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Critical determinants influencing consumers' decision-making process to buy green cosmetics. A systematic literature review

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ABSTRACT

The current Systematic Literature Review (SLR) represents the first attempt to systematically classify the factors influencing consumers' decision-making process to purchase green cosmetics, based on a review of 60 studies from 2007 to 2022. The factors were classified using the Stimulus-Organism-Response (SOR) paradigm as the theoretical framework. The findings of the SLR indicate that consumers' decision-making process is primarily driven by socio-psychological stimuli, such as environmental concern, health consciousness, and social norms. These stimuli trigger internal states in consumers, which consist of cognitive and affective states. The internal states are represented by facilitators, such as attitude towards green cosmetics, perceived product quality, and product knowledge, as well as inhibitors, such as perceived high price, skepticism, and greenwashing. Among the final responses, purchase intention was found to be the most detected in the reviewed studies. Regarding socio-demographic characteristics, the segment of green cosmetic consumers is mainly characterized by women, employed individuals, with a high level of education and income. The study also highlights the core limitations of the existing literature and proposes a research agenda for future investigations.

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KEYWORDS

Consumer behaviour;
sustainable consumption;
purchase intention; natural;
SOR theory

1. Introduction

Green consumption is on the rise worldwide (Mansoor et al., 2022). This trend is evident in various business sectors, such as food and beverage (Migliore et al., 2018), tourism (Galati et al., 2021), energy, transportation (Wang et al., 2017), and more recently, cosmetics (Ali et al., 2022; Kumar, Dhir, et al., 2021). Recent literature indicates that the global green cosmetics market reached \$34.5 billion in 2018, accounting for approximately 15% of the global cosmetics market (Sadiq et al., 2021). The United States, Germany, and France are the largest green cosmetics markets globally, followed by the United Kingdom and Italy (Statista, 2022).

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Scholars have analysed the determinants influencing consumers' preference for green cosmetics, drawing similarities with factors influencing organic food consumption. Health and environmental concerns appear to be the main reasons for choosing green cosmetics, as for organic food (Kumar, Dhir, et al., 2021; Tandon et al., 2021). Psychological factors (e.g. attitudes towards green products), socio-demographic characteristics (e.g. income, age, and gender), and contextual factors (e.g. price and advertising) play a crucial role in influencing consumers' purchase intentions for green cosmetics (Ali et al., 2022; Kumar, Dhir, et al., 2021). However, these determinants have often been analyzed separately, leaving a gap in fully understanding the factors facilitating or inhibiting consumers' decision-making process for green cosmetics. To address this gap, Liobikienė and Bernatoniė (2017) categorized the determinants of purchase intention into internal, social, and external factors. However, their stimulus-response paradigm does not fully capture consumers' behavior. Instead, the neo-behavioral approach suggests that intermediate critical factors, internal to the consumer, influence the decision-making process, which is in turn influenced by environmental stimuli (Rödiger & Hamm, 2015). In other words, the neo-behavioral approach highlights the crucial role of intermediate consumers' internal variables in responding to stimuli and making purchase decisions (Kumar, Dhir, et al., 2021).

To fill the literature gap on green cosmetics, this study provides a structured and updated overview of green cosmetic consumption literature. As the first Systematic Literature Review (SLR) on this subject, it aims to systematically classify the determinants that facilitate or inhibit consumers' decision process to purchase green cosmetics. The SOR paradigm (Mehrabian & Russell, 1974) is used as the theoretical framework to categorize the determinants of consumers' decision-making process.

2. Theoretical framework

The SOR paradigm, introduced by Mehrabian and Russell (1974), elucidates consumers' behavior by examining the impact of environmental stimuli (S) on the internal state of individuals (O), which subsequently influences their final behavioral response (R). In essence, the SOR paradigm embodies a neo-behavioral approach, acknowledging how individuals respond positively or negatively to environmental stimuli (Jacoby, 2002).

According to the SOR paradigm, an environmental stimulus can be either be socio-psychological (i.e. health consciousness, environmental concern, appearance consciousness, etc.) or object (i.e. quality cues, brand, advertising, etc.), depends on whether it is related to the individual's inner world or product characteristics (Rong Da Liang & Lim, 2020).

The organism construct encompasses cognitive processes related to information acquisition, processing, retention, and retrieval, as well as emotional reactions to the surrounding environment (Eroglu et al., 2001). Within the organism, there are two internal states – the affective state, which involves emotions and feelings linked to a specific experience, and the cognitive state, referring to consumers' mental processes such as memory, knowledge, beliefs, and attitudes (Eroglu et al., 2001; Hsiao & Tang, 2021). To classify factors within the organism construct, the SOR model is often combined with the Dual Factor Theory (DFT) (Herzberg et al., 1996), which

categorizes variables in facilitators and inhibitors, depending on whether they encourage or dissuade consumers' behavioral intentions (Lavuri et al., 2022; Tandon et al., 2021).

Therefore, facilitators and inhibitors can affect positively or negatively the final response (R), that represents the last step of decision-making process (Tandon et al., 2021).

It is important to note that the SOR paradigm is flexible, and constructs may be classified as stimuli or organism depending on the research question, study context, and purpose (Bigne et al., 2020; Jacoby, 2002). For example, some studies on green and food products have classified constructs such as health consciousness, environmental concern, and social norms differently in terms of stimuli or organism (Han et al., 2022; Hsiao & Tang, 2021; Kumar, Dhir, et al., 2021; Tandon et al., 2021; Tang et al., 2019; Yin et al., 2021).

3. Methodology

3.1. Selection process

An SLR is a method for evaluating and interpreting all available studies relevant to a specific research question or topic of interest (Kitchenham, 2004, p. 1). It serves as a secondary study, summarizing primary studies obtained through an extensive literature review. The main objective of an SLR is to offer new insights or identify gaps in a chosen topic, providing recommendations for future primary studies (Dabas & Whang, 2022). To ensure impartiality during the SLR process, a protocol is established, outlining the steps to be followed, including defining research questions, selecting primary studies, determining exclusion and inclusion criteria, and assessing the quality of selected manuscripts. The following research questions guided the selection of primary studies published in academic journals: What are the main Stimuli (S), facilitators, and inhibitors of consumers' internal state (O) that affect the decision-making process to purchase green cosmetics (R)?

The search for relevant studies was conducted based on commonly adopted terms in the literature related to consumers of green cosmetics, defined as “naturally processed materials that are free from artificial or synthetic color, additives, or ingredients” (Kumar, Talwar, et al., 2021). Due to the lack of a standardized legal definition, “green” cosmetics are also referred to as “natural” or “organic”, with varying percentages of natural or organic ingredients and certification standards from bodies such as Cosmos, Natrue, ICEA, USDA, Soil Association, Ecocert, and AIAB (Bozza et al., 2022; Shimul et al., 2022).

In the literature, the term “green cosmetics” is sometimes interchanged with synonymous terms such as (green) “personal care”, “beauty care”, “haircare”, “skincare”, “color”, “make-up”, and “styling” (Liobikienė & Bernatoniene, 2017). Additional terms linked to consumers of green cosmetics include “social norms”, “antecedents”, “attitudes”, “barriers”, “risks”, “motives”, “motivations”, and “determinants”. We have also chosen to include the terms “consumer(s)”, “consumption”, “purchase intention”, “buying behavior”, “decision making”, and “behavior” to capture a comprehensive range of studies related to private household consumption (Rödiger & Hamm, 2015). This

approach ensures a comprehensive and detailed review of the literature on green cosmetics.

