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Young consumers' purchase behaviour of sustainably-labelled food products. What is the role of scepticism?

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ABSTRACT

This paper aimed to investigate consumer scepticism towards third-party sustainability labels in the context of food products, evaluating its role in the formation of the customer's buying behaviour. A covariance-based structural equation model (CB-SEM) was developed, and it included the customer's socio-environmental concern, scepticism toward sustainability labels, reported use of the socio-environmental commitment declared by the producer, and purchase behaviour of sustainably-labelled food products. The model was tested on a sample of 311 Italian high-educated young consumers, a group of sustainability-conscious individuals. The findings highlight that purchase behaviour is positively influenced by two reciprocally-related variables: socio-environmental concern and the reported use of the socio-environmental commitment declared by the producer. While other studies have ascertained that scepticism is an antecedent of purchase behaviour, this study findings highlight it can also be considered a mediator of the relationships between purchase behaviour and other antecedents considered in this model. In addition to advancing the study on the role of scepticism in the formation of purchasing decisions for food products, drawing on signalling theory, this study provides insights for practitioners and policymakers, highlighting the absolute necessity to reassure consumers about the credibility of third-party sustainability labels and providing them with the instruments needed to distinguish the truth from the fluff in sustainability communication.

1. Introduction

Consumers' growing ethical concern and their attention to socially and environmentally-sensitive food products induced companies to increasingly demonstrate their commitment, communicating their efforts toward sustainability (Mohr et al., 2001; Morsing & Schultz 2006; Nan & Heo, 2007).

Sustainable attributes of food products are most often communicated on product labels, addressing different dimensions of sustainability (Janssen & Langen, 2017), including fair trade, respect for animal welfare, organic production, and carbon footprint. From a signalling theory perspective (Spence, 1973; Stigler, 1961), sustainability labels act as "informational cues" of the quality of unobservable, desirable product attributes and assist consumer choices by transforming credence features into attributes that consumers can search for before purchasing, thus reducing levels of perceived risk and facilitating decision making (Thøgersen et al., 2010; Bleda & Valente, 2009; Van Loo et al., 2015; Canavari & Coderoni, 2019; Apostolidis & McLeay, 2019; Bublitz et al., 2010; Vermeir & Verbeke, 2006; Zander & Hamm, 2010).

Appearing on the product packaging (or on a company website, brochure, and other material), these labels take the form of words, symbols, graphics, logos, and product brand names and can be issued either by a third party that is a governmental or private organisation (third-party labels) or by the producer (self-declared labels) who directly asserts the environmental or socio-ethical qualities of their products/organization.

Research exploring the impact of sustainability labels on food product choices is abundant as confirmed by recent reviews (e.g., Tobi et al., 2019; Majer et al., 2022). The main findings of previous research can be summarized as follows:

- Third-party labels generally tend to gain higher consumer trust (e.g., Atkinson & Rosenthal, 2014; Gordon et al., 2011; Thøgersen & Nielsen, 2016; Majer et al., 2022) than corporate-based information that may inspire perceptions of greenwashing (Delmas & Burbano, 2011). Nevertheless, some studies outlined that the combined use of third-party labels and self-declared claims leads to the highest perceptions of credibility and product quality (Ertz et al., 2017; Rossi &

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Rivetti, 2020). However, in a study involving a majority of consumers unfamiliar with frequently used seafood labels, Sigurdsson et al. (2022) found that sustainability tags—unverified sustainability claims—had higher importance compared to sustainability labels—actually awarded eco-certificates—on consumer choice and willingness to pay (WTP).

- Sustainability labels have the potential to motivate consumers' purchase intention and their WTP (e.g., Aprile et al., 2012; De Magistris & Gracia, 2016; Ertz et al., 2017; Rossi & Rivetti, 2020; Vecchio & Annunziata, 2015; Testa et. al., 2015; Potter et al., 2021; Feuβ et al., 2022; Duckworth et al., 2022); nonetheless, such labels cannot be a universal tool to support individuals in making more sustainable decisions (Torma & Thøgersen, 2021). That is because their effectiveness may vary with respect to different factors such as the label characteristics itself, the purchase context (e.g., Majer et al., 2022), the product under consideration or the country that is being considered (e.g., Rousseau, 2015), the level of environmental concern (e.g., Bickart & Ruth, 2012; Siraj et al., 2022), and other consumer aspects (e.g., their knowledge, education, psychometrics, demographics, etc.) (Peschel et al., 2016; Koistinen et al., 2013; de Magistris & Gracia, 2016; van Loo et al., 2015; Loureiro et al., 2002; de Pelsmacker et al., 2005), with highly educated consumers tending to express a greater appreciation for sustainability labels (Aprile & Punzo, 2022) and more "virtuous" behaviours in buying sustainably-labelled products than the less educated ones (Mancini et al., 2017). Furthermore, labels' effectiveness may vary with respect to the presented format (colour, text, visual configuration, etc.) and the "intuitiveness" of the label (e.g., Rihn et al., 2019; Neumayr & Moosauer, 2021; Donato & Adıgüzel, 2022), as well as consumers' understanding level of the label claims (e.g., Samant & Seo, 2016) and trust in the label (e.g., Taufique et al., 2019; Taufique et al., 2017; D'Souza et al., 2019; Thøgersen, 2002).
- When it comes to food products, other characteristics, such as brand, taste, price, use-by-date, and nutrition information, compete with sustainability labels for consumer awareness, perceived relevance, and influence on choice behaviour (e.g., Grunert et al., 2014; van Bussel et al., 2022) and can exert a greater influence over purchasing decisions than sustainability labels (e.g., Rousseau, 2015; Sörqvist et al., 2013; Watanabe et al., 2020). For example, when selecting "self-indulgent treat" products, such as chocolate, the consumer first considers other aspects (e.g., flavour, price, and brand) that have greater importance than socio-environmental attributes (Rousseau, 2015).
- Labels can act as effective signals only to the degree that consumers can recognize them, understand their basic meaning, and deem them both useful and credible (e.g., Grunert et al., 2014; Atkinson & Rosenthal, 2014; Boulding & Kirmani, 1993; Thøgersen, 2002; Sirieix et al., 2013; D'Souza et al., 2019). From this perspective, the first problem is related to a generally poor level of consumer understanding (e.g., Annunziata et al., 2019, van Bussel et al., 2022). In general terms, overall knowledge of socio-ethical and environmental labels is limited and varies across countries (e.g., D'Souza et al., 2006; Sirieix et al., 2013; Alevizou et al., 2015; Eufic, 2014). Consumer understanding—and perceived credibility—of the label are essential for labelling effects (Brach et al., 2018; Darnall et al., 2018). Perceived credibility—a crucial dimension of consumer trust (Nilsson et al., 2004; Riskos et al., 2021)—is critical for sustainable products that consumers can consider with suspicion, being aware of the risks associated with "greenwashing" (Wagner et al., 2009; Benoît-Moreau et al., 2010; Bickart & Ruth, 2012; Nyilasy et al., 2014; Chen & Chang, 2012; Nguyen et al., 2019). Thus, a lack of consumer trust can reduce the effectiveness of labels in nudging sustainable consumption (Gossen et al., 2022).

