BJMkt
BRAZILIAN JOURNAL OF MARKETING

OPEN ACCESS

e-ISSN: 2177-5184

https://doi.org/10.5585/2025.29924

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Sustainable beauty: decoding motivational factors in green cosmetics consumption

Keloane Mendes da Silva [a] **Luciana Florêncio de Almeida**[b] **Marcelo Luiz Dias da Silva Gabriel** [c]

Escola Superior de Propaganda e marketing (ESPM), Programa de Pós-graduação, Escola: Programa de Pós-graduação em Comportamento do Consumidor (PPGCC), São Paulo, SP, Brasil

Editor-in-Chefe: André Torres Urdan
Scientific Editor: Leonardo Vils
Evaluation Process: Double Blind Review

Received: 29 Nov. 2024
Approved: 05 Aug. 2025

Authors' notes
Conflict of interest: The authors have not declared any potential conflicts of interest
Corresponding author: Luciana Florêncio de Almeida - lflorencio@espm.br

Cite as – American Psychological Association (APA)

Silva, K. M. da, Almeida, L. F. de, & Gabriel, M. L. D. da S. Sustainable beauty: decoding motivational factors in green cosmetics consumption. *Brazilian Journal of Marketing*, São Paulo, *24*(4), p. 1-28, e29924. https://doi.org/10.5585/2025.29924

Abstract

Objective: To investigate the effect of environmental trust and motivations on the conscious consumption of green cosmetics in both social and ecological dimensions.
Method: A survey was conducted with 386 green cosmetics consumers using the Structural Equation Modeling method for data analysis.
Originality/Relevance: This research sought to add new findings to the studies on green cosmetics consumption behavior from the perspective of Self-Determination Theory (SDT), still scarcely applied in this consumer segment.
Results: The findings reveal that environmental trust plays a salient role as an antecedent in shaping consumption motivations, particularly within the dimensions of external regulation and introjected regulation. Furthermore, the results highlight the significant impact of motivation on conscious consumption behavior, especially in the environmental context. Additionally, consumers' environmental trust plays a prominent role in driving the preference for products with environmental attributes compared to social themes.
Theoretical/Methodological Contributions: The study's results contribute to demonstrating the explanatory–empirical potential of SDT in consumer research, particularly in predicting the antecedents and outcomes of consumption motivations.
Managerial Contributions: It is recommended that marketing managers in the industry: (a) invest in business sustainability with transparent actions to increase environmental trust in the brand, and (b) adopt recognized certifications to positively influence the habits of cosmetics consumers.

Keywords: consumer behavior, conscious consumption, consumption motivations, green cosmetics

[a] Master's degree in Consumer Behavior from ESPM. Holds a Bachelor's degree in Social Communication with an emphasis in Advertising from the Federal University of Goiás (UFG), including two semesters of international academic exchange at the Polytechnic Institute of Bragança in Portugal. Postgraduate degrees in Marketing Management and Consumer Analysis from UFG, and in People Management and Leadership from FGV. Has over 10 years of experience in advertising, specializing in Planning, Digital Media, and Influencer Marketing. Areas of interest include Consumer Behavior, Digital Marketing, Conscious Consumption, Sustainability, and Strategy. http://lattes.cnpq.br/6339821862837631 - mcckeloane@gmail.com

[b] *Leader of the Agrifood Franchising Research Group, partner at Stracta Strategic Consulting, and professor in the Master's and Doctoral programs in Administration and Consumer Behavior at ESPM. Member of the Advisory Board of the Brazilian Association of Rural and Agribusiness Marketing (ABMRA). She has been involved in research, consulting, and training projects in marketing and strategy within agribusiness and food sectors. She held the position of Executive Director at the Brazilian Coffee Exporters Council (CECAFE). She holds a PhD in Business Administration from FEA USP and a Master's degree in Administration from UFLA. She was a research fellow during her postdoctoral research at the Technical University of Munich. She was also a visiting researcher in the Department of Agricultural Economics at the University of Missouri, USA, and at the University of Macerata, Italy. Her studies have focused on topics such as Food Consumption; Sustainable Agrifood Chains; Value Creation; Relationship Marketing; Trust, Loyalty, Consumer Experience, Consumer Journey; Green Consumption, and Sustainable Consumption. In 2019, she published the book Coffee Consumption and Strategies in Brazil with Elsevier International.*
. https://orcid.org/0000-0003-2602-3844 - lflorencio@espm.br

[c] *PhD in Education (Science and Technology) from the University of Campinas – UNICAMP (2011), Master's in Business Administration from Centro Universitário Álvares Penteado – UNIFECAP (2005), Executive MBA in Marketing from IBMEC (2001), and Bachelor's degree in History from the University of São Paulo – USP (1997). Professor in the Graduate Program in Business Administration at the Escola Superior de Propaganda e Marketing (ESPM). Acts as a reviewer for national and international journals in the fields of Business Administration and Psychology, and as a reviewer for academic conferences such as EnANPAD, CLAV, SEMEAD, and ENGEMA. Guest editor of the Brazilian Journal of Marketing (BJMkt) for the special issue on Marketing Research.*. http://lattes.cnpq.br/1088858946552108 - marcelo.gabriel@espm.br