To carry out the SLR, the previous key terms are combined in a Boolean algorithm (Page et al., 2021), as follows:

((green OR natural OR organic) AND (“beauty products” OR cosmetics OR “personal care” OR make-up OR styling OR skincare OR “hair care”) AND (consum*) AND (values OR “social norms” OR antecedents OR “purchase intention” OR attitud* OR behavio* OR barrier* OR risk OR motiv* OR determinant* OR “buy* behavio*” OR “decision making”))

The Boolean algorithm has been launched in March 2023 and the key terms have been searched in titles, keywords, and abstracts of manuscripts contained in the Scopus database and searched in “topic” for the Web of Science database. These two databases have been chosen due to their reliability and completeness of topics. As regards time constraint, we have not set a starting year as green cosmetic sector is relatively a new research field in consumer behavior literature (Ali et al., 2022; Susanty et al., 2022).

3.2. Study selection criteria

To identify primary studies for the current SLR, we followed the key steps of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, an evidence-based guide comprising a checklist and flowchart (Page et al., 2021). The procedure is depicted in [Figure 1](#).

Using the selected key terms, the initial search yielded 975 primary studies in Scopus and 623 in Web of Science. We applied the first selection criteria, focusing on English-language manuscripts reporting empirical studies published in journals while excluding reviews, book chapters, theses, conference proceedings, and reports due to variations in peer review processes and limited availability (Rödiger & Hamm, 2015).

After the first screening, we excluded duplicates (34 studies) and those not pertaining to consumers of green cosmetics (1017 studies), leaving us with 78 eligible studies. We then conducted a thorough review of the full manuscripts to gain a better understanding of their topics and performed a quality assessment based on eight criteria ([Table 1](#)) emphasized by van Dinter et al. (2021). According to their recommendations, a manuscript can receive a positive rating if it achieves a total score of at least 4 out of 8. The study quality assessment revealed that ten of the selected studies were not relevant to the topic of this SLR, and eight manuscripts did not attain the minimum score of 4. Consequently, after the screening process, a total of 60 studies were included in the current SLR.

4. Results and discussions

4.1. Year of publication

[Figure 2](#) depicts the time frame in which the studies analyzed in this SLR were published. The first manuscript dealing with consumers of green cosmetics refers to 2007, highlighting that the study of this topic is relatively recent. A constant growing interest among scholars has quickly occurred in last years, in fact, just under half of studies (46.7%) have

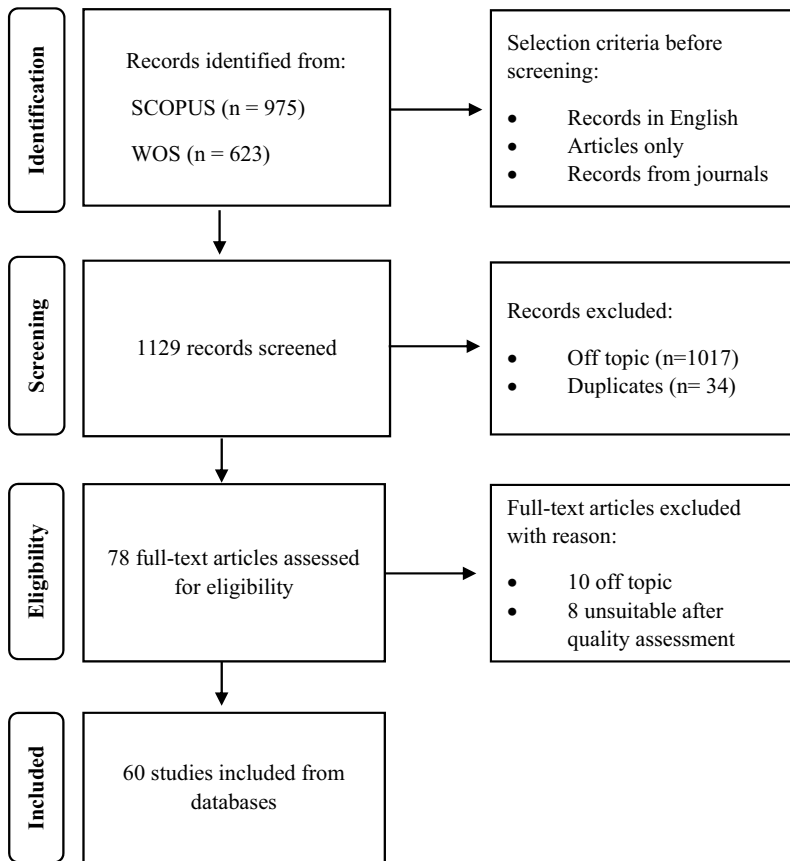


Figure 1. PRISMA flow diagram.

been published after 2020. Most studies on green cosmetic consumers have been published in 2022, reaching a peak of 15 manuscripts.

4.2. Survey’s countries

Scholars’ interest in green cosmetics is evident from the global distribution of studies (Figure 3). These studies originate from various regions around the world, with

Table 1. Quality assessment checklist (van Dinter et al., 2021).

Quality criteria	Question
Q1	Are the aims of the study clearly stated?
Q2	Are the scope, context and experimental design clearly defined?
Q3	Is the proposed solution clearly explained and validated by an empirical study?
Q4	Are the variables in the study likely to be valid and reliable?
Q5	Is the research process documented adequately?
Q6	Are all the study questions answered?
Q7	Are the negative findings presented?
Q8	Are the main findings stated clearly in terms of creditability, validity, and reliability?

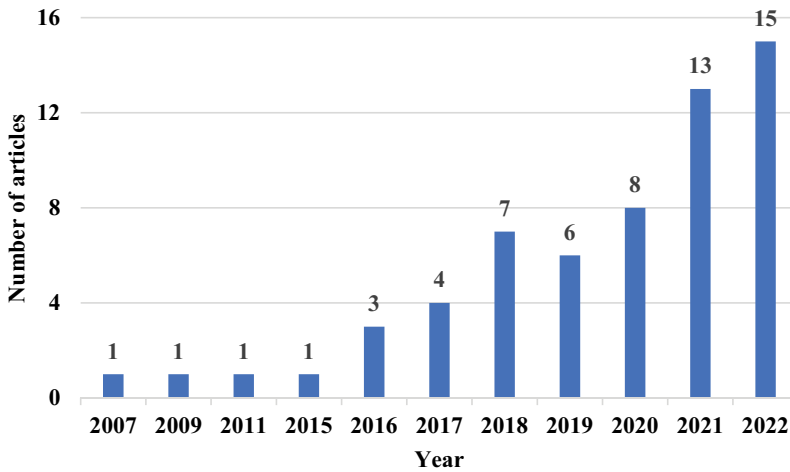


Figure 2. Reviewed studies per year.

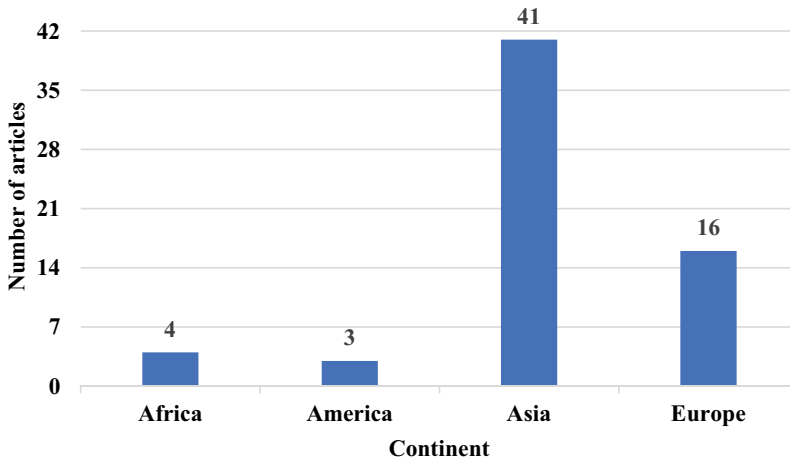


Figure 3. Reviewed studies according to the geographical location of the research.

a substantial number coming from Asia (41), followed by Europe (16), Africa (4), and America (3). It is worth noting that the total number exceeds the number of reviewed manuscripts due to four studies conducted in multiple countries (Afonso et al., 2016; Pop et al., 2020; Sajinčič et al., 2021; Zollo et al., 2021).