Concerning the last point, which is of greatest interest to this study, consumers may experience difficulty in assessing the validity of food products' sustainability claims not only because of companies' greenwashing strategies but also due to a staggering label proliferation. At the end of 2021, Ecolabelindex.com (the largest global directory of ecolabels, including the social ones) counted an assortment of 455 labelling schemes in 25 industry sectors. Over 70 different types of labels are in use on food products. In addition to these labels, considering that producers widely use self-declared labels (issued without involving third parties), it appears clear that communicating the benefits of sustainable food has become increasingly challenging.

The presence of far too many labels on the market offering vague and varying criteria creates consumer confusion (Brécard, 2014) and increases consumer search costs and the perceived risk of being exposed to "greenwashing". As such, the proliferation of sustainability labels can amplify consumer uncertainty and confusion (Harbaugh et al., 2011), thereby producing a paradox: instead of reducing information asymmetry, it can increase scepticism among consumers, generating negative responses (Aprile & Mariani, 2015; Sirieix et al., 2013; Engels et al., 2010) and inducing them to view sustainability claims with a suspect.

Consumer scepticism is defined as a tendency towards disbelief (Obermiller & Spangenberg, 1998), and it has attracted considerable research attention in the field of corporate social responsibility (CSR) (e.g., Lee et al., 2019; Rim & Kim, 2016), advertising in general (e.g., Ford et al., 1990, Obermiller & Spangenberg, 1998; Koslow, 2000), green marketing/advertising (e.g., Goh & Balaji, 2016; Do Paço & Reis, 2012; Matthes & Wonneberger, 2014), and health labels (e.g., Fenko et al., 2016). Even though, recently, there has been an increase in research aimed to investigate the role of scepticism in green purchase intentions (Goh & Balaji, 2016; Nyilasy et al., 2014; Matthes & Wonneberger, 2014), it is still insufficient to understand the role of scepticism in green purchase behaviours (Goh & Balaji, 2016) and, more generally, sustainable behaviours. There are still factors that are either absent from or contradictory in previous green literature (Farooq & Wicaksono, 2021), and the attempt to shed light on this phenomenon through the lenses of sustainability labels has been rare and still new. This is quite surprising, considering that consumers' doubts may deter them from making new or repeated purchases of sustainably-labelled food products; in return, this may thwart the required change of consumption patterns (the movement toward more sustainable diets) needed to feed a growing population within planetary boundaries (Willett et al., 2019), and it may also jeopardize companies' efforts toward sustainability. To comply with sustainability standards and display on-pack third-party sustainability labels, companies are required to make an evident effort in adapting their processes and methods and also incur certification costs and annual fees.

Some recently published studies have only incidentally analysed the role of scepticism regarding sustainability labels. For example, Cho and Taylor (2020) sought to understand if specific magnitude formats used to present (as a score on a scale) sustainability levels of the product could influence perceived ambiguity and, thereby, customers' perceptions and product evaluations. In their study, like in the one of Cho and Baskin (2018), consumer scepticism towards labelling essentially remains on the "background", being considered only as one of the possible moderating factors of the relationship between other variables: the scale magnitude and the perceived ambiguity of sustainability information in the study by Cho and Taylor (2020) and product healthiness and consumer's attitudes/intentions in the work by Cho and Baskin (2018).

In light of these considerations, this research aimed to explore, in the context of sustainably-labelled food products, the role of consumer scepticism in the formation of purchasing decisions (for food products displaying a third-party sustainability label) and its interaction with two other "internal" factors determining pro-sustainability behaviour (i.e., consumer's socio-environmental concern and the consumer's reported use—for the purchase—of the information related to the socio-environmental commitment of the producer). Consumer scepticism is explored as both a direct inhibitor of buying behaviour and a mediator of the impact of sustainability concern and consumers' reported use of

information related to producers' socio-environmental commitment on purchase behaviour.

The results highlight that the consumer's purchasing behaviour is significantly influenced by two variables: the socio-environmental concern and the reported use of information concerning the producer's socio-environmental commitment. The impact of both these variables on purchasing behaviour is mediated by consumer scepticism towards third-party labels. This evidence advances the literature on the antecedents of sustainably-labelled purchasing behaviour, intercepting the mediating role of scepticism and evaluating the influence of the use of information regarding the socio-environmental commitment of the producer. From a practical point of view, this emphasizes the need to take actions instrumental to increasing the perceived credibility of these labels.

2. Conceptual development and hypotheses

Literature on green marketing has investigated internal factors that can complement external ones (e.g., eco-labels) in determining the pro-environmental behaviour of individuals. In this vein, environmental concern, defined as the level of emotion and involvement towards green issues (Zimmer et al., 1994; Aman et al., 2012), emerged as an important predictor of green-buying behaviour, representing not only the extent of consumer awareness about the environment but also their willingness to contribute towards the implementation of solutions (Dunlap & Jones, 2002). Environmental concern proved to positively influence consumer purchase decisions (Hao et al., 2019; Vermeir & Verbeke, 2006; Kim & Choi, 2005) as environmentally conscious consumers prefer to purchase products having less impact on the environment (Taufique et al., 2019). Based on this evidence and drawing from the study by Grunert et al. (2014), who suggested measuring a broader "sustainability concern" regarding not only environmental protection but also socio-ethical issues that are part of the broader sustainability concept, the following hypothesis is formulated:

H1: The consumer's socio-ethical and environmental concern (*SEC*) positively influences the sustainably-labelled product purchase behaviour (SPPB).

