.924			
Green purchasing behavior (GPB)		0.857	0.889	0.670
Adapted from Carrión and Arias-Bolzmann (2022)				
I buy organic products regularly	0.696			
I buy organic products for my daily needs	0.911			
I have bought organic products for the last few months	0.730			
I buy organic products, although there are conventional alternatives	0,913			
Green advertising (GAD)		0.881	0.894	0.739
Adapted from Sun *et al.* (2020)				
I think brands that use advertising messages about the environment are good	0.906			
I pay attention to products that develop advertisements that relate to the environment	0.783			
I find green advertising valuable in my opinion	0,884			
Eco-labels (ECL)		0.825	0.864	0.680
Adapted from Riskos *et al.* (2021)*and* Nguyen (2022)				
I consider the eco-labels displayed on the product to be a good way to inform consumers	0.866			
The presence of certified organic labels increases my credibility in a product	0.862			
I believe that eco-labeled products are really committed to protecting the environment	0.739			
Alfa total: 0.824				

Table 2.
Convergent validity and reliability

	F1	F2	F3	F4	F5	SR (AVE)	M	SD(σ)
F1	*0.860*[a]					0.927	4.356	0.221
F2	0.135**	*0.835*[a]				0.913	4.221	0.207
F3	0.238**	0.173**	*0.670*[a]			0.818	3.891	0.198
F4	0.220**	0.193**	0.291**	*0.739*[a]		0.859	4.091	0.216
F5	0.105*	0.224**	0.137**	0.048	*0.680*[a]	0.824	3.984	0.201

Notes: [a]EVA; **Correlation is significant at 0.01 (bilateral), *Correlation is significant at 0.05 (bilateral); F1 = Environmental attitude; F2 = Environmental awareness; F3 = Green purchasing; F4 = Green advertising; F5 = Eco-label. F1-F3; F2-F3; F4-F1; F4-F2; F4-F3; F5-F2 and F5-F3 had significant correlation at bilateral level 0.01; F5-F1 had significant correlation at bilateral level 0.05

Table 3.
Reliability and validity

variables of the hypothesized model, 11 hypotheses were accepted and one was rejected. The estimated values obtained through AMOS 24 allowed us to determine that EAT ($\beta = 0.112$, $t = 3.804$) and EAW ($\beta = 0.124$, $t = 2.060$) influence GPB.

Likewise, GAD directly influenced GPB ($\beta = 0.154$, $t = 4.398$), EAT ($\beta = 0.245$, $t = 4.670$) and EAW ($\beta = 0.110$, $t = 4.223$). Above the mediator effects, EAT mediates the relationship between GAD and GPB ($\beta = 0.178$, $t = 3.918$), and EAW mediates the relationship between GAD and GPB ($\beta = 0.201$, $t = 4.112$). On the other hand, ECL does not directly influence GPB ($\beta = 0.128$, $t = 1.310$) but influences EAW ($\beta = 0.277$, $t = 3.453$) and EAT ($\beta = 0.406$, $t = 2.560$). Above the mediator effects, EAW mediates the relation between ECL and GPB ($\beta = 0.361$, $t = 4.311$) and EAT mediates the relationship between ECL and GPB ($\beta = 0.386$, $t = 4.327$).

Through the beta values, the study can discern the strength and direction of the relationship between the latent constructs and observed variables included in the hypothesized model. It is evident that EAT and EAW are mediating elements that enhance the relationship between GAD and GPB as well as between ECL and GPB. (see Table 4 and Figure 2).