India stands out as the country with the highest number of studies on consumers of green cosmetics (17), followed by Malaysia (6), Pakistan, and Spain (3). This reflects the growing interest in green cosmetics, not only in Western countries but particularly in nations with a strong tradition of Ayurvedic and natural medicine (Lavuri et al., 2022). In these regions, consumers are increasingly mindful of green cosmetics due to their positive effects on the environment and health-related aspects, leading to the emergence of numerous local and multinational firms producing these products (Mansoor et al., 2022).

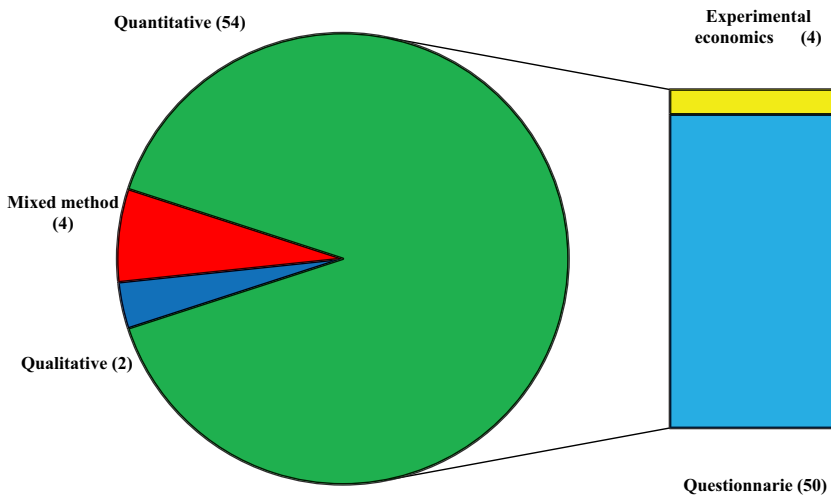


Figure 4. Number of reviewed studies according to the research methodology.

4.3. Research methodologies and sample size of the studies

Regarding the methodology used, many studies (54) have employed a quantitative approach, while two (Kahraman & Kazançoğlu, 2019; Lin et al., 2018) utilized a qualitative method (focus groups) (Figure 4). Among the quantitative studies, most of them (50) conducted surveys using structured questionnaires, while only four adopted an experimental approach to capture more realistic consumers' choices (Choi & Lee, 2019; Joshi & Nulkar, 2016; Kapoor et al., 2022; Morone et al., 2021). The remaining four studies employed a mixed-method approach, combining focus groups, open-ended questions, or in-depth interviews with quantitative surveys (Altintzoglou et al., 2021; Eberhart & Naderer, 2017; Joshi & Nulkar, 2016; Papista & Dimitriadis, 2019).

Specifically, online surveys were the most common data collection approach (37 studies out of 60), followed by face-to-face interviews conducted at shopping malls, cosmetic stores, events (12 studies) or universities (8 studies), and mixed surveys (3 studies), incorporating two or more data collection methods (e.g. online, telephone, and face-to-face).

All reviewed manuscripts focused solely on consumers, except one that also analyzed 35 retailers (Joshi & Nulkar, 2016). Most studies used a convenience sample for data collection, with only one manuscript (Altintzoglou et al., 2021) employing a representative sample, facilitated by a professional marketing company. The sample sizes of consumers ranged from 20 to 1867, while one study (Eberhart & Naderer, 2017) utilized a commercial consumer database, encompassing 10,272,477 consumers (Table 2).

Regarding the characteristics of convenience samples, most studies focused on generic consumers (42 out of 60), while 13 studies specifically targeted green cosmetic consumers. Additionally, four studies exclusively analyzed students' behavior (Fatoki, 2020; Hsu et al., 2017; Kapoor et al., 2022; Kim & Seock, 2009), and one study investigated non-green cosmetic consumers to understand barriers to their purchase intention (Chockalingam & Isreal, 2016).

Table 2. Consumers' sample size of reviewed studies.

Sample size	Number of studies
<100	2
100–499	45
500–999	9
>999	4
min ($n = 20$)	
max ($n = 10,272,477$) ^a	

^acommercial consumer database.

5. Decision-making process of green cosmetic consumption

The SOR paradigm was utilized to classify all constructs identified in the reviewed studies, categorizing them into Stimuli, Organism, and Response. Specifically, environmental stimuli were differentiated into socio-psychological and object stimuli (Rong Da Liang & Lim, 2020; Table 3).

Regarding the Organism, it was classified, following the Dual Factor Theory (DFT), into facilitators and inhibitors of green cosmetic consumers (Lavuri et al., 2022; Tandon et al., 2021). Facilitators and inhibitors, in turn, were categorized according to the two internal states of the organism: affective and cognitive states (Eroglu et al., 2001; Hsiao & Tang, 2021; Tables 4 and 5).

As for the Response, it represents the final phase of the decision-making process. Finally, as for other studies adopting the SOR theory, sociodemographic characteristics were considered as control variables due to their diverse effects on the purchase intentions of natural products (Kumar, Dhir, et al., 2021; Kumar, Talwar, et al., 2021; Lavuri et al., 2022).

For a brief description of constructs affecting decision-making process, please refer to the [Appendix](#).

5.1. Stimuli

5.1.1. Socio-psychological stimuli

Consumers with high health consciousness perceive green cosmetics as healthier than their conventional counterparts, viewing them as products that contribute to improved well-being (Ali et al., 2022; Kim & Chung, 2011; Kim & Seock, 2009). The absence of chemicals and synthetic materials leads health-conscious consumers to perceive green cosmetics as harmless (Kumar, Dhir, et al., 2021; Shimul et al., 2022; Simão et al., 2022). Consequently, consumers with a strong health consciousness are more inclined to purchase green cosmetics (Choi & Lee, 2019; Kumar, Dhir, et al., 2021; Tewary et al., 2021). Notably, it has been observed that consumers with high health consciousness exhibit a more positive attitude towards buying green cosmetics and are more likely to prefer such products (Ali et al., 2022; Ghazali et al., 2017; Kumar, Dhir, et al., 2021; Sharma & Lawande, 2022).

Similarly, consumers' environmental concern is seen as a prerequisite for green cosmetics consumption (Kumar, Dhir, et al., 2021), as it represents a significant antecedent of consumers' intention to purchase green cosmetics (Ahmad & Omar, 2018; Kaur et al., 2022; Suphasomboon & Vassanadumrongdee, 2022). Consumers are

Table 3. Environmental stimuli in reviewed studies.