Contrasting findings on the relationship between sustainability concern and purchase behaviour emerged in literature (Paco et al., 2009; Ramayah et al., 2010). For example, Grunert et al. (2014) found that a general concern for sustainability issues did not necessarily translate into behaviour, even when the information provided by a sustainability label was rightly understood by the consumer. Similarly, the Eurobarometer monitor (2017) highlighted the persistence of an attitude-behaviour gap, revealing that although more than nine in 10 Europeans (94 %) considered the protection of the environment important, only three in 10 Europeans who were aware of ecolabels had bought a product carrying the EU ecolabel (the most known label in the study). This contradicting evidence highlights the opportunity to further investigate the relationship between sustainability concern and buying behaviour, taking into account other variables that may intervene and inhibit the actual purchase of sustainable food products, in addition to the ones already emerged in previous literature, including limited availability (Buder et al. 2014; Henryks et al., 2014; Vermeir & Verbeke, 2008) or insufficient saliency in the store (Brécard et al., 2009; van Herpen et al., 2012). One of these variables is scepticism.

Defined as a tendency towards doubt and disbelief (Obermiller & Spangenberg 1998), scepticism is a cognitive reaction that varies according to the occasion and content of the communication (Mohr et al., 1998). It plays an important role in shaping consumers' thoughts and their subsequent behaviour. Prior literature focusing on scepticism in the field of advertising (e.g., Ford et al., 1990; Obermiller & Spangenberg, 1998; Koslow, 2000), green advertising (e.g., do Paço & Reis, 2012; Matthes & Wonneberger, 2014), and CSR messages (e.g., Lee et al., 2019; Rim & Kim, 2016) suggested that sceptical consumers are less likely to engage in environmentally friendly behaviours (Leary et al., 2017), are less reactive to advertising (Obermiller et al., 2005), and report less favourable purchase intentions (Cho & Baskin, 2018).

To buy sustainably-labelled products, consumers have to believe the "promise" subsumed in the label. Past research demonstrated that labels can act as effective "signals" of the qualities of food products only to the degree that consumers deem them both useful and credible (Boulding & Kirmani, 1993; Thøgersen, 2002; Sirieix et al., 2013). This credibility has been progressively undermined by the rising consumer awareness of the greenwashing phenomenon, together with the proliferation of environmental and socio-ethical labels. As suggested by Torma and Thøgersen (2021, p. 2), the information provided by sustainability labelling schemes is "too much, too complex, too similar, and too ambiguous", and this makes these schemes unable to support sustainability-involved consumers sufficiently. The plethora of different sustainability labels and the consequent information overload, producing a state of confusion, doubt, and disbelief (Barreau & Vielliard, 2014; Nikolaou & Kazantzidis, 2016), make consumers unlikely to buy sustainably-labelled products to contribute to a solution to socio-environmental problems (Mohr et al., 1998; Pagiaslis & Krontalis, 2014), even though they continue to sincerely declare their concern for sustainability issues.

Based on this evidence, the following hypothesis is formulated:

H2: Consumer scepticism (SCE-LAB) negatively influences sustainably-labelled product purchase behaviour (SPPB).

Consumer scepticism may impact the purchase behaviour of sustainability-concerned customers and can be, in turn, influenced by sustainability concern. Previous literature revolving around green communication and scepticism did not provide concordant results when trying to explain the relationship between sustainability concern and consumer scepticism. While do Paço and Reis (2012) found a positive relationship between these two variables and concluded that the most concerned consumers are, in fact, the most sceptical about green communication, D'Souza and Taghian (2005) ascertained that environmentally concerned consumers consider green ads as "believable" and "favourable" based on cognitive evaluation and as "good" based on the affective evaluation. The authors thereby outlined the different attitudes (and scepticism) towards green advertising shown by high and low socio-environmentally concerned customers, with the latter appearing to have a stronger disregard for green advertising. In this case, a lower concern corresponded to a higher scepticism. In light of these contradictory results, it seems important to verify whether a positive or negative relationship between consumer's socio-environmental concern and scepticism does exist.

Based on the above-mentioned pieces of evidence, the following hypothesis is formulated:

H3: The consumer's socio-ethical and environmental concern (*SEC*) negatively influences consumer scepticism towards sustainability labels (SCE-LAB).

Scepticism may also intervene in the relationship linking the expressed sustainability concern of consumers and their actual consumption behaviour (e.g., Leonidou & Skarmeas, 2017), thus contributing to the generation of the discrepancy commonly observed between these two variables.

In these terms, consumer scepticism could be considered not only as a direct inhibitor of SPPB but also as a mediator within the relationships linking environmental concern and purchase behaviour. Accordingly, the following hypothesis is made:

H4: Consumer scepticism (SCE-LAB) mediates the relationship between socio-ethical and environmental concern (*SEC*) and sustainably-labelled product purchase behaviour (SPPB).

Previous research underlined the importance of consumer motivation for the use of sustainability information on food products and additionally highlighted the importance of other product characteristics—such as brand, taste and price—that can exert greater influence on purchasing decisions than sustainability labels (e.g., Grunert et al., 2014; Rousseau, 2015; Sörqvist et al., 2013; Watanabe et al., 2020).

When making food choices, consumers face trade-offs between information related to sustainability and other kinds of product information. Thus, sustainability labels compete with other informative elements to capture consumers' attention. Different studies (e.g., Rousseau, 2015) suggested that sustainability information is not the first element that consumers report to consider before assuming their decision. Nevertheless, making sustainability labels available on food products provides consumers with the opportunity to take into account socio-environmental and ethical considerations when making food choices. On this basis, it is reasonable to formulate the following hypothesis:

H5: The consumer's reported use (RU), for the purpose of making a purchasing choice, of the socio-environmental commitment declared (through the label) by the producer positively influences sustainably-labelled product purchase behaviour (SPPB).

Prior literature suggested that doubtful consumers, when confronted with a decision involving ambiguity, tend to increase rational information search (Sinaceur, 2010). Sceptical people can change their minds when provided with clear and convincing evidence (Mohr et al., 1998). Thus, consumers sceptical about the sustainability qualities of food products are likely to seek additional information about the socio-ethical and environmental attributes (e.g., read certification/labels) to dispel their doubts and enhance their understanding of product features. For example, Leonidou and Skarmeas (2017) revealed that green scepticism generates interest in seeking information about green products. Following this line of reasoning, it can be assumed that those who claim to use (reported use) the sustainability information provided on the pack by the manufacturer tend to be less sceptical because, by reading the information, they have at least partially dispelled their doubts. Consequently, the following hypothesis can be formulated:

H6: The consideration (RU) of the socio-environmental commitment declared by the producer negatively influences consumer scepticism (SCE-LAB).