Hypotheses	Relation	β	p-values	Hypotheses
H1	EAT-GPB	0.112	***	Accepted
H2	EAW-GPB	0.124	0.039	Accepted
H3	GAD-GPB	0.154	***	Accepted
H3a	GAD-EAT	0.245	***	Accepted
H3b	GAD-EAW	0.110	***	Accepted
H3c	EAT(GAD-GPB)	0.178	***	Accepted
H3d	EAW(GAD-GPB)	0.201	***	Accepted
H4	ECL-GPB	0.128	0.190	Rejected
H4a	ECL-EAW	0.277	***	Accepted
H4b	ECL-EAT	0.406	0.010	Accepted
H4c	EAW(ECL-GPB)	0.361	0.002	Accepted
H4d	EAT(ECL-GPB)	0.386	***	Accepted

Notes: Goodness-of-fit indices: χ^2 (gl) = 132,704 (96); χ^2/g = 1,382, NFI = 0.978; TLI = 0.992; CFI = 0.994; RMSEA = 0.030; *$p < 0.05$; ***$p < 0.001$

Table 4.
Results of hypotheses testing

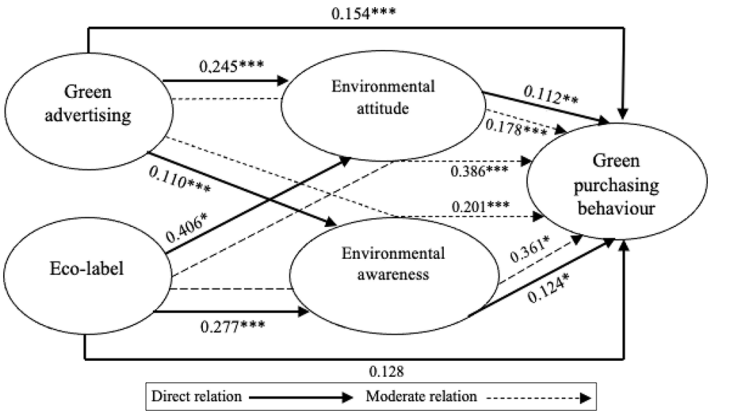

Figure 2.
Values in the hypothesized model

5. Discussion

The results obtained through SEM support 11 hypotheses presented in the hypothesis model and reject one. Therefore, *H1* is empirically supported, indicating that EAT positively influences the GPB of millennials consuming organic products. This finding demonstrates the strong association between EAT and buying behavior for products identified with the environment, thus corroborating what has already been stated by several researchers, who have determined that attitude has a significant influence on purchasing intention and purchase behavior of organic products (Jaiswala and Kant, 2018; Taufique and Vaithianathan, 2018; Woo and Kim, 2019; Carrión and Arias-Bolzmann, 2022; Carrión *et al.*, 2023). This finding contradicts previous studies indicating that there is an attitude–behavior gap and that consumers who have pro-environmental attitudes do not always buy organic products (Sharma and Kushwaha, 2019; Ahmad *et al.*, 2022).

H2 is empirically supported, implying that EAW positively influences the GPB of millennials who consume organic products. Thus, for millennials, humanity abuses nature and considers disastrous consequences for the environment are taking place. This finding allows us to support the results of other investigations that have determined the concern that exists in millennials about environmental problems (Naderi and Van, 2018; Hansmann *et al.*, 2020; Amalia *et al.*, 2020; Kashif *et al.*, 2021; Carrión and Arias-Bolzmann, 2022; Carrión *et al.*, 2023). This also supports previous studies indicating that millennials' purchasing behaviors are aligned with the consumption of products identified with the environment (Suárez *et al.*, 2016; Shelest *et al.*, 2017; Aliman and Astina, 2019; Hansmann *et al.*, 2020; Yuriev *et al.*, 2020).

In addition, the statistical analyses indicate the direct influence of GAD on GPB. Thus, *H3* is empirically supported, indicating that GAD directly influences the GPB of millennials who consume organic products. This verifies the considerable direct influence of this marketing strategy on purchasing behavior aligned with the environment. This finding also supports the results of other studies that determined the influence of green advertising on GPB (Rahbar and Wahid, 2011; Nyilasy *et al.*, 2014; Kim *et al.*, 2019; Nguyen, 2022). This corroborates that advertising messages that offer products aligned with environmental protection and inform people about the consequences of excessive consumption of traditional products are effective and encourage people to purchase organic products (Sun *et al.*, 2020).