Constructs	References
<i>Socio-psychological stimuli</i>	
Appearance consciousness	Ahmad et al. (2018), Hamelin et al. (2018), Kim and Chung (2011), and Sharma and Lawande (2022)
Environmental concern	Ahmad and Omar (2018), Ali et al. (2022), Al Mamun et al. (2020), Altintzoglou et al. (2021), Chin et al. (2018), Eberhart and Naderer (2017), Ghazali et al. (2017), Jaini et al. (2020a, 2020b), Joshi and Nulkar (2016), Kahraman and Kazançoğlu (2019), Kapoor et al. (2022), Kaur et al. (2022), Kim and Chung (2011), Kim and Seock (2009), Kumar, Dhir, et al. (2021), Laheri (2020), Mishra (2018), Morone et al. (2021), Moslehpour et al. (2021), Nguyen et al. (2019), Papista and Dimitriadis (2019), Patak et al. (2021), Pop et al. (2020), Pudaruth et al. (2015), Quoquab et al. (2020), Sadiq et al. (2021), Sajinčić et al. (2021), Sharma and Lawande (2022), Shimul et al. (2022), Simão et al. (2022), Suphasomboon and Vassanadumrongdee (2022), Tewary et al. (2021), Zollo et al. (2021), and Zahid et al. (2018)
Health consciousness	Ahmad and Omar (2018), Ali et al. (2022), Altintzoglou et al. (2021), Choi and Lee (2019), Eberhart and Naderer (2017), Ghazali et al. (2017), Jaini et al. (2020a, 2020b), Kapoor et al. (2022), Kim and Chung (2011), Kim and Seock (2009), Kumar, Dhir, et al. (2021), Laheri (2020), Mishra (2018), Nguyen et al. (2019), Pop et al. (2020), Pudaruth et al. (2015), Quoquab et al. (2020), Sharma and Lawande (2022), Shimul et al. (2022), Simão et al. (2022), Sadiq et al. (2021), Sajinčić et al. (2021), and Tewary et al. (2021)
LOHAS consumption tendency	Lavuri et al. (2022), Lin et al. (2018), Patak et al. (2021), and Pudaruth et al. (2015)
Social norms	Afonso et al. (2016), Ali et al. (2022), Al Mamun et al. (2020), Askadilla and Krisjanti (2017), Bharti et al. (2022), Chin et al. (2018), Choi and Lee (2019), Fatoki (2020), Ghazali et al. (2017), Ha et al. (2021), Hamelin et al. (2018), Hsu et al. (2017), Kapoor et al. (2022), Kim and Chung (2011), Lili et al. (2022), Limbu et al. (2022), Lin et al. (2018), Mishra (2018), Morone et al. (2021), Papista and Dimitriadis (2019), Patak et al. (2021), Pop et al. (2020), Premi et al. (2019), Pudaruth et al. (2015), Seal and Bag (2022), Shimul et al. (2022), Singhal and Malik (2018), Suphasomboon and Vassanadumrongdee (2022), Susanty et al. (2021), Tengli and Srinivasan (2022), Zahid et al. (2018), and Zollo et al. (2021)
<i>Object stimuli</i>	
Advertising	Ali et al. (2022), Chockalingam and Isreal (2016), Gani et al. (2022), Ha et al. (2021), Hamelin et al. (2018), Jaini et al. (2020a), Kaur et al. (2022), Kumar, Polonsky, et al. (2021), Lavuri et al. (2022), Lee and Chen (2019), Lili et al. (2022), Lin et al. (2018), Mansoor et al. (2022), Papista and Dimitriadis (2019), Patak et al. (2021), Pop et al. (2020), Premi et al. (2019), Pudaruth et al. (2015), Rajagopal (2007), Seal and Bag (2022), Susanty et al. (2021), and Zahid et al. (2018)
Brand	Al-Haddad et al. (2020), Chin et al. (2018), Choi and Lee (2019), Gani et al. (2022), Joshi and Nulkar (2016), Kahraman and Kazançoğlu (2019), Kumar, Polonsky, et al. (2021), Kumar, Talwar, et al. (2021), Lavuri et al. (2022), Lee and Chen (2019), Lili et al. (2022), Mansoor et al. (2022), Papista and Dimitriadis (2019), Premi et al. (2019), Pudaruth et al. (2015), Rajagopal (2007), Seal and Bag (2022), and Tewary et al. (2021)
Eco-label	Eberhart and Naderer (2017), Joshi and Nulkar (2016), Kahraman and Kazançoğlu (2019), Kapoor et al. (2022), Kim and Seock (2009), Kumar, Dhir, et al. (2021), Kumar, Polonsky, et al. (2021), Laheri (2020), Lee and Chen (2019), Morone et al. (2021), Pudaruth et al. (2015), Sadiq et al. (2021), and Zahid et al. (2018)
Green packaging	Eberhart and Naderer (2017), Kim and Seock (2009), Laheri (2020), Moslehpour et al. (2021), Pudaruth et al. (2015), Seal and Bag (2022), and Singhal and Malik (2018)
Natural content	Ali et al. (2022), Chockalingam and Isreal (2016), Eberhart and Naderer (2017), Kim and Seock (2009), Kumar, Dhir, et al. (2021), Kumar, Talwar, et al. (2021), Laheri (2020), Pudaruth et al. (2015), Seal and Bag (2022), and Simão et al. (2022)
Product availability	Afonso et al. (2016), Ali et al. (2022), Al Mamun et al. (2020), Chockalingam and Isreal (2016), Kaur et al. (2022), Kumar, Dhir, et al. (2021), Kumar, Talwar, et al. (2021), Laheri (2020), Pudaruth et al. (2015), Sadiq et al. (2021), Seal and Bag (2022), Singhal and Malik (2018), Tewary et al. (2021), and Zollo et al. (2021)
Product origin Promotion	Hsu et al. (2017), Kahraman and Kazançoğlu (2019) and Kumar, Dhir, et al. (2021) Chockalingam and Isreal (2016), Lin et al. (2018), Patak et al. (2021), Pudaruth et al. (2015), and Rajagopal (2007)

Table 4. Facilitators in reviewed studies.

Constructs	References
<i>Cognitive Facilitators</i>	
Attitudes	Ali et al. (2022), Altintzoglou et al. (2021), Al Mamun et al. (2020), Askadilla and Krisjanti (2017), Chin et al. (2018), Ghazali et al. (2017), Fatoki (2020), Ha et al. (2021), Hamelin et al. (2018), Hsu et al. (2017), Jaini et al. (2020a, 2020b), Joshi and Nulkar (2016), Kapoor et al. (2022), Kim and Chung (2011), Kim and Seock (2009), Lavuri et al. (2022), Lili et al. (2022), Limbu et al. (2022), Mishra (2018), Moslehpour et al. (2021), Nguyen et al. (2019), Pop et al. (2020), Premi et al. (2019), Pudaruth et al. (2015), Quoquab et al. (2020), Sajinčić et al. (2021), Singhal and Malik (2018), Sharma and Lawande (2022), Shimul et al. (2022), Susanty et al. (2021), Tengli and Srinivasan (2022), and Tewary et al. (2021)
Perceived behavioural control	Ali et al. (2022), Al Mamun et al. (2020), Askadilla and Krisjanti (2017), Fatoki (2020), Ghazali et al. (2017), Hamelin et al. (2018), Hsu et al. (2017), Limbu et al. (2022), Kim and Chung (2011), Kim and Seock (2009), Premi et al. (2019), Sharma and Lawande (2022), Shimul et al. (2022), Susanty et al. (2021), and Tengli and Srinivasan (2022)
Personal norms	Bharti et al. (2022), Fatoki (2020), Gani et al. (2022), Hamelin et al. (2018), Jaini et al. (2020a, 2020b), Kapoor et al. (2022), Premi et al. (2019), Pudaruth et al. (2015), Quoquab et al. (2020), and Seal and Bag (2022)
Product Knowledge	Ghazali et al. (2017), Kim and Chung (2011), Kumar, Polonsky, et al. (2021), Lin et al. (2018), Limbu et al. (2022), Mansoor et al. (2022), Nguyen et al. (2019), Patak et al. (2021), Papista and Dimitriadis (2019), Pudaruth et al. (2015), Sajinčić et al. (2021), Seal and Bag (2022), Sharma and Lawande (2022), Singhal and Malik (2018), Susanty et al. (2021), Tengli and Srinivasan (2022), and Zollo et al. (2021)
<i>Affective Facilitators</i>	
Openness to Change	Kumar, Talwar, et al. (2021), Mishra (2018), and Sajinčić et al. (2021)
Perceived Product Quality	Afonso et al. (2016), Ahmad and Omar (2018), Al-Haddad et al. (2020), Bharti et al. (2022), Chockalingam and Isreal (2016), Choi and Lee (2019), Eberhart and Naderer (2017), Ghazali et al. (2017), Ha et al. (2021), Kapoor et al. (2022), Kaur et al. (2022), Kim and Seock (2009), Kumar, Polonsky, et al. (2021), Kumar, Talwar, et al. (2021), Laheri (2020), Lavuri et al. (2022), Lili et al. (2022), Lin et al. (2018), Moslehpour et al. (2021), Nguyen et al. (2019), Premi et al. (2019), Rajagopal (2007), Shimul et al. (2022), Simão et al. (2022), Suphasomboon and Vassanadumrongdee (2022), Papista and Dimitriadis (2019), Pudaruth et al. (2015), Zahid et al. (2018), and Zollo et al. (2021)
Price Sensitivity	Hsu et al. (2017), Kahraman and Kazaçoğlu (2019), Kaur et al. (2022), Kim and Seock (2009), Morone et al. (2021), Moslehpour et al. (2021), Seal and Bag (2022), Singhal and Malik (2018), and Zahid et al. (2018)
Trust	Choi and Lee (2019), Joshi and Nulkar (2016), Kahraman and Kazaçoğlu (2019), Kumar, Talwar, et al. (2021), Lavuri et al. (2022), Lee and Chen (2019), Papista and Dimitriadis (2019), and Singhal and Malik (2018)