As mentioned previously, sustainability labels can act as effective "signals" of the socio-ethical and environmental qualities of food products only when consumers consider them credible (Boulding & Kirmani, 1993; Thøgersen, 2002; Sirieix et al., 2013). Sceptical consumers tend to distrust information provided by the producer; therefore, the above-proposed relationship between RU of the information related to the socio-environmental commitment of the producer and purchase behaviour will inevitably be negatively impacted if consumers are sceptical about the label content. On this basis, the following hypothesis can be formulated:

H7: Consumer scepticism (SCE-LAB) mediates the relationship between the consumer's reported use (RU), for the purpose of making a purchasing choice, of the socio-ethical commitment declared by the producer and sustainably-labelled product purchase behaviour (SPPB).

Literature on green marketing suggested that consumers who have high environmental concern are likely to not only develop a positive attitude and interest towards green products but also change their choices and motivation. For instance, Newton et al. (2015) demonstrated that environmental concern accrues consumers' motivation to learn about the outcomes of environmental purchases, making them more involved in identifying additional information to aid in their environmental purchase decision. Consequently, the following can be hypothesised:

H8: The consumer's socio-environmental concern (*SEC*) and the reported use (RU), for the purpose of making a purchasing choice, of the socio-environmental commitment declared by the producer are significantly correlated.

Fig. 1 shows the proposed research model.

3. Material and methods

3.1. Data collection and questionnaire

A survey was conducted online from December 2021 until the end of February 2022 with the students of an Italian University, enrolled in three-year and master's degree courses in economics and management, as well as bachelor's and master's degree graduates. As such, the sample is composed of Italian high-educated young adults born between 1981 and 2002.

The choice to focus on high-educated, young adults stems from a series of considerations. First of all, the two generations considered here—Generation Y (Millennials) and Generation Z (Post-Millennials)—are likely to be better informed about and more concerned with socio-environmental issues compared to older generations (Kanchanapibul et al., 2014; Annunziata et al., 2019; Blanc et al., 2021). Moreover, as explained above (see Section 1), the literature suggests that high-educated individuals tend to be more "virtuous" in buying products with sustainability labels than less educated ones (Mancini et al., 2017)

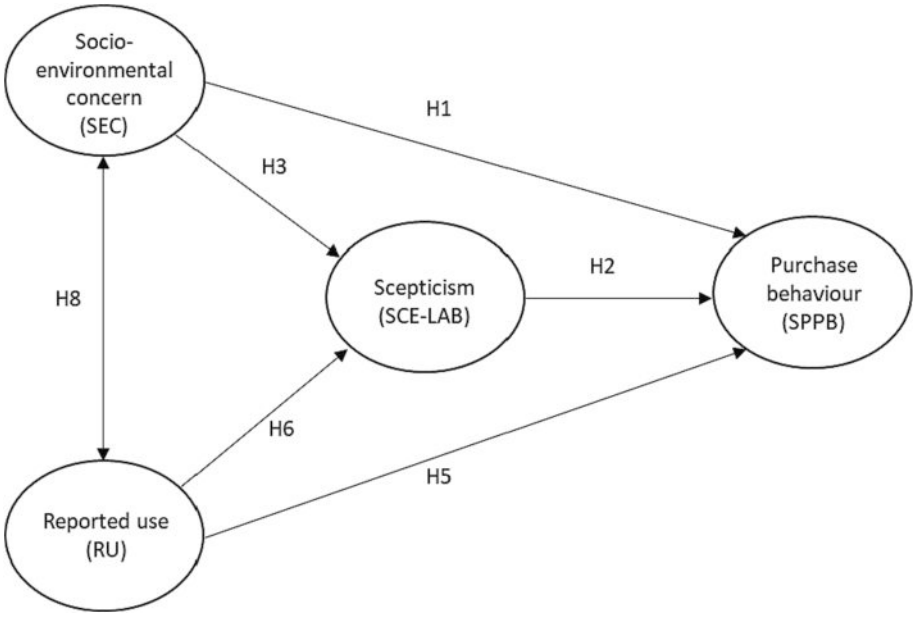

Fig. 1. The research model. Please note that to avoid congestion, the figure includes only the hypothesized direct effects and does not show the mediation hypotheses.

and have some prior knowledge of sustainability issues (Vermeir & Verbeke, 2008), which would allow them to answer the questions included in the questionnaire with more awareness.

Since this study is focused on third-party sustainability labels, it was deemed necessary to present the interviewees with a definition of these labels and accompanying images depicting some of the most common labels in the food sector (i.e., Fairtrade, UTZ, Rainforest Alliance, EU Organic) with their respective descriptions as shown in Fig. 2.

The questionnaire was designed to collect data about each of the four aforementioned constructs included in the model (Fig. 1). To measure the consumers' socio-environmental concern, nine items proposed by Grunert et al. (2014, p. 181) were used. Three items inspired by Grunert et al. (2014, p. 185) were used to measure the consideration (RU) of the socio-environmental commitment declared by the producer; in this regard, the respondents were asked to rate their self-reported use of socio-environmental information provided by the producer through the label on the pack.

Scepticism was measured using three items adapted from various sources (Cho & Baskin, 2018, p. 124; Mohr et al., 1998, p. 37; Taufique et al., 2017, p. 520). Three other items were adapted from Braga Junior et al. (2014, p. 30), Kim & Choi (2005, p. 595) and Junior et al. (2015, p. 104) to measure the SPPB. Each item was measured on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Table 1 details the items considered in the analysis. The last part of the questionnaire was designed to collect data concerning the demographic characteristics of the respondents.

Before conveying the questionnaire to the sample, it was pre-tested on 25 university students to ensure comprehensibility and avoid ambiguity in the questions. Following the evidence that emerged during the pre-test, the formulation of some questions was modified. Participants were contacted by email, informed of the purpose of the study, and asked to answer an online questionnaire designed in Google Form. To reduce the likelihood of hypothesis-guessing, they were told that the researchers wanted to get an understanding of young people's attitudes towards food product packaging. In total, 500 individuals were contacted, and 332 replied (64 %). Due to many missing values, 21 questionnaires were excluded. Thus, the final sample is composed of 311 students.