Resumo

Objetivo: Investigar o efeito da confiança ambiental e das motivações no consumo consciente de cosméticos verdes nas dimensões social e ecológica.
Método: Foi realizada uma *survey* com 386 consumidores de cosméticos verdes utilizando o método de Modelagem de Equações Estruturais para análise dos dados da pesquisa.
Originalidade/Relevância: A pesquisa buscou adicionar novos achados aos estudos sobre o comportamento de consumo de cosméticos verdes a partir da perspectiva da Teoria de Autodeterminação (TAD), ainda pouco utilizada nas pesquisas neste segmento de consumo.
Resultados: Os resultados revelaram que a confiança ambiental desempenha um papel saliente como antecedente na formação das motivações de consumo, em especial nas dimensões da regulação externa e regulação introjetada. Além disso, os resultados destacam o impacto significativo da motivação no comportamento de consumo consciente, especialmente no contexto ambiental. Ainda, a confiança ambiental do consumidor desempenha um papel proeminente para impulsionar a preferência por produtos com atributos ambientais em comparação com temas sociais.
Contribuições teóricas/metodológicas: Os resultados da pesquisa contribuem para evidenciar o potencial explicativo-empírico da TAD em estudos de consumo, e em especial, na predição de antecedentes e resultantes das motivações de consumo.
Contribuições para a gestão: Recomenda-se que os gestores de marketing da indústria: a) invistam na sustentabilidade do negócio com ações transparentes para aumentar a confiança ambiental na marca, e b) adotem certificações reconhecidas para influenciar positivamente os hábitos dos consumidores de cosméticos.

*Palavras-chave***:** Comportamento do Consumidor, Consumo Consciente, Cosméticos Verdes, Motivações de Consumo.

1 Introduction

The cosmetics industry holds a highly relevant position worldwide, with personal care and cosmetic products being essential in consumers' lives. In 2023, Brazil returned to being the third-largest cosmetics consumer market in the world, generating more than R$156 billion (Ibram, 2024). The market for cosmetics considered clean or natural (*clean beauty*) is a major bet in the sector, with projections to reach US$37.6 billion in global revenue by 2028 (Carvalho, 2024).

A green product is an umbrella label that can be applied to a wide range of goods whose production and consumption processes involve minimal and controlled use of non-renewable resources, aiming to minimize environmental impact. In general, these products come from companies that claim greater care in preventing environmental pollution and promoting recycling (Shamdasani, Chon-Lin & Richmond, 1993). The growing demand indicates that environmental concerns and corporate social responsibility are becoming important issues for consumers (Oliver & Lee, 2010).

In the case of cosmetics, when labeled as green products, such items assume different nomenclatures that define distinct product groups, with possible intersections—for example, natural, vegan, organic, cruelty-free, and clean beauty cosmetics. These products focus on environmental preservation, pollution reduction, responsible use of non-renewable resources, and animal welfare, as well as species conservation (McEachern & McClean, 2002).

The search for green cosmetics, in addition to sustainability appeal, also relates to health issues, such as the safety of ingredients when used in long-term contact with the skin. This is the case for *clean beauty* products, which avoid raw materials with potential risks to skin health, such as sulfates, parabens, formaldehyde releasers, chemical sunscreens, fragrances, butylated hydroxytoluene, phthalates, and propylene glycol. However, in the scientific community, there is no conclusive evidence that these components are harmful to humans. Without adequate scientific support, there remains a lack of alignment between medical field expectations and the offerings of the cosmetics and pharmaceutical industries (Kalil, de Vargas, Grazziotin, Campos & Chaves, 2022; Rubin & Brod, 2019).

Although the market is expanding, there are still many questions regarding consumers' understanding of nomenclature and claims on packaging. Furthermore, understanding the attitudes, values, and motivations that shape green cosmetics consumption behavior represents a promising avenue for research, with results that can guide and improve marketing strategies in this consumer segment.

Consumers become more conscious about sustainable consumption when they include the environmental variable in their "power of choice," preferring products that do not harm—or are perceived as non-harmful to—the environment (Matić & Puh, 2016). This means that the green consumer, as defined by Portilho (2005), is one who considers not only the quality and price of products but also the environmental impact of consumption choices. This environmental awareness is reflected in individual actions and choices motivated by environmental concerns, which are considered essential for promoting changes in the energy and technological matrices of the production system. In this sense, for green products to become widely recognized, it is necessary to understand consumer behavior from the perspective of valued attributes and factors that may influence the decision to purchase and consume such

products (Souto Maior, de Oliveira Júnior, Ribeiro & Fernandes, 2022; Romero, Khury, Aiello, Foglio & Leonardi, 2018).

Previous studies have addressed green cosmetics consumption behavior from different perspectives and theoretical arguments. Some authors investigated consumer behavior regarding resistance to green cosmetics consumption (Jaini, Quoquab, Mohammad & Hussin, 2020). Others focused on analyzing perceptions of natural product textures (Huynh, Garcia, Young, Szoboszlai, Liberatore & Baki, 2021). Da Silva Tamashiro, da Silveira, Mantovani & de Abreu Campanário (2014) associated the constructs of ecological concern (EC) and ecological affect (EA) with cosmetics consumption behavior. Chin, Mufidah, Persada & Noer (2018) studied purchase intention dimensions of green skincare products based on the Theory of Reasoned Action. Da Silva, Scherer & Pivetta (2018) analyzed the incidence of *greenwashing* in this type of product.

As demonstrated by Zhang & Dong (2020), most studies employ behavioral theories focused on psychological factors, such as the Theory of Planned Behavior (TPB) and the Value–Attitude–Behavior Theory, or those that explore internal and external factors jointly, such as the Attitude–Behavior–Context Theory. However, such theories tend to emphasize psychological aspects and neglect or only superficially address external factors. Considering the complexity of green product consumption, which involves personal values, social pressure, and trust in label messages and certifications on environmental and social issues, this research sought to address green cosmetics consumption behavior through the lens of Self-Determination Theory (SDT). SDT's fundamental premise is that, by satisfying basic psychological needs, humans are motivated to engage in activities either for personal interest (intrinsic motivations) or for external rewards and pressures (extrinsic motivations).