Table 5. Inhibitors in reviewed studies.

Inhibitors	References
<i>Cognitive Inhibitors</i>	
Lack of Information	Eberhart and Naderer (2017), Joshi and Nulkar (2016), Kumar, Dhir, et al. (2021), Lin et al. (2018), Morone et al. (2021), and Sajinčić et al. (2021)
Lack of Motivation	Afonso et al. (2016), Eberhart and Naderer (2017), Kahraman and Kazaçoğlu (2019), and Sadiq et al. (2021)
Previous Negative Experience	Ahmad and Omar (2018) and Sadiq et al. (2021)
<i>Affective Inhibitors</i>	
Greenwashing	Joshi and Nulkar (2016), Kahraman and Kazaçoğlu (2019), Lin et al. (2018), Sadiq et al. (2021), and Simão et al. (2022)
Perceived High Price	Afonso et al. (2016), Bharti et al. (2022), Chockalingam and Isreal (2016), Eberhart and Naderer (2017), Laheri (2020), Lin et al. (2018), Pudaruth et al. (2015), Rajagopal (2007), Sadiq et al. (2021), Sajinčić et al. (2021), Susanty et al. (2021), and Tewary et al. (2021)
Resistance to Change Skepticism	Hamelin et al. (2018), Laheri (2020), Mishra (2018), Sadiq et al. (2021), and Seal and Bag (2022)
	Afonso et al. (2016), Bharti et al. (2022), Kahraman and Kazaçoğlu (2019), Kumar, Dhir, et al. (2021), Kumar, Talwar, et al. (2021), Morone et al. (2021), Pudaruth et al. (2015), and Sadiq et al. (2021)

increasingly attentive to eco-friendly products and their production processes, with environmental concern being a key factor in their decision-making process (Kapoor et al., 2022; Simão et al., 2022; Zollo et al., 2021). It emerges that as consumers' awareness of environmental issues increases, their preference for green cosmetics also increases, despite any obstacles related to information, availability, or price (Kumar, Dhir, et al., 2021; Sadiq et al., 2021; Tewary et al., 2021). High environmental concern is positively linked to consumers' favorable attitude towards purchasing green cosmetics (Ali et al., 2022; Ghazali et al., 2017; Pop et al., 2020; Shimul et al., 2022), product's origin (Kumar, Dhir, et al., 2021) and social reassurance (Zollo et al., 2021). These aspects, in turn, influence consumers' purchase intentions.

Many studies have also emphasized the importance of social norms in affecting consumers' behavior towards green cosmetics (Afonso et al., 2016; Ali et al., 2022; Lin et al., 2018; Morone et al., 2021; Pudaruth et al., 2015; Zahid et al., 2018), as consumers feel reassured by positive opinions of other people (Zollo et al., 2021), especially celebrities or influencers (Hsu et al., 2017; Lili et al., 2022). In this way, consumers recognize in purchase of green cosmetics a social value (Choi & Lee, 2019; Suphasomboon & Vassanadumrongdee, 2022), reducing their negative perception on these products (Bharti et al., 2022). Conversely, Hamelin et al. (2018) highlight that social approval can also negatively affect purchase intention, especially when an individual is subject to religion restrictions for social acceptance. However, other studies have shown that social norms do not significantly affect green cosmetics consumption (Al Mamun et al., 2020; Mishra, 2018; Tengli & Srinivasan, 2022), inasmuch consumers adopt these products in a private setting (Ghazali et al., 2017; Papista & Dimitriadis, 2019).

Some studies have highlighted the significance of appearance consciousness as another important socio-psychological stimulus, since consumers choose green cosmetics to satisfy their need for beauty (Ahmad & Omar, 2018; Hamelin et al., 2018). Consumers perceive green cosmetics as a direct means to maintain their physical appearance and achieve an overall attractive physique (Sharma & Lawande, 2022). This perception arises from the belief that green cosmetics are more natural compared to their conventional counterparts and, therefore, capable of promoting better healthy skin in a natural way (Kim & Chung, 2011).

Another socio-psychological stimulus identified in the literature is associated with LOHAS (lifestyles of health and sustainability) consumption tendency. Consumers who are more health and environmentally conscious tend to trust information from individuals leading health-conscious and sustainable lifestyles (Lavuri et al., 2022; Lin et al., 2018; Patak et al., 2021; Pudaruth et al., 2015).

5.1.2. Object stimuli

Advertising stands out as the most detected object stimulus, playing a crucial role in creating product awareness and increasing the purchase intention toward green cosmetics (Kumar, Polonsky, et al., 2021), influencing and convincing hesitant or non-regular consumers (Kaur et al., 2022; Lin et al., 2018; Mansoor et al., 2022; Premi et al., 2019; Seal & Bag, 2022; Susanty et al., 2021). Social and mass media have been identified as important channels (Ali et al., 2022; Hamelin et al., 2018; Pop et al., 2020), along with the impact of word-of-mouth and electronic word-of-mouth, particularly through

opinion leaders or respected public figures, conveying powerful messages on environmental issues (Chockalingam & Isreal, 2016; Jaini et al., 2020b; Papista & Dimitriadis, 2019).

The brand emerges as another influential stimulus, enhancing the perceived product quality and positively affecting consumers' decision to purchase green cosmetics (Kumar, Talwar, et al., 2021; Rajagopal, 2007; Tewary et al., 2021). Brands provide reassurance to consumers who choose green products, unaffected by potential negative influences (Lili et al., 2022; Mansoor et al., 2022). Consumers respond positively to brand loyalty and image, valuing brand credibility in their decision-making process (Al-Haddad et al., 2020; Choi & Lee, 2019; Lili et al., 2022; Papista & Dimitriadis, 2019; Premi et al., 2019).

Eco-labelling has also shown a positive impact on consumers, as it adds to their favorable perceptions of green cosmetics (Kapoor et al., 2022; Kumar, Polonsky, et al., 2021; Morone et al., 2021). However, the lack of a clear and standardized regulatory framework for green cosmetics has led to multiple certification bodies admitting different percentages of natural or organic ingredients, causing confusion and resistance among consumers (Laheri, 2020; Morone et al., 2021; Sadiq et al., 2021). A well-defined eco-label could aid consumers in recognizing the quality and high standards of green cosmetics in terms of environmental and health-related aspects (Kahraman & Kazançoğlu, 2019; Kumar, Dhir, et al., 2021; Morone et al., 2021).