Table 2 shows the socio-demographic characteristics of the respondents.

3.2. Data analysis

3.2.1. Analysis of the measurement model

To test the hypotheses, a covariance-based structural equation model (CB-SEM) was applied (Kaplan, 2008). The CB-SEM tests hypotheses "by determining how closely a proposed theoretical model can reproduce the covariance matrix for an observed sample dataset" (Hair et al., 2021, p. 4) (see the Appendix for the covariance matrices). The statistical analysis was carried out using the lavaan package (Rosseel, 2012) of the software "R" (R Core Team, 2013). Regarding the estimation method, the unweighted least squares (ULS) estimator was chosen because it is considered the best solution with ordinal variables (Li, 2016).

To measure the internal consistency of each construct, the Cronbach Alpha (Cronbach, 1951) and the composite reliability (CR) (Bentler, 1972) indexes were calculated. As shown in Table 3, the values of the Cronbach Alpha are higher than 0.7, the cut-off value generally suggested by scholars. CR values are also acceptable since they are higher than the threshold of 0.6 (Bagozzi & Yi, 1988). Discriminant validity was examined by calculating the average variance extracted (AVE) index (Fornell & Larcker, 1981), which is at least equal to 0.5 (Hair et al., 2014).

The constructs' discriminant validity was also evaluated following the Fornell-Larcker criterion and the heterotrait-monotrait ratio (HTMT) criterion. As set out in the case of the Fornell-Larcker criterion (Fornell & Larcker, 1981), the square root of the AVE of each construct was higher than the other correlation values among the other constructs considered in the model. Additionally, following the HTMT criterion (Henseler et al., 2015), the heterotrait-monotrait ratio of correlations was lower than the threshold value of 0.85. Therefore, in both cases, discriminant validity was verified for all the constructs considered in the model (Table 4).

3.2.2. Analysis of the structural model

Once the goodness of the measurement model was verified, the fit of the structural model was evaluated. Regarding the incremental fit measures, the values of the comparative fit index (CFI) (Bentler, 1990) and Tucker-Lewis index (TLI) (Bentler & Bonnett, 1980; Tucker & Lewis, 1973) are very close to 1 (CFI = 0.998; TLI = 0.998), denoting a good fit of the hypothesized model. The exact fit of the model was also examined, calculating the standardized root mean square residuals (SRMR) index (Bentler, 1995; Jöreskog & Sörbom, 1981). The SRMR estimates the mean of the residual correlation whose value (0.053) denotes a good fit since values below 0.08 are recommended for this index (Hu & Bentler, 1998). Then, the absolute fit was considered, calculating the root mean squared error of approximation (RMSEA) index (Steiger & Lind, 1980; Browne & Cudeck, 1993). In this regard, the accepted values of RMSEA should be lower than 0.08 (MacCallum et al., 1996), and the goodness-of-fit index (GFI) must be at least equal to 0.95 (Jöreskog & Sörbom, 1986); accordingly, that was the case in this study (RMSEA = 0.015; GFI

Fig. 2. The four third-party sustainability labels shown as examples to the respondents. The accompanying descriptions were taken from the websites of the issuing organizations.

Table 1
Items considered in the analysis.

Constructs	Items	Sources
Socio-environmental concern (*SEC*)		Grunert et al. (2014, p. 181)
	Sec1: I am concerned about the deforestation of the rainforest. Sec2: I am concerned about the poor treatment of animals in food production. Sec3: I am concerned about the environmental damage caused by human use of land and water. Sec4: I am concerned about using too much of the world's natural resources for food production. Sec5: I am concerned about poor working conditions and wages for food producers. Sec6: I am concerned about packaging that is not recyclable. Sec7: I am concerned about the amount of packaging used on products. Sec8: I am concerned about carbon emissions caused by food production. Sec9: I am concerned about the amount of energy used when transporting food products.	
Reported use (RU) of the socio-environmental commitment declared by the producer		Grunert et al. (2014, p. 185)
	Ru1: When buying food products, I consider the socio-ethical commitment of the producer. Ru2: When buying food products, I consider the environmental commitment of the producer. Ru3: When buying food products, I consider the biological origin of raw materials.	
Scepticism toward sustainability labels (SCE-LAB)		Cho and Baskin (2018, p. 124); Mohr et al. (1998, p. 37); Taufique et al. (2017, p. 520)
	Sce-lab1: I feel I've been accurately informed after viewing the sustainability labels (reverse-scored item). Sce-lab2: The labels are genuinely committed to socio-environmental protection (reverse-scored item). Sce-lab3: Most of what labels say about their products is true (reverse-scored item).	
Sustainably-labelled products purchase behaviour (SPPB)		Kim and Choi (2005, p. 595); Junior et al. (2015, p. 104); Braga Junior et al. (2014, p.30)
	Sppb1: When buying a product, I always try to choose the one that has the least socio-environmental impact. Sppb2: When I have a choice between two equal products, I purchase the one less harmful to other people and the environment. Sppb3: I try to buy products that are less harmful to the environment and society.	

Table 2
Demographic characteristics of the sample.

Variables	Frequency	Percentage
Gender		
Male	110	35.37
Female	201	64.63
Generation		
Millennials	166	53.38
Post-millennials	145	46.62
Education		
High school graduate	148	47.59
University undergraduate	112	36.01
University graduate	51	16.40

Note: Millennials' birth year ranges from 1981 to 1996, while Post-millennials' birth year ranges from 1997 to 2012.

= 0.987). Furthermore, a power analysis was also performed (Wang & Rhemtulla, 2021), using the semPower package (Moshagen & Erdfelder, 2016). The power of the hypothesis test was very close to 1 (>0.999), indicating a high probability to correctly evaluate the hypotheses.

4. Results

As specified in section 3.2, to test the research hypotheses, a CB-SEM was implemented.

The following two sub-sections illustrate the results of the research, focusing first on the direct relationships hypothesized in the model and then on the mediation effect achieved through consumer scepticism.

4.1. Direct effects

Table 5 shows the values of beta coefficients, the standard error, and the *t*-values for each direct relationship included in the structural model (Fig. 3). As explained below, the results support all the hypothesized relationships.