Previous studies have demonstrated the relevance of intrinsic as well as extrinsic motivations in explaining green behavior (Yang & Thøgersen, 2022; Duong, Nguyen, & Nguyen, 2023; Schulze & Janssen, 2024). Additionally, environmental trust has been validated as one of the main determinants of green product purchases (Liobikienė & Bernatonienė, 2017; Zhang, W.; Zhang, L.; Song, C.; Gao, C., 2024), influencing not only purchase intention but also actual consumption behavior (Songyue, Rasiah, Shufan & Ziyan, 2023). However, its application has been mostly restricted to attitude-based theories, such as TPB.

Seeking to bridge these two perspectives, the present research investigated the effect of environmental trust and motivations (intrinsic and extrinsic) on the conscious consumption of green cosmetics in the social and ecological dimensions.

This research contributes to the field by testing green consumption behavior from the perspective of conscious consumption in two dimensions: environmental and social, and their antecedents. The use of SDT as a theoretical framework provides an opportunity to understand the phenomenon through the continuum of motivation, exploring psychological aspects related to the satisfaction of basic human needs—autonomy, competence, and relatedness (Ryan & Deci, 2017).

The cosmetics industry is commonly categorized into five main business segments: skincare, haircare, makeup, fragrances, and personal care (Vázquez-Burguete, Sahelices-Pinto & Lanero-Carrizo, 2017). This study is limited to the skincare sector. According to Statista (2023), skincare was the most consumed beauty product category in 2022, holding a 41% global market share and projecting estimated revenue of US$186 million by 2028.

This article is structured into five sections, including this introduction. The second section presents the theoretical framework and research hypotheses, followed by the methodological procedures and research results. In the conclusion section, the authors present their final considerations, managerial implications, and research limitations with suggestions for future studies.

2 Theoretical Framework

2.1. Conscious Consumption

Conscious consumption denotes distinct behaviors that demonstrate consumers' engagement with environmental and social concerns. Paswan, Guzmán, and Lewin (2017) present three groups of conscious consumers: (a) consumers who support social and environmental causes with little effort to acquire sustainable products or services; (b) consumers with active behavior, already involved in other pro-environmental initiatives; and (c) consumers with pro-environmental behavior, in which there is a direct relationship between sustainability and lifestyle.

Complementarily, Black and Cherrier (2010) state that conscious consumption may involve three stages: the first is the consumption of green products, the second is the adoption of anti-consumption practices, and the third consists of recycling practices. The present study focuses on the first stage, i.e., the acquisition and use of green cosmetic products. Silva et al. (2012) complement this view by arguing that consumption is transformed into a kind of "conscious act," which impacts both society and nature, derived from the concept of eco-capitalism as an ideology.

When analyzed from the lens of sustainability, conscious consumption must be understood as a consumption act in which social organization and its dynamics remain central. However, the resulting behavior is also understood as a form of social distinction (Araújo, Oliveira & Correia 2021; de Rezende Pinto & Batinga, 2016), being associated with social, ethical, and ideological values. In this sense, some individuals associate conscious consumption with status signaling and/or belonging to a distinct group (Carr, Gotlieb, Lee & Shah, 2012).

Park, Lee & Koo (2017, p. 303) argue that sustainable consumer behavior is anchored in the social and ecological dimensions of conscious consumption, insofar as "these consumers are expected to have a greater propensity to exhibit conscious consumption behavior in relation to ecology as well as to society." Ertz (2016, p. 90) complements this by defining the socially responsible consumer as someone "engaged in a deliberate effort to acquire, use, and dispose of products in ways that minimize negative consequences and maximize positive ones, at both environmental and social levels."

2.2. Self-Determination Theory (SDT)

Self-Determination Theory (SDT) is considered effective in understanding factors that affect motivation and behavior. Although rooted in psychology, it also considers biological and evolutionary aspects, being a fusion of six other theories: Cognitive Evaluation Theory (CET), Organismic Integration Theory (OIT), Causality Orientations Theory (COT), Basic Psychological Needs Theory (BPNT), Goal Contents Theory (GCT), and Relationships Motivation Theory (RMT). Together, these theories aim to explain human behavior through the lens of psychological needs (Gilal, Zhang, Gilal & Gilal, 2020a), enabling the understanding of how certain behaviors are initiated and sustained (Gauthier, Guertin & Pelletier, 2022).

SDT focuses primarily on the psychological level, distinguishing types of motivation along a continuum and seeking to understand how socio-contextual factors may act on the satisfaction of basic human needs, namely autonomy, competence, and relatedness—considered essential for healthy human development (Ryan & Deci, 2017).

Recent research supports the use of SDT in marketing studies, highlighting its strong predictive power for consumer behavior and emphasizing the importance of intrinsic and extrinsic motivations for marketing outcomes (Cassia & Magno, 2024).

The continuum (Figure 1) proposed by Ryan and Deci (2017) initially presents the concept of amotivation, defined as a state in which individuals lack any intention or motivation to engage in a particular behavior. It represents irrelevance and a complete absence of value (Ntoumanis, Ng, Prestwich, Quested, Hancox, Thøgersen-Ntoumani & Williams, 2021).

Next are extrinsic motivations, regulated through external regulation, introjection, identification, and integration. These motivations can be linked to activities that generate external indicators of self-esteem (Wang & Hou, 2015), or when individuals act solely to obtain a reward or avoid punishment (Gibson & Seibold, 2014), being actions motivated by external control or contingencies.