However, *H3a* is empirically supported. This indicates that GAD influences the EAT of millennials consuming organic products. This finding supports the view that millennials tend to focus on advertising messages related to environmental protection. Thus, consumers exposed to GAD shape their attitudes toward the environment (Kim *et al.*, 2019). Therefore, this finding demonstrates that GAD is a precursor to EAT, confirming that advertising messages promoting environmental protection elevate millennials' attitudes toward undertaking actions that favor environmental protection (Nguyen, 2022). Similarly, *H3b* is empirically supported, indicating that GAD influences the EAW of millennials who consume organic products. GAD fulfills the role of disseminating a green image of products and, through brand positioning, stimulates consumer awareness (García and Rondon, 2022). This supports the findings of other investigations that have identified a positive relationship between GAD and EAW (Bedard and Tolmie, 2018; Hojnik *et al.*, 2020), demonstrating that advertising messages with content aligned with environmental protection increase consumer awareness and motivate consumers to engage in actions that protect the ecosystem and ensure environmental sustainability (Nguyen, 2022).

Regarding the mediator effect, *H3c* is empirically supported, determining that EAT mediates the relationship between the GAD and GPB of millennials who consume organic

products. This finding demonstrates that, within green consumption, EAT acts as a crucial mediator between GAD and the GPB of organic products, thus confirming that ecological values are reinforced through advertising messages highlighting environmental benefits, which encourages millennials to choose organic products (Kim *et al.*, 2019). Consequently, a positive EAT translates into a conscious GPB, positioning it as a key catalyst for sustainable consumption decisions (Nguyen, 2022).

On the other hand, *H3d* is empirically supported, indicating that EAW mediates the relationship between the GAD and GPB of millennials who consume organic products. This demonstrates that EAW serves as a fundamental mediator in the dynamics between the GAD and GPB organic products. This demonstrates that GAD strategies are designed to raise EAW and encourage a deeper understanding of the environmental impact of consumption (do Paço and Reis, 2012; Matthes *et al.*, 2014; Sun *et al.*, 2020). This increased awareness is critical in shaping consumer behavior, leading to a preference for organic products that are perceived as more sustainable (Nguyen, 2022). The resulting behavior is a tangible reflection of the theoretical link between greater EAW and the practical choice of organic products, underlining the role of GAD in promoting sustainable consumption habits (Kim *et al.*, 2019).

H4 is rejected. Therefore, the direct influence of ECL and GPB is not supported. This finding contradicts several investigations that have determined that ECL influences GPB (Sun *et al.*, 2020; Nguyen, 2022; Panopoulos *et al.*, 2023). This finding proves that ECL does not influence GPB if consumers are skeptical about the authenticity of the labels, or if they do not understand what ECL means and ignore environmental issues. In addition, the sheer number of labels can confuse consumers, thereby diluting the impact of any label. In addition, the perceived premium price associated with ECL can be a deterrent, especially if the economic benefit is unclear, leading consumers to prioritize costs over ecological benefits.

Similarly, *H4a* is empirically supported, indicating that ECL influences the EAW of millennials consuming organic products. In view of this, millennials consider that products with eco-labels are committed to the environment. This corroborates the results of previous investigations (Alamsyah *et al.*, 2020; Safitri *et al.*, 2022). This finding demonstrates that ECL plays a significant role in enhancing EAW by providing consumers with verifiable information regarding the ecological footprint of products (Song *et al.*, 2019; Nguyen and Le, 2020; Riskos *et al.*, 2021; Panopoulos *et al.*, 2023). ECL acts as a signal of environmental stewardship, encouraging consumers to make informed choices that align with their personal values toward sustainability (Hameed and Waris, 2018; Sun *et al.*, 2020). The presence of ECL can thus catalyze a shift in consumer perception, fostering a more conscious approach to purchasing decisions that prioritize environmental impact, ultimately promoting a culture of responsible consumption (Alamsyah *et al.*, 2020).