The consumer's socio-environmental concern positively influences the SPPB, thus supporting H1 ($\beta = 0.197$; $t = 3.412$). Moreover, as stated by H2, purchase behaviour is negatively affected by consumers' scepticism towards sustainability labels (β = -0.369; t = -5.057). The socio-environmental concern negatively impacts scepticism, thus supporting H3 (β = -0.182; t = -3.749). H5, concerning the relationship between the RU of the socio-environmental commitment declared by the producer and the SPPB, is also supported ($\beta = 0.312$; $t = 6.677$). H6, concerning the negative influence of the RU of the socio-environmental commitment on scepticism, is confirmed (β = -0.222; t = -6.261). Finally, the

Table 3
Descriptive statistics, reliability, and validity of the constructs.

Construct	Items	Mean	Standard deviation	Standardized Loadings	Cronbach α	Composite reliability (CR)	Average variance extracted (AVE)
Socio-environmental concern (*SEC*)					0.897	0.900	0.507
	Concern about the deforestation	4.445	0.798	0.641			
	Concern about the poor treatment of animals	4.274	0.998	0.617			
	Concern about human-induced environmental damages	4.323	0.855	0.705			
	Concern about overuse of natural resources	4.126	0.921	0.762			
	Concern about poor working conditions	4.381	0.819	0.566			
	Concern about not recyclable packaging	4.158	0.887	0.785			
	Concern about overuse of packaging	3.974	0.920	0.728			
	Concern about carbon emissions	4.006	1.011	0.763			
	Concern about energy use for food transportation	3.813	1.007	0.761			
Reported use (RU) of the socio-environmental commitment declared by the producer					0.828	0.835	0.629
	Consideration of the socio-ethical commitment of the producer	3.019	1.098	0.808			
	Consideration of the environmental commitment of the producer	3.106	1.065	0.909			
	Consideration of the biological origin of raw materials	2.900	1.171	0.666			
Scepticism toward sustainability labels (SCE-LAB)					0.766	0.772	0.536
	I feel informed after viewing the sustainability labels	3.048	0.895	0.631			
	The labels are genuinely committed to socio-environmental protection	2.688	1.017	0.805			
	Most of what labels say is true	3.000	0.923	0.726			
Sustainably-labelled products purchase behaviour (SPPB)					0.760	0.763	0.518
	I always try to choose products having the least socio-environmental impact	3.035	0.991	0.774			
	When choosing between two equal products, I purchase the less harmful one	3.441	1.096	0.727			
	I try to buy products that are less harmful to the environment and society	4.000	1.032	0.657			

Table 4
Measurement model for the initial model: loadings and reliability measures.

	Fornell-Larcker criterion				Heterotrait–monotrait ratio criterion			
Constructs	SCE-LAB	*SEC*	RU	SPPB	SCE-LAB	*SEC*	RU	SPPB
Scepticism toward sustainability labels (SCE-LAB)	0.732				–			
Socio-environmental concern (*SEC*)	−0.346	0.712			0.343	–		
Reported use (RU) of the socio-environmental commitment declared by the producer	−0.434	0.519	0.793		0.441	0.523	–	
Sustainably-labelled products purchase behaviour (SPPB)	−0.536	0.467	0.619	0.720	0.544	0.475	0.623	–

results reveal a significant co-variance between socio-environmental concern and the RU of the socio-environmental commitment declared by the producer ($\beta = 0.235$; $t = 14.219$), and this supports H8.

In sum, the SPPB is significantly influenced by socio-environmental concern, the RU of the socio-environmental commitment declared by the producer, and scepticism, and in the latter case, the relationship is negative as expected. Thus, scepticism is negatively affected by the RU of the socio-environmental commitment and the consumer's socio-environmental concern, with a stronger influence of the first construct. The socio-environmental concern and the RU are positively correlated, mutually reinforcing each other.

4.2. The mediating role of consumers' scepticism toward sustainability labels

Beyond direct relationships, the study aimed to investigate the role of consumer scepticism as a mediator within the relationships between SPPB and its antecedents. Table 6 shows the results of the mediation analysis that considered the following: the *direct effect*, produced by the independent variable on the dependent variable without considering the mediator included in the model, the *indirect effect*, referring to the influence of the independent variable on the dependent variable due to the mediator, and the *total effect*, concerning the overall impact of the

Table 5
Structural model results.

Hypothesis	Path	β	*Se*	*t*	*p-value*	Decision
H1	*SEC* → SPPB	0.197	0.058	3.412	0.001**	Supported
H2	SCE-LAB → SPPB	−0.369	0.073	−5.057	0.000***	Supported
H3	*SEC* → SCE-LAB	−0.182	0.049	−3.749	0.000***	Supported
H5	RU → SPPB	0.312	0.047	6.677	0.000***	Supported
H6	RU → SCE-LAB	−0.222	0.035	−6.261	0.000***	Supported
H8	*SEC* ↔ RU	0.235	0.017	14.219	0.000***	Supported
SRMR = 0.053; TLI = 0.998; CFI = 0.998; GFI = 0.987; RMSEA = 0.015						

Note: *** $p < 0.001$; ** $p < 0.01$.
SEC - Socio-environmental concern.
RU - Reported use of the socio-environmental commitment declared by the producer.
SCE-LAB - Scepticism toward sustainability labels.
SPPB - Sustainably-labelled products purchase behaviour.

independent variable on the dependent variable.

Regarding the role of scepticism in the relationship between socio-environmental concern and purchase behaviour, several considerations should be made. First, the analysis revealed an overall significant impact of socio-environmental concern on purchase behaviour (β = 0.264; t = 4.543). This is partly due to the direct impact that socio-environmental concern has on purchase behaviour (β = 0.197; t = 3.412); however, to some extent, it is also attributable to the indirect effect of sustainability concern on purchase behaviour, which is also significant (β = 0.067; t = 2.982). The significance of both direct and indirect effects indicates that there is no full mediation; instead, scepticism acts as a partial mediator. In light of this, H4 is supported.