Within extrinsic motivation, introjected regulation refers to behaviors motivated by shame, guilt, fear of disapproval, or ego (Gauthier et al., 2022, p. 2). The further to the right of the spectrum, the more internalized the motivation becomes, culminating in identified regulation. This suggests that external pressure transforms the action into a personally important goal—valued because it is useful, not because it is inherently desirable (Cook & Artino, 2016).

Finally, integrated regulation represents the most internalized aspect of extrinsic motivation, appearing on the continuum as the last stage before intrinsic motivation. At this stage, "external influences are integrated with intrinsic interests, becoming part of one's identity and personal aspirations" (Cook & Artino, 2016, p. 1011).

Figura 1

SDT Continuum

TAXONOMY OF MOTIVATION ACCORDING TO SELF-DETERMINATION THEORY						
MOTIVATION	**AMOTIVATION**	**EXTRINSIC MOTIVATION**				**INTRINSIC MOTIVATION**
REGULATORY STYLE		**EXTERNAL REGULATION**	**INTROJECTION**	**IDENTIFICATION**	**INTEGRATION**	
			Internalization			
ATTRIBUTES	Lack of perceived competence	Rewards or external punishments	Ego involvement	Personal importance |	Congruence	Interest
	Lack of value	Conformity	Focus on others' approval	Conscious valuing of the activity	Synthesis and consistency of identifications	Pleasure
	Irrelevance			Self-approval		
		Reactance				Inherent satisfaction
PERCEIVED LOCUS OF CAUSALITY	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal

Source: Prepared based on Ryan & Deci (2020)

Intrinsic motivation, the last stage of the continuum, refers to activities that bring inherent self-fulfillment and personal pleasure—actions that do not depend on external incentives or pressures but provide their own satisfaction and enjoyment (Ryan & Deci, 2020, p. 2). For internalization to occur, basic psychological needs (autonomy, competence, and relatedness) must be satisfied, which leads to increased efficacy and social connection (Ryan & Deci, 2020, p. 99).

Pro-environmental internalized behavior emerges as consumers develop positive attitudes toward sustainability, fulfilling their search for autonomy, competence, and relatedness, which positively affect their purchase intentions of green and sustainable products (Wang, Yang, Bailey & Wang, 2021). For example, a brand may empower consumers by allowing them to celebrate their individuality (autonomy). Similarly, when consumers perceive themselves as rewarded for adopting sustainable practices (competence), this may lead to emotional attachment to a green brand (relatedness) (Gilal, Zhang, Gilal & Gilal, 2018). Such examples demonstrate how external triggers—such as brand actions or rewards that value

behaviors—positively reinforce intrinsic motivations in consumption behavior (Gilal, Chandani, Gilal, Gilal, Gilal & Channa, 2020b).

Duong, Nguyen, and Nguyen (2023) demonstrated that increases in both intrinsic and extrinsic motivations raise the likelihood of green purchase intentions. From another perspective, exploring green behavior and greed through recycling rewards, Yang and Thøgersen (2022) concluded that, in the United States, extrinsic motivation was the strongest factor for increased recycling. In China, introjected motivation predominated, while in Germany, environmental appeals proved the most effective strategy. Schulze et al. (2024) also applied SDT to investigate sustainable consumption motivations, finding that intrinsic motivation was more relevant for reducing meat consumption in Denmark, while extrinsic motivation was insufficient to encourage consumers to adopt this reduction.

2.2.1. Intrinsic Motivation

Intrinsic motivation is considered the most internalized of all, understood as a natural process of human development that may be either fostered or hindered (Ryan & Deci, 2017). It can be argued that consumers are motivated to purchase green products due to an intrinsic need to protect personal health and, in some way, contribute to the environment (Tandon et al., 2020). Accordingly, the following hypotheses are proposed:

- H4a: Intrinsic motivation positively impacts ecologically conscious consumption of green cosmetics.
- H4b: Intrinsic motivation positively impacts socially conscious consumption of green cosmetics.

2.2.2. Introjected Regulation

Introjected regulation refers to "behaviors motivated by shame, guilt, fear of disapproval, or ego" (Gauthier et al., 2022, p. 2). It involves perfectionism, fear of failure, excessive self-criticism, competition, and heightened social comparison (Ryan & Deci, 2017). There is a deliberate effort to avoid feelings of shame, guilt, or others' disapproval, or to enhance self-esteem (Gilal et al., 2018; Howard, Gagné & Bureau, 2017).

In the context of green cosmetics, an individual may feel ashamed if they realize they are using a product tested on animals, for instance. Based on this understanding, the following hypotheses are proposed:

- **H5a:** Introjected regulation positively impacts ecologically conscious consumption of green cosmetics.
- **H5b:** Introjected regulation positively impacts socially conscious consumption of green cosmetics.

2.2.3. External Regulation

External regulation refers to behavior shaped by punishments or external forces, meaning individuals behave in certain ways due to contingencies that may provoke fear of punishment or retaliation. For a long time, the construct was emphasized by behavioral psychologists, who argued that external regulation is more reliable for sustaining behavior patterns (Ryan & Deci, 2017). At this stage, behavior is not yet autonomous, as it remains externally driven (Tandon, Dhir, Kaur, Kushwah & Salo, 2020). These premises lead to the following hypotheses:

- **H6a:** External regulation positively impacts ecologically conscious consumption of green cosmetics.
- **H6b:** External regulation positively impacts socially conscious consumption of green cosmetics.

Integrated and identified regulations were not considered for hypothesis development and subsequent analysis, following Howard, Gagné, and Bureau's (2017) recommendation. Their meta-analysis of over 205,000 participants across 486 motivational scale samples, using SDT, revealed heterogeneity among constructs. The only exception was integrated regulation, which exhibited high inter-factor correlations and overlap with adjacent constructs, preventing proper differentiation. Thus, results did not support its inclusion in SDT measurement, requiring further refinement of the scale. The study also found introjected regulation to be positively related to health-related behaviors.