H4b is empirically supported, indicating that ECL influences the EAT of millennials consuming organic products. Millennials believe that ECL is a good way to inform consumers about the ecological characteristics of products, which increases their credibility. This finding supports the idea that ECL is a communication tool that informs consumers about the ecological characteristics of organic products (Nguyen and Le, 2020; Sun *et al.*, 2020; Nguyen, 2022; Panopoulos *et al.*, 2023). Thus, this study corroborates the findings of other studies that determined that ECL influences the EAT of consumers of products identified with the environment (Raziuddin *et al.*, 2016; Raziuddin *et al.*, 2017; Riskos *et al.*, 2021; Hossain *et al.*, 2022).

Thus, *H4c* is empirically supported. This indicates that EAW mediates the relationship between ECL and GPB in millennials consuming organic products. This finding demonstrates

that ECL informs and reinforces this consciousness, leading to a deliberate preference for products that align with environmental protection ideals (Nguyen and Le, 2020). As consumers with high environmental awareness encounter ECL, their existing pro-environmental stance is activated, prompting them to favor green products (Riskos *et al.*, 2021). This heightened consciousness bridges the gap between the presence of eco-labels and the actual decision to engage in environmentally friendly purchasing behaviors (Panopoulos *et al.*, 2023).

Thus, *H4d* is empirically supported. This indicates that EAT mediates the relationship between ECL and GPB among millennials who consume organic products. This finding demonstrates that EAT serves as a crucial mediator between ECL and GPB, as it reflects the personal relevance a consumer places on sustainability (Nguyen and Le, 2020). Therefore, ECL serves as a cue that triggers consumers to align their purchases with their values, leading to a preference for products that demonstrate ecological responsibility (Nguyen, 2022). This alignment is due to eco-labels' ability to reduce information asymmetry, making it easier for consumers to identify and select environmentally friendly products. Consequently, positive EAT strengthens the influence of ECL, guiding consumers toward choices that contribute to environmental conservation and sustainability (Sun *et al.*, 2020; Hossain *et al.*, 2022).

6. Conclusion

Research on organic consumption has gained great relevance within academic contexts, and several studies have been conducted to identify the factors that influence the purchase behavior of products identified in the environment. Although several studies have proven the influence of EAT and EAW on organic product behavior, there is little evidence on the influence of ECL and GA on the attitudes and awareness of millennials who consume organic products in developing countries, especially in South America. This study demonstrated that Ecuadorian millennials have favorable EAT, and their EAW levels are aligned with environmental issues, which directly influences their GPB.

The study answered the following research question: Does environmental attitude and environmental awareness mediate the relationship between green advertising and eco-labels on green purchasing behaviors? and determined that (a) GAD has a direct influence on the GPB of Ecuadorian millennials, and EAT and EAW mediate the relationship between GAD and GPB of organic products. (b) ECL does not directly influence the GPB of Ecuadorian millennials; however, it has an indirect relationship with GPB through the mediating effect of EAT and EAW (see Table 5).

7. Theoretical, practical and social implications

This study has theoretical, practical and social implications. This study enriches the theoretical landscape of green marketing by validating the mediating roles of EAT and EAW. This underscores the importance of these psychological constructs in shaping the influence of GAD and ECL, thus providing a nuanced understanding of the pathways that drive GPB. Regarding practical implications, the study identified that GAD directly influences GPB, while ECL does not. It has been shown that ECL first shapes EAT and EAW before leading a consumer to purchase organic products. This provides valuable information for organic product companies to understand that ECL alone does not directly influence consumers, and it is necessary that ECL first raises consumer awareness and shapes their attitudes before encouraging consumption. Finally, regarding social implications, this study highlights the consciousness of millennials regarding environmental protection and suggests that fostering EAT and EAW can have a substantial impact on sustainable consumer behaviors, which could encourage collective efforts toward environmental sustainability and guide policymakers in developing strategies that support green consumption.