Scepticism is also hypothesized to be a mediator of the relationship between the RU of the socio-environmental commitment declared by the producer and the customer's purchase behaviour (H7). The results revealed the significance of the overall effect of the RU on purchase behaviour (β = 0.394; t = 8.786). Moreover, in this case, both indirect effects (β = 0.082; t = 4.614) and direct effects (β = 0.312; t = 6.677) are

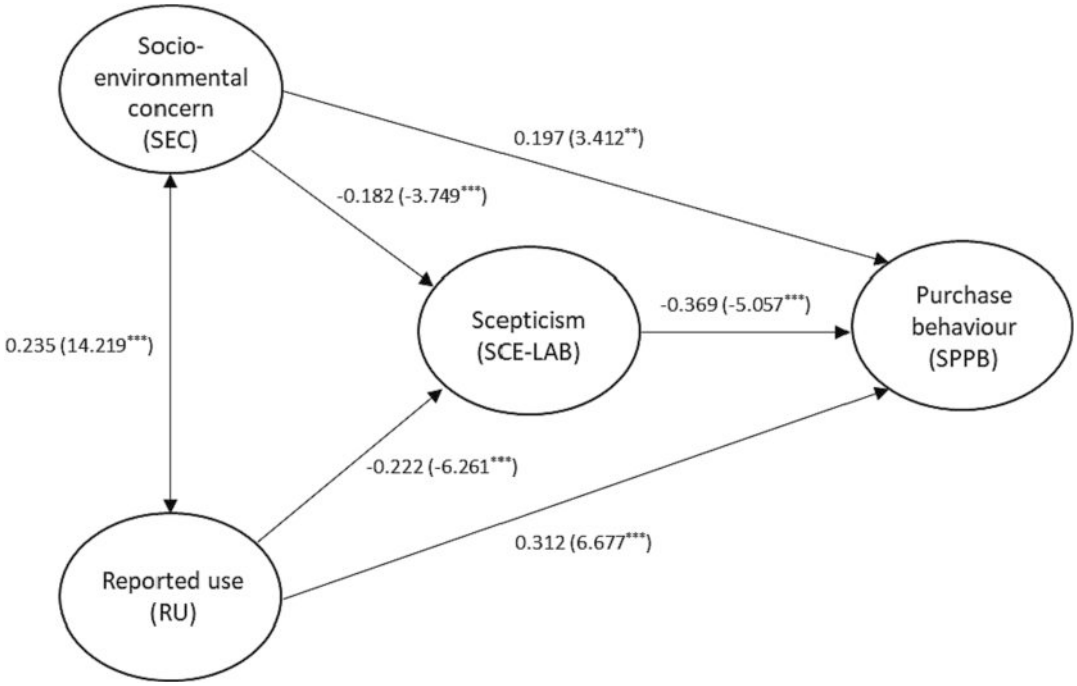

Fig. 3. The structural equation model. The value of the beta coefficient and the *t*-value are shown for each direct relationship. Note: *** $p < 0.001$; ** $p < 0.01$.

Table 6
Results of the mediation analysis.

Hypothesis	Path	Direct effect		Indirect effect		Total effect		Result
		β	*t*	β	*t*	β	*t*	
H4	*SEC* → SCE-LAB → SPPB	0.197***	3.412	0.067**	2.982**	0.264***	4.543	Partial Mediating effect
H7	RU → SCE-LAB → SPPB	0.312***	6.677	0.082***	4.614***	0.394***	8.786	Partial Mediating effect

Note: *** $p < 0.001$; ** $p < 0.01$.
SEC - Socio-environmental concern.
RU - Reported use of the socio-environmental commitment declared by the producer.
SCE-LAB - Scepticism toward sustainability labels.
SPPB - Sustainably-labelled products purchase behaviour.

significant, meaning that a partial mediating effect is verified. Thus, H7 is supported.

5. Discussion

In line with previous findings (e.g., De Canio et al., 2021; Diamantopoulos et al., 2003; Li et al., 2019; Newton et al., 2015; Paul et al., 2016; Rhead et al., 2015; Grunert et al., 2014), the present study highlights the positive influence of both the concern about socio-environmental issues and the reported use of on-pack sustainability information on purchase behaviour. The study contributes to the literature by providing empirical evidence of the multiple roles scepticism plays in influencing consumers' purchasing behaviour of food products with sustainability labels.

First, scepticism is an antecedent of purchase behaviour, impacting it negatively and making consumers less likely to buy products with sustainability labels. This confirms what has already been highlighted in the literature concerning green scepticism (Goh & Balaji, 2016; Golob et al., 2018; Leonidou & Skarmeas, 2017; Nguyen et al., 2019). Second, scepticism also acts as a mediator that intervenes in both the relationships between purchase behaviour and two of its other antecedents here considered, mitigating the behavioural intention that both variables (sustainability concern and reported use of on-pack sustainability information) would inspire in absence of scepticism.

Moreover, the study findings suggest that scepticism is influenced by the aforementioned two antecedents of purchase behaviour. Regarding the socio-environmental concern, the study highlights the "controversial" relationship between socio-environmental concern and scepticism. As seen in Table 5, the socio-environmental concern exerts a negative influence on scepticism, meaning that the most concerned consumers tend to exhibit lower levels of disbelief. This result validates—regarding sustainability labels—previous research studies revolving around green communication and scepticism by D'Souza and Taghian (2005); on the other hand, it contradicts the conclusions drawn by do Paço and Reis (2012) who suggested that the most concerned consumers are the most sceptical toward green communication. A reasonably justified conjecture for this finding is that high levels of concern accrue consumers' motivation to seek additional information (as also suggested by the hypothesis H8, which was verified by the present study) to learn about the outcomes of environmental purchases (Newton et al., 2015), making them more involved in identifying all those informative data and "clues" signalling the sustainability qualities of the food products they intend to buy.

High-educated people (like the participants in this study) have all the instruments to collect additional information and interpret the clues and the hidden meanings, using them to dispel their doubts and support their decision-making process.

This explanation is further corroborated by the verification of hypothesis H6, which considered the relationship between the second construct (the reported use of the information related to the socio-environmental commitment of the producer) and consumer scepticism, assuming the existence of a negative relationship between these two variables. As hypothesized, consumers who reported paying more attention to on-pack information communicating the producer's socio-environmental commitment exhibited lower levels of scepticism, perhaps because they felt, with reasonable confidence, that by reading on-pack labels, they could fill their knowledge gap and sufficiently dispel their doubts. This result aligns with the findings of Leonidou and Skarmeas (2017) who demonstrated that sceptical consumers are likely to seek additional information about green products. Additionally, this finding also agrees with literature about "consumer involvement", demonstrating how individuals who attach high perceived importance (relative to their needs, interests, and values) to a stimulus object (such as a product, a brand, a purchase decision or idea) tend to actively seek and apply the information before making a purchase (Zaichkowsky, 1994; Verbeke & Vackier, 2004).