2.3. Environmental Trust

Previous studies on green product purchase intentions did not consider environmental trust as a central dimension, focusing instead on environmental knowledge and consumer attitudes within the TPB framework (Hossain, Nekmahmud, & Fekete-Farkas, 2022). However, more recent findings highlight trust as a relevant factor in green purchase intentions (Liobikienė & Bernatonienė, 2017; Tandon et al., 2020; Hossain et al., 2022). Beyond green products, trust also contributes to the perception that green brands are legitimate, reliable, and competent (Kumar et al., 2021).

Hilgard and Atkinson (1967, p. 118) note that there are triggers explaining motivational dimensions, defined as "something that arouses the organism to action or sustains or gives direction to action once the organism is activated." In this study, this trigger is represented by the construct of environmental trust, leading to the following hypotheses:

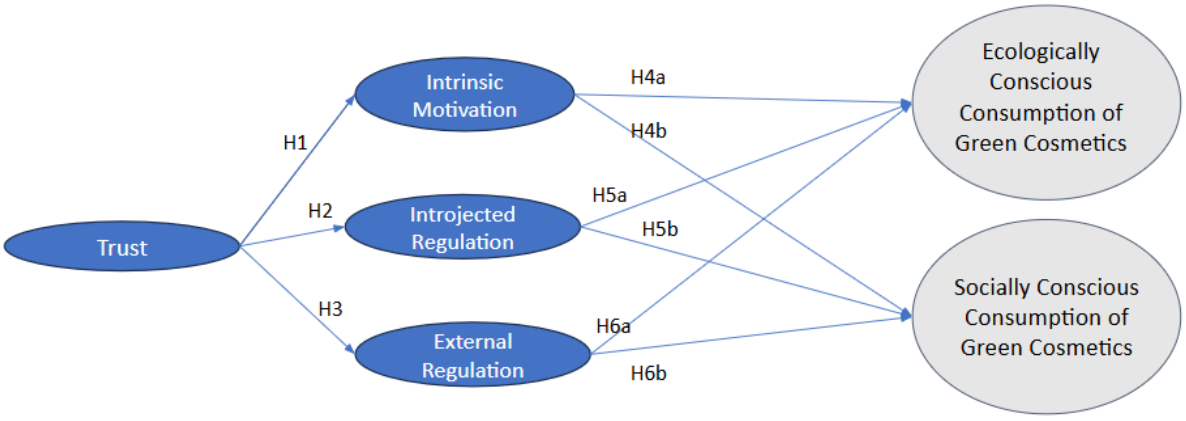
- **H1:** Environmental trust positively impacts intrinsic motivation.
- **H2:** Environmental trust positively impacts introjected regulation.
- **H3:** Environmental trust positively impacts external motivation.

The conceptual model of this research is presented in Figure 2 and is based on a variant of OIT within the SDT framework. In this regard, the study builds on prior research that used this theory to understand green consumer behavior (Cassia & Magno, 2024; Gilal et al., 2018; Tandon et al., 2020; Chen & Chang, 2013; Ribeiro et al., 2013).

Howard, Gagné, and Bureau (2017) contributed to SDT by analyzing over 205,000 participants in 486 motivational scale samples through inter-factor correlation. The analysis confirmed the heterogeneity of constructs, with the exception of integrated regulation, which showed high overlap with identified regulation, leading to its exclusion from measurement models.

Figure 2

Conceptual Model Used



Source: Research Data

It was possible to confirm the heterogeneity of the constructs, with one exception: integrated regulation, which is usually related to identified regulation, showed high inter-factor correlation and overlap with adjacent constructs, resulting in a lack of differentiation. Therefore, the results do not support the inclusion of integrated regulation in the measurement of SDT, indicating the need for refinement of the scale. The study also showed that introjected regulation is positively related in studies that seek to measure health-related behaviors (Howard, Gagné, & Bureau, 2017).

As presented in Figure 2, introjected regulation is equidistant in the SDT continuum in relation to the other regulations and, for this reason, it was prioritized in the present study. Integrated and identified regulations were not considered for hypothesis development and subsequent analysis, following the authors' recommendation.

3 Method

In this study, a quantitative and descriptive approach was adopted through the survey method. Descriptive marketing research aims to describe characteristics of a population or phenomenon, usually employing representative samples via surveys (Vieira, 2017; Malhotra,

2019). The investigated population consisted of consumers of green cosmetics, specifically within the skincare category.

Scales Used

The scales were adapted to the context of green cosmetics consumption. The constructs of Intrinsic Motivation (IM), Introjected Regulation (MIT), and External Regulation (ME) were adapted from Gilal et al. (2018) and Tandon et al. (2020); Environmental Trust (ET) was adapted from Chen & Chang (2013) and Tarabieh (2021); and Socially Conscious Consumption (SC) and Ecologically Conscious Consumption (EC) were derived from Park et al. (2017) and Ribeiro et al. (2023).

The adaptation followed the recommendations of Pasquali (2017) and Hair et al. (2009): 1) Translation of the scales into Portuguese; 2) Back-translation; 3) Verification of inconsistencies and adaptation to the research context; 4) Validation by experts; 5) Pre-test with semantic validation carried out with higher education students.

Sample and Data Collection Instrument

The sample was non-probabilistic and based on convenience. To participate, consumers had to be over 18 years old and have purchased green cosmetics within the last three months. Data collection occurred in the first semester of 2024. The survey link was freely distributed through social media. However, due to low adherence, it was necessary to hire a market research company with a consumer panel. Participation was voluntary, anonymous, and incentivized by donating R$1.00 per response to the NGO *Amor em Patas*, which rescues cats and dogs.