Furthermore, product availability has also been identified as a stimulus influencing the decision-making process of green cosmetic consumers (Al Mamun et al., 2020; Pudaruth et al., 2015; Tewary et al., 2021). Consumers attach great importance to the place where green cosmetics are sold or available, as convenience plays a crucial role in their choices (Kumar, Talwar, et al., 2021; Testa et al., 2021). Conversely, consumers are less likely to purchase green cosmetics when they face challenges in finding them or when they are sold in shops located far from their homes (Afonso et al., 2016; Chockalingam & Isreal, 2016; Kumar, Dhir, et al., 2021; Laheri, 2020). In this way, consumers tend to prefer conventional cosmetics that are easily available in the market (Sadiq et al., 2021).

Object stimuli are also associated with the natural content and origin of the product. Previous studies have demonstrated that consumers highly concerned about health positively evaluate the absence of chemicals and non-toxic ingredients during their decision-making process for green cosmetics (Eberhart & Naderer, 2017; Kim & Seock, 2009; Kumar, Dhir, et al., 2021; Kumar, Talwar, et al., 2021; Laheri, 2020). Additionally, consumers consider the natural content of products as a critical factor, especially those with a high environmental concern, as it enhances their perceived product quality (Simão et al., 2022).

Other studies have revealed that product origin influences green cosmetic consumers' choices. Consumers purchase these products to support local and domestic producers while reducing environmental costs associated with transportation (Hsu et al., 2017; Kumar, Dhir, et al., 2021). However, Kahraman and Kazançoğlu's (2019) study has pointed out that consumers may attribute higher values to foreign products due to greater trust in non-domestic brands.

Green packaging is identified as another significant object stimulus. Consumers respond positively to the use of recyclable or green packaging, showcasing their increasing environmental concern and interest in pollution issues (Eberhart & Naderer, 2017;

Laheri, 2020; Pudaruth et al., 2015; Singhal & Malik, 2018). Moslehpour et al. (2021) found that adopting green packaging could convince consumers to pay a premium for green cosmetics, as it adds environmental value to the products.

Finally, sales promotions or discounts have a positive impact on consumers (Patak et al., 2021; Pudaruth et al., 2015; Rajagopal, 2007). These marketing strategies enable firms to reach different consumer segments, contributing to consumers' positive responses and purchase intentions for green cosmetics (Chockalingam & Isreal, 2016; Lin et al., 2018).

5.2. Organism

5.2.1. Cognitive facilitators

Attitudes towards green cosmetics play a vital role as the main cognitive factor influencing consumers' purchase intentions. Many authors consider attitudes as one of the most significant predictors of consumers' willingness to buy green cosmetics (Ali et al., 2022; Hsu et al., 2017; Lavuri et al., 2022; Nguyen et al., 2019; Shimul et al., 2022; Susanty et al., 2021; Tengli & Srinivasan, 2022). When consumers hold positive attitudes towards green products, their likelihood of choosing green cosmetics increases (Altintzoglou et al., 2021; Lili et al., 2022; Sharma & Lawande, 2022; Tewary et al., 2021).

Perceived behavioral control is another essential cognitive facilitator of consumers' purchase intentions for green cosmetics. When consumers perceive that they have the necessary abilities, opportunities, and resources to buy these products, they are more inclined to do so (Fatoki, 2020; Hamelin et al., 2018; Hsu et al., 2017; Sharma & Lawande, 2022; Susanty et al., 2021). Several studies have found a positive association between attitudes and perceived behavioral control, suggesting that these factors often work in tandem to influence consumers' purchase intentions (Ali et al., 2022; Askadilla & Krisjanti, 2017; Fatoki, 2020; Susanty et al., 2021).

Moreover, individuals who possess a clear self-concept and are environmentally conscious feel morally obligated to make responsible choices, such as purchasing green cosmetics (Gani et al., 2022; Premi et al., 2019; Quoquab et al., 2020). Personal norms, in fact, play a role in consumers' choices as they are driven by their personal values and interests rather than external influences from peers, family members, or reference groups (Bharti et al., 2022; Jaini et al., 2020a, 2020b; Seal & Bag, 2022).

Lastly, the level of product knowledge is fundamental in encouraging consumers' purchase intentions (Kim & Chung, 2011; Limbu et al., 2022; Tengli & Srinivasan, 2022; Zollo et al., 2021). Consumers who possess high knowledge about the product recognize its qualities and functions, leading to an increased perceived value (Ghazali et al., 2017) as well as paying more attention to advertising (Kumar, Polonsky, et al., 2021). Furthermore, consumers are positively influenced by products that they have previously used with a positive judgment (Papista & Dimitriadis, 2019; Susanty et al., 2021).

5.2.2. Affective facilitators

One of the most important affective facilitators in consumers' decision-making process is represented by the perceived product quality, which can be different from consumer to consumer. This can be attributed to factors such as the degree of satisfaction from using green cosmetics, the perceived value they offer, and the recognition of functional values

such as safety, efficacy, scent, reliability, and durability (Ahmad & Omar, 2018; Ghazali et al., 2017; Lavuri et al., 2022; Lin et al., 2018; Nguyen et al., 2019; Papista & Dimitriadis, 2019; Simão et al., 2022).

Perceived product quality often goes hand in hand with another affective facilitator, such as consumers' trust in green cosmetics (Lavuri et al., 2022). Trust not only influences consumers' attitudes but also enhances their purchase intentions (Kahraman & Kazançoğlu, 2019; Lee & Chen, 2019). Building trust in the green cosmetics sector facilitates consumers' choices and reduces skepticism, fostering a strong consumer-green brand relationship (Choi & Lee, 2019; Kumar, Talwar, et al., 2021; Lavuri et al., 2022; Papista & Dimitriadis, 2019).

Price sensitivity also plays a significant and positive role in consumers' purchase intentions for green cosmetics, as consumers associate higher prices with more natural products (Kahraman & Kazançoğlu, 2019; Morone et al., 2021). Hsu et al. (2017) found that consumers perceive green cosmetics as prestige goods, and higher-priced products are chosen to gain social prestige.

Lastly, the current SLR reveals that consumers' purchase intention is also positively influenced by openness to change, signifying its vital role as an emotional state in adopting or trying new products like green cosmetics (Mishra, 2018; Sajinčič et al., 2021). Consumers with higher openness to change are more motivated to buy green cosmetics because they positively evaluate their perceived benefits (Kumar, Talwar, et al., 2021).

5.2.3. Cognitive inhibitors

The lack of information about green cosmetics emerges as one of the most significant cognitive inhibitors in the literature. Consumers who possess limited information about green cosmetics are less likely to purchase them (Joshi & Nulkar, 2016; Sajinčič et al., 2021). This lack of information is often due to the absence of marketing strategies or educational campaigns (Eberhart & Naderer, 2017; Joshi & Nulkar, 2016; Lin et al., 2018). As a result, they may struggle to recognize natural products and become susceptible to fake news about the product (Kumar, Talwar, et al., 2021; Morone et al., 2021; Sajinčič et al., 2021). When consumers lack information about green cosmetics, they may develop a negative perception of these products and subsequently lack the motivation to consider their sustainability benefits (Eberhart & Naderer, 2017). Consequently, they may be disinclined to purchase green cosmetics and opt for conventional products instead (Eberhart & Naderer, 2017; Kahraman & Kazançoğlu, 2019; Sadiq et al., 2021).

Similarly, negative experiences with green cosmetics can deter consumers from repurchasing them in the future (Ahmad & Omar, 2018; Sadiq et al., 2021). Such negative experiences influence consumers' perception of the product quality and may discourage them from revisiting green cosmetics (Ahmad & Omar, 2018).