5.1. Managerial and policy implications

The study provides some useful implications for companies, marketers, and policymakers interested in promoting the widespread adoption of sustainable consumer food product choices.

First, marketing managers must be cognizant that the rising wave of consumer scepticism is largely a consequence of an excessively nonchalant, over-casual, vague use of the word "sustainability" (and similar terms) by many businesses. When it comes to sustainability, it is very difficult for the consumer to weed out the truth from the fluff. In this scenario, even the labelling schemes are not always helpful. The plethora of green/sustainability labels and marketing claims provide too much information that is "too complex, too similar, and too ambiguous" (Torma & Thøgersen, 2021). As such, these labels and marketing claims fail to credibly support sustainability-involved consumers, even when third parties intervene to certify environmental claims (Delmas et al., 2013). In this context, responsible companies must do their utmost in monitoring levels of scepticism among their consumers, taking the most appropriate countermeasures to manage it. This means increasing transparency and taking any action aimed at convincing consumers that the company's sustainability commitment is genuine and authentic (Goh & Balaji, 2016). Moving away from an instrumental and reductive use of communication (which, in this case, would be considered pure propaganda), truly committed companies should remember that marketing still has a vital role to play in leveraging their sustainability credentials and reinforcing brand equity. Marketers must provide clear and robust evidence for all sustainability claims without omitting material information. If on-pack space is limited, they must use alternative means/channels (e.g., promotional materials, the company's website, apps, etc.) to make qualifying information readily accessible to the audience in order to achieve a genuinely sustainable positioning for their brands in the mind of the consumer. In this regard, to communicate relevant product details and additional information and reduce paper waste, marketers can leverage the opportunity offered by QR codes. Even if it represents a more expensive solution, blockchain technology can remove any doubts from the minds of consumers and provide them with a transparent view of the supply chain (Boukis, 2019; Redkal-Remme et al., 2022), thus validating the labels' sustainability claims. In this way, companies can better satisfy the needs of consumers interested in reading information related to the socio-environmental commitment of the producer, enhance/protect their socio-environmental reputation (better aligning companies' moral values to the ones of the present-day consumers), and educate the consumers, helping them distinguish the truth from the fluff.

Considering the findings of this study, producers should be increasingly aware of the need to invest in the communication activities needed to "declare" (i.e., make more explicit) and substantiate (i.e., make more credible and transparent) their commitment towards the socio-environmental issues.

The extent of the impact of consumers' scepticism towards sustainability labels highlights the absolute need to take action to "protect" the meaning and credibility of this type of label. This implies adopting measures to counteract the practice of greenwashing and protect the relevance and perception of sustainability, restoring dignity, meaning, and value to the word "sustainability", which has ended up losing its meaning due to the reckless (or light) use that some companies have made of it. Accordingly, the problem is not only the proliferation of official sustainability labels but also the wide—and undisciplined—use of words/symbols that have a sustainable "sound" (or *façade*) but are lacking any substance. Truly committed companies are interested in promoting fair competition among businesses making socio-environmental claims and in ensuring that consumers' willingness to invest in ethical and sustainable products is not (anymore) exploited. In this sense, they cannot act alone; instead, other interested parties, from consumer protection agencies to competition authorities and policymakers, must be involved in their battle. The stakes are too high, and the

adoption of truly sustainable behaviours is a practice that must be encouraged and protected. It is time to put an end to the use of decoys and sterile rhetoric in sustainability communication. It is time to define more stringent regulations regarding the use of words, the release of specific certifications, and the following monitoring, which is instrumental to maintain the standards over time. It is time to get serious about sustainability and labelling schemes.

5.2. Limitations and further research

This study has some limitations, and they are briefly outlined below.

First of all, the structural model was tested solely with reference to Italian high-educated young consumers. To generalize the findings, the model must be tested on participants from other countries and/or generations. This could also bring out interesting differences based on culture or age.

Second, the present study considers the macro-category of third-party sustainability labels. Considering such a broad category could hide differences in the model between the different types of labels; thus, in future works, it would be better to distinguish between socio-ethical and environmental labels to intercept any differences in causal relationships.

Third, a future line of investigation may be aimed at discovering other variables that could influence scepticism towards sustainability labels and specific circumstances that may contribute to the relationships in the model. A construct that could help explain the causal relationships investigated here is the knowledge regarding sustainability labels. Further research could integrate this construct into the structural model or extrapolate the individual causal relationships and examine them with reference to knowledge of sustainability labels. From a methodological point of view, the application of structural equation modelling to experimental design could contribute to a further understanding of the dynamics of purchasing decision-making in light of scepticism.

Finally, the literature on scepticism mainly includes quantitative studies, and few contributions examine its genesis in the consumer's perception. Therefore, this construct requires an in-depth analysis through qualitative approaches aimed at investigating the process through which this cognitive response is formed.

6. Conclusion

In sum, this research investigated some antecedents of purchasing decisions related to products with sustainability labels, aiming to develop a better understanding of the role of consumer scepticism in the purchase behaviour of food products with sustainability labels. Scepticism is the cornerstone of the proposed structural model, tested on a sample of Italian high-educated young consumers.

The study findings contribute to the literature by highlighting that consumer scepticism can be considered not only as a direct inhibitor of SPPB but also as a partial mediator within the relationships linking the purchase behaviour with two of its antecedents considered in this paper (socio-ethical and environmental concern and reported use of on-pack sustainability information), thus reducing the effects of both variables on the sustainably-labelled product purchase behaviour.

Considering these multiple roles played by scepticism, its potentially detrimental impact on the adoption of sustainable consumption patterns emerges with evidence. Labels can play a determinant role in fostering sustainable consumption, providing consumers with the opportunity to consider the environmental, social, and ethical impacts of their food choices. However, these labels can only fully express their potential as an environmental and social policy instrument when consumers consider the conveyed information trustworthy. From this perspective, although companies (or, at least, the most unscrupulous ones) can be considered among the main culprits of the increased consumer confusion and mistrust due to greenwashing strategies and the excessive use of the sustainability rhetoric, they cannot be left alone to achieve this ambitious goal that imposes an integrated approach involving individual consumers, responsible producers, and supportive policy measures. Therefore, a greater joint effort—on behalf of private companies, non-government organizations, government agencies, and public policy-makers—is needed to protect labels' credibility, defeat consumer scepticism, and gear consumer education towards sustainable food in general and products with sustainability labels in particular.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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