Following Figueiredo & Silva Júnior (2010), who recommend collecting between five and ten observations per construct item, the minimum required sample was 165 participants. Nevertheless, the final sample comprised 386 valid responses.

A pre-test was conducted with undergraduate students from different majors at a college in São Paulo. Based on this stage, the Likert scale was reduced from 11 to 5 points. It was also necessary to standardize the questions, which previously mixed positive and negative statements, since students reported difficulty understanding them. After adjustments, all items were formulated only as affirmative statements.

The questionnaire began with study information and informed consent. Next, a comprehension question asked participants about their understanding of different cosmetic terms such as "vegan," "natural," and "cruelty-free." A filter question then verified whether the respondent had purchased skincare-related green cosmetics in the past three months. If yes, the participant proceeded to questions about the frequency of use of specific products (e.g., facial soap, moisturizer, sunscreen, serums, clay masks, anti-acne and anti-spot treatments, and facial oils). Average monthly spending on these products was also recorded.

Subsequently, the research scales were presented in randomized order, measured on a 5-point Likert scale. Finally, sociodemographic information was collected, including gender, age, marital status, educational level, and household income, according to the ranges defined by Critério Brasil (2023). In total, respondents answered 42 questions, 33 of which were statements. The questionnaire also included three attention-check questions distributed randomly.

Data Analysis Procedures

The chosen method for data analysis was Structural Equation Modeling (SEM), using Partial Least Squares (PLS), widely applied in marketing research for hypothesis testing and models based on SDT (Gilal et al., 2019; Cassia & Magno, 2024). The stages recommended by Ringle, Da Silva & de Souza Bido (2014) were followed, using SmartPLS version 4 software. The study was approved by the Research Ethics Committee of a higher education institution in São Paulo, under registration CAAE No. 75839123.0.0000.9127.

4 Results

4.1. Respondent Profile

All participants reported having consumed at least one green skincare product in the three months prior to the survey. The sample is predominantly female, representing 90.2% of respondents, while men account for 9.1%. In terms of age, the highest concentration was among participants over 50 years old (19.7%), followed by those aged 41–45 (17.6%) and 46–50 (17.4%). The youngest group (18–20 years) represented only 2.1% of the sample.

Regarding marital status, most respondents were single (38.9%) or married (38.6%), with smaller proportions being in stable relationships (13.0%), divorced (8.5%), or widowed (1.0%). As for education, most had completed higher education (33.9%) or were in progress (26.7%), while 25.1% had only completed elementary school. Household income varied widely, but the largest group (29.8%) reported earning up to R$3,194.33 per month.

In addition, 92.7% declared that they had a good understanding of the differences between "vegan," "natural," and "cruelty-free" cosmetics, while 7.3% admitted not fully understanding but still consuming such products. Sunscreen was the most frequently consumed product, used daily by 66.3% of respondents, followed by facial moisturizer (60.1%). Anti-acne products were the least used (52.8%), likely due to the sample being mostly above 30 years of age (80.6%).

Monthly spending on green cosmetics varied: 11.7% spent up to R$50, 28.2% between R$51–100, 24.6% between R$101–150, 17.1% between R$151–200, 11.1% between R$201–300, and 7.3% more than R$300. These results are consistent with spending profiles in the cosmetics market overall.

4.2. Structural Equation Modeling (SEM) Results

Convergent validity was tested using Average Variance Extracted (AVE), valid when values are above 0.50 (Ringle et al., 2014). All constructs exceeded 0.6, confirming convergent validity. Discriminant validity was evaluated using cross-loadings, showing that each indicator loaded highest on its respective construct (Souza, Alexandre & Guirardello, 2017).

Cronbach's Alpha (CA) and Composite Reliability (CR) were both above 0.70 for all constructs, confirming reliability (Ringle et al., 2014; Sarstedt, Ringle, Smith, Reams & Hair 2014). Bootstrapping with 5,000 resamples was performed, suitable for non-parametric tests without normal distribution (Sarstedt et al., 2014). All items were significant ($p \leq 0.04$), following Ringle, da Silva & Bido (2014). Table 1 summarizes reliability and validity.

Table 1

Discriminant Validity – Fornell-Larcker

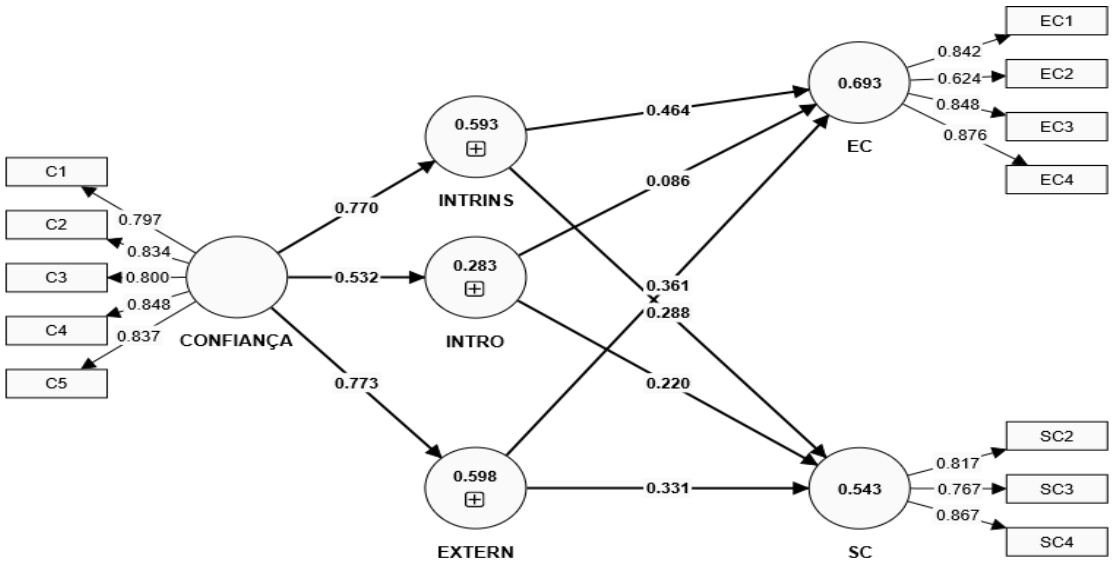
CONSTRUCTS	Cronbach's alpha	Composite reliability (rho_c)
Trust	0,881	0,913
Intrinsic Motivation	0,813	0,878
Introjected Regulation	0,704	0,837
External Regulation	0,806	0,873
Ecologically Conscious Consumption	0,844	0,884
Socially Conscious Consumption	0,753	0,858