5.2.4. Affective inhibitors

Several studies have consistently shown that one of the primary affective inhibitors of green cosmetics purchase intention is the perceived high price. Consumers often believe that green cosmetics are more expensive than conventional ones, leading them to view the price as a potential risk factor for their household finances, prompting them to stick with their traditional counterparts (Lin et al., 2018; Susanty et al., 2021; Tewary et al.,

2021). As a result, the perception of higher costs hinders their preference for green cosmetics, and they may choose conventional alternatives instead (Afonso et al., 2016; Bharti et al., 2022; Sadiq et al., 2021).

Another significant factor that negatively affects consumers' preferences is the perception of greenwashing phenomenon. This is because some companies, for the lack of information and a clear regulatory framework, try to appeal to green consumers by providing misleading information about their products' environmental friendliness (Kahraman & Kazançoğlu, 2019). Specifically, they use the word "natural" improperly, adopt green colors or images of flowers and plants, or indicate vegetable ingredients, even if present in minimal quantities (Bozza et al., 2022). However, this deceptive strategy can harm the company's reputation in the long run and significantly inhibit consumers' behavior (Sadiq et al., 2021), leading to a negative perception of green products (Joshi & Nulkar, 2016).

Moreover, the perception of greenwashing can cause skepticism among consumers (Kahraman & Kazançoğlu, 2019; Sadiq et al., 2021; Simão et al., 2022). They may struggle to verify the authenticity, absence of chemical ingredients, and green claims of green cosmetics, resulting in a loss of trust in the green cosmetic sector (Kumar, Dhir, et al., 2021; Kumar, Talwar, et al., 2021; Pudaruth et al., 2015) and becoming skeptical about their adoption (Bharti et al., 2022).

Lastly, resistance to change has been identified as a barrier to green cosmetics consumption. Some consumers may be reluctant to adopt new products that would alter their habits and lifestyles (Laheri, 2020; Mishra, 2018; Sadiq et al., 2021). This resistance could be influenced by perceptions of green cosmetics having a shorter shelf-life compared to conventional ones (Sadiq et al., 2021) or by cultural context (Hamelin et al., 2018; Mishra, 2018; Seal & Bag, 2022).

5.3. Response

In most of the reviewed studies (40), purchase intention has been identified as the main final response in consumers' decision-making process. Many scholars consider purchase intention as a significant construct that effectively explains consumers' behavior, as higher purchase intention indicates a greater likelihood or willingness to buy green cosmetics (Sharma & Lawande, 2022; Simão et al., 2022; Suphasomboon & Vassanadumrongdee, 2022). Furthermore, in some studies, purchase intention continues to play a key role as the preceding step to the final response, which is the consumers' actual purchase behavior (Al Mamun et al., 2020; Askadilla & Krisjanti, 2017; Laheri, 2020; Premi et al., 2019; Susanty et al., 2021; Tengli & Srinivasan, 2022). In these cases, the real purchase behavior is considered as the final response in 17 reviewed articles (Eberhart & Naderer, 2017; Mansoor et al., 2022; Susanty et al., 2021). Some studies identified other final responses, such as brand love (Kumar, Dhir, et al., 2021) and attitudes towards green cosmetics (Altintzoglou et al., 2021; Tewary et al., 2021).

5.4. Sociodemographic variables

Among the reviewed studies 11 focused on females, who constitute the major target market for green cosmetics (Al-Haddad et al., 2020; Chin et al., 2018; Hamelin et al.,

2018; Joshi & Nulkar, 2016; Kim & Seock, 2009; Lin et al., 2018; Pudaruth et al., 2015; Shimul et al., 2022; Singhal & Malik, 2018; Tewary et al., 2021). Additionally, two studies revealed that females are more likely to purchase green cosmetics compared to males due to their more sustainable lifestyles, higher altruistic values, and greater emphasis on self-image (Al Mamun et al., 2020; Susanty et al., 2021). Conversely, Ali et al. (2022) focused solely on men, showing their growing interest in green cosmetics, while Quoquab et al. (2020) found that males are more engaged in buying green cosmetic products due to their heightened sensitivity to environmental issues.

Regarding age, only two studies reported a preference for green cosmetics among older individuals (Hamelin et al., 2018; Patak et al., 2021). In contrast, eight studies exclusively analyzed the consumption behavior of younger consumers, who are considered more environmentally and health-conscious than elders (Fatoki, 2020; Kim & Seock, 2009; Lili et al., 2022; Limbu et al., 2022; Moslehpour et al., 2021; Seal & Bag, 2022; Sharma & Lawande, 2022; Tewary et al., 2021).

Education level was identified as an important factor positively influencing green cosmetics consumers in five studies (Al Mamun et al., 2020; Kaur et al., 2022; Patak et al., 2021; Seal & Bag, 2022; Susanty et al., 2021).

Regarding occupation, Lavuri et al. (2022) found that employed individuals are more likely to purchase green cosmetics compared to the unemployed. Similarly, three studies demonstrated that a higher income significantly affects consumers' purchase intention toward green cosmetics (Hamelin et al., 2018; Kaur et al., 2022; Singhal & Malik, 2018).

Moreover, Hamelin et al. (2018) showed a positive relationship between household size and purchase intention, and Kumar, Dhir, et al. (2021) considered household size as a moderator of the relationship between environmental concern and purchase intention.

On the other hand, some studies found that age, gender, income, and education have no significant effect on the purchase intention of green cosmetics (Kumar, Dhir, et al., 2021; Kumar, Talwar, et al., 2021; Lavuri et al., 2022; Sadiq et al., 2021; Suphasomboon & Vassanadumrongdee, 2022; Tengli & Srinivasan, 2022), as well as educational level (Hamelin et al., 2018; Singhal & Malik, 2018). Among the remaining studies (32), socio-demographic characteristics of the sample were reported, but their impact on green consumption behavior was not considered.

6. Research agenda

Although several core factors influencing consumers' intention and behavior to purchase green cosmetics have been identified by scholars, there are still some under-explored research areas that require further investigation.

One of the limitations in existing studies is the lack of clear reporting on data collection procedures and methodologies, leading to weak conclusions from a methodological standpoint. Additionally, the sampling procedures used in most studies, such as convenience sampling, do not allow for robust and generalized results. Only one study (Altintzoglou et al., 2021) has adopted a representative consumer sample. Furthermore, many published studies focus on a single country or specific city, limiting the extension of conclusions to a broader context. To address these limitations, future studies should employ well-defined data collection methodologies, consider

representative consumers' samples, and investigate different countries to evaluate potential differences in cultural values.

Another under-explored area is the use of experimental approaches to better understand consumers' behavior. Only four studies have adopted experimental methods, and further investigations should simulate the real market to provide more realistic insights into consumers' choices. Understanding the price premium that consumers are willing to recognize for green cosmetics compared to conventional products is crucial, as it can impact market volume and demand.

Additionally, while many studies have focused on facilitators of purchase intention towards green cosmetics, few have explored inhibitors of consumers' consumption. This is partly due to the research questions of existing studies, which primarily aim to evaluate the drivers of consumers' behavior. To gain a more comprehensive understanding, future studies should identify both facilitators and inhibitors of consumers' decision-making processes. Adopting suitable theories or models can help explain both drivers and barriers effectively. Specifically, in the literature on consumer behavior, only three papers have adopted the SOR paradigm to explain the decision-making process for green cosmetics (Kumar, Dhir, et al., 2021; Lavuri et al., 2022; Mansoor et al., 2022).

Moreover, studies should consider the specific sub-category of green cosmetics under study. Cosmetics products can be divided into two sub-categories: luxury make-up and styling cosmetics, and personal care products purchased out of necessity. The decision-making process may vary depending on the specific sub-category of green cosmetics being studied. Therefore, future research should take this distinction into account in the analysis of determinants affecting consumers of green cosmetics.