Conclusions	Theoretical and managerial implications
Environmental attitude and awareness are the important influential factors in green purchasing behavior	These psychological and cognitive factors are crucial in making eco-friendly decisions. Therefore, the businesses can be an effective strategy to promote sustainable consumption, leading to a market more oriented towards green products
Green advertising has a direct impact on the green purchasing behavior of Ecuadorian millennials. In addition, attitude and environmental awareness mediate this relationship	This finding strengthens theories on the influence of communication and marketing on sustainability. Therefore, companies need to design marketing campaigns that not only promote eco-friendly products but also educate consumers about environmental benefits
Eco-labels do not directly influence green purchasing behavior, but have influence trough mediator effect of environmental attitude and awareness	This finding challenges the notion that eco-labels alone are sufficient to influence consumer behavior. Therefore, businesses should complement labeling strategies and maximize the impact of eco-labels

Source: Authors' own creation

Table 5. Conclusions and theoretical and managerial implications

8. Limitations and recommendations for future research

This study had three limitations. First, the study was conducted only with millennials, relegating population cohorts such as Generation X who, due to their purchasing power and the fact that they are more familiar with traditional advertising, could be consumers whose purchasing behaviors can be influenced by GAD. Second, advertising is only one of the tools through which marketing influences consumer behavior. The present study did not consider other communication tools, such as social networks and sales promotions, which could also influence attitudes and environmental awareness. Finally, the third limitation of this study is the study sample. The sample units were taken from one city in Ecuador, which does not allow the results to be generalized to the entire Ecuadorian population.

To overcome the limitations of this study, it is recommended that future research develop comparative studies between different population cohorts such as centennials, millennials, Generation X and Baby Boomers, to identify which of these population cohorts is most identified with environmental protection and green consumption. However, it is necessary to broaden the research model presented in this study and identify whether other marketing strategies such as branding, ecological packaging, sales promotion or social networks influence consumers' attitudes toward the environment. Finally, future research could expand the sample to include millennials from other cities in Ecuador and compare the sample unit with millennials from other regions of the country. In addition, it is necessary to conduct qualitative studies through in-depth interviews to identify the true values that influence the attitudes of consumers toward the consumption of organic products.

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Appendix 1

Variable	
Environmental attitude Trivedi *et al.* (2018)	I am very concerned about the environment I am willing to reduce my consumption to help the environment I would contribute financially to help protect the environment I have asked my family to recycle some of the things we use
Environmental awareness Trivedi *et al.* (2018)	I believe that humanity is seriously abusing the environment I think that humans produce disastrous consequences in nature I consider that the balance of nature is very delicate and easily upset I think that one must live in harmony with nature in order to survive
Green purchasing behavior Carrión and Arias-Bolzmann (2022)	I buy organic products regularly I buy organic products for my daily needs I have bought organic products for the last few months. I buy organic products, although there are conventional alternatives
Green advertising Sun *et al.* (2020)	I tend to focus on advertising messages that relate to the environment. I think brands that use advertising messages about the environment are good I pay attention to products that develop advertisements that relate to the environment I find green advertising valuable in my opinion
Eco-labels Riskos *et al.* (2021) *and* Nguyen (2022)	I consider the eco-labels displayed on the product to be a good way to inform consumers I believe that eco-labeled products meet reliable environmental quality standards The presence of certified organic labels increases my credibility in a product I believe that eco-labeled products are really committed to protecting the environment

Table A1.
Survey questions

Appendix 2

Table A2.
Convergent validity with items deleted

Variable	Item	Loading factor	Cronbach's alpha	Composed reliability (CR)	Extracted mean variance (AVE)
Environmental attitude (EAT)	EAT1	0.955	0.705	0.867	0.751
	EAT2	0.916			
	EAT3	0.911			
	EAT4	0.587			
Environmental awareness (EAW)			0.768	0.745	0.617
	EAW1	0.591			
	EAW2	0.945			
	EAW3	0.871			
	EAW4	0.924			
Green purchasing behavior (GPB)	GPB1	0.696	0.801	0.725	0.632
	GPB2	0.911			
	GPB3	0.730			
	GPB4	0.913			
Green advertising (GAD)			0.681	0.702	0.545
	GAD1	0.589			
	GAD2	0.906			
	GAD3	0.783			
	GAD4	0.884			
Eco-labels (ECL)	ECL1	0.866	0,691	0,713	0,568
	ECL2	0.503			
	ECL3	0.862			
	ECL4	0.739			
Alfa total	0.709				

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