Source: Research data

The result of the SEM analysis is presented in Figure 3, where it is possible to visualize the beta coefficients and the R^2 of the SEM.

Figure 3

Result of the Analysis



Source: Research Data.

The results indicate the significant effect of trust on the three motivational constructs tested: intrinsic motivation, introjected regulation, and external regulation. In turn, both ecologically and socially conscious behaviors receive the total indirect effect of trust and the direct effect of the three motivational variables.

Based on the analysis of the Standardized Beta Coefficient, it is possible to observe a positive and significant effect of environmental trust on motivations, confirming the first three hypotheses (H1, H2, and H3) (Table 2). The coefficients show that the greater the trust, the greater the impact on external regulation (0.773), followed by intrinsic motivation (0.770), and finally introjected regulation (0.532). In the evaluation of Pearson's coefficients (R^2), considering the analyses of H1, H2, and H3, it can be seen that intrinsic motivation, introjected regulation, and external regulation are strongly explained by trust, since all effects exceed 26%, with 59%, 28%, and 59%, respectively. From this point, effect size (f^2) was calculated, also known as Cohen's Indicator, which assesses the usefulness of each construct for the proposed model. Reference indices indicate that values of 0.02 are considered small, 0.15 medium, and above 0.35, large (Sarstedt et al., 2014). Again, trust proved to be strongly associated with motivational indicators, with large effect sizes: 1.456 for intrinsic motivation, 0.394 for introjected regulation, and 1.489 for external regulation. It can be stated that trust has a very strong effect on the development of intrinsic motivation and, above all, on external regulation.

These results demonstrate that environmental trust in the product and the brand are strong antecedents of motivation, especially based on the claims used in products. Additionally, participants indicated a good understanding of what constitutes a vegan, natural, or cruelty-free cosmetic. With this knowledge, consumers align their expectations with brand promises through what is communicated on packaging and product communication (Cheng & Chang, 2013).

The results confirm the positive influence of different forms of motivation on the conscious consumption of green cosmetics, in both ecological and social dimensions, supporting hypotheses H4a, H4b, H5a, H5b, H6a, and H6b (Table 2) and consistent with the assumptions of Self-Determination Theory. The predominance of intrinsic motivation in ecologically conscious consumption reinforces the idea that internalized values and beliefs carry greater weight when environmental appeal is emphasized. Meanwhile, introjected and external motivations, though with smaller effects, also proved relevant, indicating that social pressures

and external rewards contribute to sustainable engagement. These findings are aligned with the studies of Duong et al. (2023) and Cassia & Magno (2024), which position motivational constructs as exogenous determinants of sustainable purchasing behavior.

Through path coefficients, it is possible to identify the positive association of intrinsic motivation (H4a and H4b) with ecologically conscious consumption of green cosmetics (0.464) and socially conscious consumption (0.288). According to the f² calculation, the effect size of intrinsic motivation on EC consumption is medium (0.268), and for SC consumption it is small (0.069). Introjected regulation (H5a and H5b) shows a positive association with ecologically conscious consumption of green cosmetics (0.086) and socially conscious consumption (0.220), with effect sizes considered small (0.015 for EC and 0.068 for SC). External regulation (H6a and H6b) also showed a positive association with both ecologically and socially conscious consumption of green cosmetics, supporting the final hypotheses of this research, with path coefficients of 0.361 (EC) and 0.331 (SC) and effect sizes of medium (0.154) and small (0.087), respectively.

Analyzing the model, it can be verified that ecologically conscious behavior is explained 69% by the indirect effect of environmental trust and the direct effects of the self-determination theory variables. Socially conscious behavior, in turn, has a slightly lower explanatory power in the model, at 54% (Table 2).

Table 2

Size and Significance of Path and Determination Coefficients, Effect Size, and Hypotheses

Path Coefficint	VIF	Γ	R^2	f^2	Hypothesis
H1: C → MI	1,000	0,770***	0,593	1,456	Supported
H2: C → MIT	1,000	0,532***	0,283	0,394	Supported
H3: C → ME	1,000	0,773***	0,598	1,489	Supported
H4a: MI → EC	2,621	0,464***	0,693	0,268	Supported
H4b: MI → SC	2,621	0,288***		0,069	Supported
H5a: MIT → EC	1,560	0,086**	0,693	0,015	Supported
H5b: MIT → SC	1,560	0,220***	0,543	0,068	Supported
H6a: ME → EC	2,761	0,361***		0,154	Supported
H6b: ME → SC	2,761	0,331***		0,087	Supported

Note: VIF = Variance Inflation Facto. Γ = Path Coefficient. R^2 = Coefficient of Determination. f^2 = Effect Size. ** $p < 0,05$, *** $p < 0,01$
Source: Research data

4.3 Discussion of Results

The results indicate the importance of environmental trust in shaping both intrinsic and extrinsic motivation. However, its effect is more significant for external regulation (1.489). In other words, it is possible to state that the greater the environmental trust in the product/brand, the stronger the extrinsic motivation for consumption, based on brand perception regarding promises and commitments to environmental protection and confidence in the environmental claims displayed on packaging and corporate communications. In this sense, the present research aligns with the findings of Chin, Jiang, Mufidah, Persada, and Noer (2018) and Cheng & Chang (2013), by considering that external factors, such as environmental trust and green marketing, indirectly influence the decision to purchase green products.