7. Conclusions and implications

This study conducted a systematic review of 60 studies to gain insights into the consumers' decision-making process regarding green cosmetics. Through the lens of the SOR paradigm, this review identified and categorized the main environmental stimuli that facilitate or inhibit consumers' choices towards green cosmetics, offering a clear interpretation of their decision-making process.

The findings of this SLR have important implications for theory, management, and policy. From a theoretical perspective, this study contributes to the existing literature by providing a comprehensive and complete understanding of consumers' decision-making process when purchasing green cosmetics. Researchers in this domain can benefit from these insights to guide their future studies on consumers' choices regarding green cosmetics.

From a managerial standpoint, having a clear understanding of the factors influencing purchase intentions can help cosmetic companies develop targeted marketing strategies that meet consumers' needs and expectations. Companies can emphasize the positive effects of green cosmetics on health and the environment, as consumers often lack awareness of these products. Moreover, companies should avoid misleading advertising, as greenwashing can lead to consumer skepticism. Leveraging social norms and utilizing influential figures like celebrities and influencers in advertising can enhance the effectiveness of marketing efforts. Additionally, sales promotions and discounts can help overcome the barrier of high prices, encouraging consumers to try green cosmetics.

In terms of policy implications, the results of this review emphasize the need for a unified, clear, and well-defined certification or regulatory framework for green cosmetics. A consistent and reliable certification system would allow consumers to make informed choices regarding green cosmetics, resolving the problem of green-washing as well as improving consumers' trust. Additionally, offering subsidies to support the growth of the green cosmetic industry together with a widespread education campaign, can raise firms' competitiveness as well as consumers' interest on these products. This could help to reach the goals of the 2030 Agenda and the European Green Deal, aimed at fostering a sustainable consumption and production.

However, this study has certain limitations worth noting. The selection process, including the criteria for inclusion and exclusion, was based on a well-established protocol developed by our research team, but it may still be influenced by subjectivity. Thus, there is a possibility that relevant studies focusing on consumers of green cosmetics might have been overlooked due to search term limitations or database restrictions. Furthermore, while the SOR paradigm proves helpful in understanding consumers' decision-making for green cosmetics, it should not be considered the sole comprehensive framework to explain consumer behavior. It is essential to recognize that every theory has its limitations, and researchers are encouraged to explore alternative theoretical frameworks that can provide a more holistic understanding of all determinants impacting consumers' decision-making processes.

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Data availability statement

The data that support the findings of this study are openly available in Mendeley Data at <http://doi.org/10.17632/cn2ddk982f.1>.

Author contributions

Riccardo Testa contributed to the study conception and design and wrote the original draft as well as the reviewed one. Giuseppina Rizzo worked with Riccardo Testa to perform the literature search and data analysis. Giorgio Schifani contributed to write the first draft. József Tóth contributed to the investigation process. Giuseppina Migliore critically revised the work and supervised the study. All authors read and approved the final manuscript.

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Appendix

Brief description of constructs affecting decision-making process and number of studies in which they have been detected.

SOR dimension	Construct	No. of studies	Description	Relevant studies
Stimuli	Advertsing	21	Marketing strategy to attract green cosmetics consumers via several media	Gani et al. (2022) and Mansoor et al. (2022)
	Apperance consciousness	4	Individual's desire to improve his/her external appearance	Ali et al. (2022) and Sharma and Lawande (2022)
	Brand	18	Consumers' knowledge, loyalty and credibility for a specific green cosmetic brand	Lili et al. (2022) and Mansoor et al. (2022)
	Eco-label	13	Logo in the label referring to natural, organic or green cosmetic	Kapoor et al. (2022) and Kumar, Polonsky, et al. (2021)
	Environmental concern	35	Individual's feeling level toward environmental issues	Nguyen et al. (2019) and Simão et al. (2022)
	Green packaging	7	Recyclable, reusable or biodegradable packaging in green cosmetics	Moslehpour et al. (2021) and Singhal and Malik (2018)
	Health consciousness	24	Consumers' awareness on their individual health state	Kumar, Dhir, et al. (2021) and Tewary et al. (2021)
	LOHAS consumption tendency	4	Trust towards information that come from other LOHAS consumers	Lavuri et al. (2022) and Patak et al. (2021)
	Natural content	10	Product attribute referring to the content of natural ingredients of green cosmetic	Kumar, Dhir, et al. (2021) and Simão et al. (2022)
	Product availability	14	It represents the ease to find or to buy a green cosmetic	Al Mamun et al. (2020) and Zollo et al. (2021)
	Product origin	3	Product attribute referring to the origin of green cosmetic	Hsu et al. (2017) and Kumar, Dhir, et al. (2021)
	Promotion	5	Marketing strategy to attract green cosmetics consumers via sales promotion or discount	Kaur et al. (2022) and Patak et al. (2021)
	Social norms	32	Social influence that an individual obtains from significant relevant people in his/her life	Ha et al. (2021) and Shimul et al. (2022)
Organism (facilitators)	Attitudes	33	Degree to which a person has a favourable or unfavourable evaluation, feelings, and tendencies toward green cosmetics	Ali et al. (2022) and Hamelin et al. (2018)
	Openness to change	3	It stimulates and pushes individuals to change their opinion to buy a new product such as green cosmetic	Kumar, Talwar, et al. (2021) and Mishra (2018)

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SOR dimension	Construct	No. of studies	Description	Relevant studies
	Perceived behavioural control	15	Individual's capacity to recognize his/her possession of resources, abilities and opportunities to perform a behavior	Ghazali et al. (2017) and Susanty et al. (2021)
	Perceived product quality	29	Degree of consumers' satisfaction with a green cosmetic product or its quality perception	Ahmad and Omar (2018) and Suphasomboon and Vassanadumrongdee (2022)
	Personal norms	11	Individual's choices are driven by personal and egoistic interests rather than altruistic ones	Jaini et al. (2020b, 2020a)
	Price sensitivity	9	Consumers recognize the high price of green cosmetics as a quality attribute	Hsu et al. (2017) and Morone et al. (2021)
	Product knowledge	17	Individual's previous experience or knowledge about green cosmetics	Seal and Bag (2022) and Tengli and Srinivasan (2022)
	Trust	8	Consumers' trust in green cosmetics regardless of label or brand	Kahraman and Kazançoğlu (2019) and Lavuri et al. (2022)
Organism (inhibitors)	Greenwashing	5	Not corrected communication of firms about their really environmental practices or products	Kahraman and Kazançoğlu (2019) and Simão et al. (2022)
	Perceived high price	12	Consumers perceive green cosmetics more expensive than conventional ones	Bharti et al. (2022) and Sadiq et al. (2021)
	Lack of information	6	Consumers do not have enough knowledge and information on green cosmetics	Eberhart and Naderer (2017) and Lin et al. (2018)
	Lack of motivation	4	Consumers do not have motivations to buy green cosmetics	Eberhart and Naderer (2017) and Kahraman and Kazançoğlu (2019)
	Previous negative experience	2	Consumers' dissatisfaction after they have tried green cosmetics	Ahmad and Omar (2018) and Sadiq et al. (2021)
	Resistance to change	5	Consumers do not want change their consumption habits preferring conventional cosmetics	Mishra (2018) and Sadiq et al. (2021)
	Skepticism	8	Lack of consumers' trust in natural or organic green cosmetics labelling	Bharti et al. (2022) and Kumar, Polonsky, et al. (2021)
Response	Purchase behaviour	17	Consumers' choice to purchase a given product	Mansoor et al. (2022) and Susanty et al. (2021)
	Purchase intention	40	Consumers' likelihood or willingness to purchase a given product	Lili et al. (2022) and Sharma and Lawande (2022)