This result is supported by the high level of understanding among respondents regarding the meaning of definitions such as vegan, natural, or cruelty-free. As demonstrated in previous studies (Tengli & Srinivasan, 2022), consumers' level of knowledge about sustainability claims positively impacts trust in brands that provide this information on their labels and communications, as well as purchase intentions for their products.

The results also reinforce the alignment between the assumptions of Self-Determination Theory (SDT) and conscious consumption behavior of green cosmetics, showing that both intrinsic motivation and external regulation influence this behavior—especially in the ecological dimension. The predominance of environmental appeals in marketing strategies, such as emphasis on animal testing, to the detriment of social issues, such as slave labor, reflects this trend. Thus, it is confirmed that behavior can be driven both by internalized values and by external pressures, as proposed by Ryan & Deci (2017) and Tandon et al. (2020).

In the case of introjected regulation, the path coefficient was stronger for the social dimension (0.220) than for the ecological dimension (0.086). In this sense, in the consumption of green cosmetics, social aspects are more strongly associated with behaviors motivated by shame and guilt (Gauthier, 2022). Furthermore, it is noteworthy that all motivations (intrinsic, introjected, and extrinsic) showed medium effects for ecologically conscious consumption and small effects for socially conscious consumption.

From the moment that aspects of external regulation are shown to influence purchasing behavior, it is possible to point out that even when consumers are not intrinsically motivated,

they still perform the action. This may be related to the concept of virtue signaling. In the case of the virtue signaller, it can be said that he or she is more concerned with self-image than necessarily with certain issues. For example, an individual may consume consciously not necessarily because they believe in the purpose of such consumption, but rather because they wish to receive recognition from their peers or social group, carrying out a "vanity project" through their values (Levy, 2021, p. 9546).

Unlike the findings of Tandon et al. (2020), which demonstrated the positive moderating role of trust in the relationship between introjected regulation and the intention to purchase organic products, the present research demonstrates the importance of adding trust as an antecedent in the continuum of motivations and its significant impact on the development of conscious purchasing behavior, whether environmental or social.

5 Conclusions

The findings of this research contribute to demonstrating the explanatory and empirical potential of Self-Determination Theory (SDT) in consumer studies, particularly in predicting the antecedents and outcomes of consumption motivations. Furthermore, this study innovates by adding environmental trust as an antecedent of motivational dimensions, showing its significant and constitutive effect on conscious consumption, both ecological and social.

The use of SDT in this study allowed for the understanding of both external and internal drivers that lead to conscious consumption of green cosmetics, distinguishing it from previous works that focused primarily on psychological aspects. Nevertheless, a parallel can be drawn with such studies, as the results of this research complement prior evidence. An example can be seen in the study by Chin et al. (2018), who used the Theory of Reasoned Action through a pro-environmental model, with the construct "perceived authority in environmental concern" as an antecedent. The authors confirmed the positive effect of this variable on attitudes, subjective norms, and purchase intention of green cosmetics. This construct is similar to the environmental trust variable used in the present study. Thus, the perception that a brand delivers on its promises, demonstrates commitment to environmental issues, and explicitly presents these

attributes on product labels and communications has a direct and significant effect on the intention to purchase green cosmetics.

Managerial Implications

Emerging or expanding markets, such as the green cosmetics segment, become challenging when there is no clarity about consumer behavior, preferences, motivations, and beliefs. Based on the results of this research, the following tactical actions are suggested for marketing managers in the industry:

a) invest in business sustainability with transparency in actions to increase environmental trust in the brand;

b) adopt trustworthy certifications, which help raise consumer awareness and positively influence consumption habits (Hamza & Dalmarco, 2012).

Study Limitations and Suggestions for Future Research

It is recommended to overcome the geographic limitation of the present study by replicating the research in different consumer markets. Additionally, testing gender, income, and age as moderating variables within the conceptual model of this research could highlight (or not) differences among specific groups of green cosmetics consumers. Other moderators could broaden the understanding of the effect of consumers' environmental literacy on green product consumption, using variables such as environmental knowledge and product knowledge.

For future research, it is suggested to investigate the behavior of vegan and vegetarian consumers in relation to green cosmetics consumption, comparing their motivations with those of omnivorous or flexitarian consumers. Furthermore, it is recommended to test the construct of brand trust, evaluating its effect on motivations and conscious consumption. Trust in labels and certifications on these products' packaging also calls for further study, especially regarding consumer understanding and its effect on willingness to pay.

Authors' contribution

Contribution	Silva, K. M.	Almeida, L.F.	Gabriel, L.D.S.
Conceptualization	X	X	----
Methodology	X	X	X
Software	------	------	x
Validation	X	X	X
Formal analysis	X	X	X
Investigation	X	X	----
Resources	X		
Data Curation	X	X	X
Writing - Original Draft	X	------	------
Writing - Review & Editing	x	X	------
Visualization	X	X	X
Supervision	------	x	x
Project administration	X	x	x
Funding acquisition	Not applied	Not applied	Not applied

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