The more the merrier: The effect of information overload on consumers' perceptions of cosmetics products

Joana Moreira

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ABSTRACT

Title: The more the merrier: the effect of information overload on consumers' perceptions of cosmetics products

Author: Joana Moreira

The increasing demand for sustainable and environmentally friendly products has led consumers to seek out green options in the cosmetics industry. However, navigating through the abundance of information and marketing tactics can be overwhelming, resulting in potential greenwashing practices. This study aims to investigate the impact of information overload on consumers' susceptibility to falling into greenwashing in the cosmetics industry.

User-generated content (UGC), such as product reviews, is a valuable source of information for consumers. However, the abundance of UGC online can contribute to information overload, making it challenging for consumers to make informed choices. Eco-labels also play a role in consumer decision – making but can be misleading when self-generated by companies. Information overload negatively impacts decision-making and can increase susceptibility to greenwashing practices.

To test the hypothesis that information overload affects consumers' likelihood of believing the companies' greenwashing, a quantitative study was conducted. An online survey was distributed, presenting participants with different face cleansing product scenarios. Sociodemographic questions were followed by questions assessing their willingness to pay, attitudes, and sustainability perceptions.

Keywords: cosmetics industry, greenwashing, user-generated content, eco-labels, information overload

SUMÁRIO

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Autor: Joana Moreira

O aumento da procura por parte dos consumidores de produtos mais sustentáveis e ecológicos também se fez sentir na indústria da cosmética. No entanto, analisar toda a informação e discernir o que são apenas estratégias de marketings pode ser demasiado para o consumidor, deixando-o mais suscetível de cair em armadilhas de greenwashing. Este estudo pretende investigar o impacto do excesso de informação na suscetibilidade dos consumidores caírem em armadilhas de greenwashing na indústria da cosmética.

O conteúdo criado pelos próprios utilizadores, como avaliações de produtos, é uma fonte de informação importante para os consumidores. Não obstante, a sua abundância pode contribuir para o excesso de informação a que os consumidores têm acesso, tornando-se desafiante para os mesmos fazer escolhas informadas. As ecoetiquetas também têm impacto na decisão do consumidor, mas podem ser enganadoras quando autoatribuídas pelas próprias empresas. O excesso de informação impacta negativamente o processo de decisão dos consumidores e pode aumentar a sua suscetibilidade às práticas de greenwashing.

Para testar a hipótese de que a sobrecarga de informação afeta a probabilidade de os consumidores acreditarem no greenwashing das empresas, foi realizado um estudo quantitativo sobre produtos de limpeza facial. Foi distribuído um questionário online, apresentando cenários diferentes aos participantes. Questões sociodemográficas foram seguidas de questões para avaliar disposição a pagar, atitudes e perceções de sustentabilidade.

Palavras – chave: indústria da cosmética; greenwashing; ecoetiquetas; excesso de informação;

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Table of Contents

1. Introduction

In 2019, the cosmetics industry had a global market value of US$ 500 billion, being one of the fastest-growing industries (Statista, 2020). However, the more it grows, the higher are its impacts on the environment. Consequently, there is a growing need for companies to become more environmentally friendly and take measures to improve their business model and turn it more sustainable (Suphasomboon & Vassanadumrongdee, 2023).

This trend is also followed by consumers who are showing a growing interest towards sustainable and environmentally friendly products. As individuals become increasingly aware of the environmental impacts of their purchasing decisions, they seek to align their choices with their values by opting for products that promote sustainability (Bom et al., 2019).

However, navigating through the market of sustainable products has become a challenge due to the prevalence of greenwashing practices, where companies mislead consumers into believing their products are more environmentally friendly than they actually are (Delmas & Burbano, 2011). This can be critical in the cosmetics industry, considering consumers usually rely on product information and labels when making their purchasing decisions.

On top of that, with digital era we've seen the rise of user generated content (UGC), which has a tremendous impact in influencing consumer's purchasing behavior. Consumers often turn to UGC, particularly product reviews, as a reliable source to help them in their decision-making process (Özkan et al., 2015). However, the volume of information available can lead to information overload for consumers, making it difficult for them to critically evaluate the veracity of claims (Hawkins & Mothersbaugh, 2010, p. 527).

In the recent years, the impact of greenwashing practices in consumer's behaviors has been highly explored in the literature. On the same note, the effect of information overload, through social media and user-generated content, on consumer's decisions has also been studied. However, the connection between the two ideas has yet to be explored.

The objective for this dissertation is to determine if information overload affects consumers' purchasing decisions. This work we will explore if information overload increases the likelihood of falling into greenwashing with cosmetics products, specifically focusing on face cleansing products. Therefore, the research question that guides this study is: Does information overload impact consumers' Willingness to Pay, Attitudes and Sustainability Perceptions.

Face cleansing products are frequently used in consumer's skincare routines, existing many different options available in the market. This study particularly explores three popular face cleansing options: cleansing wipes, micellar water, and cleansing balm. These products differ in terms of convenience, sustainability, and environmental impact, making them great choices for investigating consumer's perceptions and behaviors regarding sustainability.

Overall, this study aims to contribute to the existing literature by shedding a light in the influence of information overload on consumer susceptibility to greenwashing in the cosmetics industry.

2. Literature Review

2.1 Face cleansing products

2.1.1 Cleansing wipes

Face cleansing wipes are a popular choice among consumers due to their practicality and user – friendly features that make them easy to use (Hadley et al., 2022). This product makes the cleansing part of a skincare routine easier and more convenient, considering that it isn't necessary to rinse with water after using them so they can be utilized anywhere. It consists in wipes that are moistened with diluted water – based solutions that contain cleansing agents (Vongsa et al., 2019).

However, this product presents concerning environmental issues. Namely, the fact that they are intended for single use only and difficult to properly recycle them (Hadley et al., 2022). Most wipes are made of fibres that are non-flushable and non-renewable plastics (Pantoja Munoz et al., 2018; Y. Zhang et al., 2022). Even when they are advertised as being biodegradable or recyclable to enhance that they are better for the environment, that isn't entirely true, because most aren't 100% biodegradable, take too much time decomposing and are only recyclable under very specific conditions, that most of the time don't occur (Hadley et al., 2022). Consequently, in the process of disposing them, microplastics are released into the natural environment, ending up contaminating it (Y. Zhang et al., 2022). Additionally, their plastic packaging and the water consumption during their manufacturing process have also a negative impact on the environment.

For the purpose of this dissertation, cleansing wipes will be addressed as no sustainable option.

2.1.2 Micellar Water

Micellar water is also gaining notoriety in the cosmetic' world, due to being gentler on the skin than cleansing wipes. Micellar water cleansers are composed by water diluted with a cleansing solution that effectively removes makeup, oil, and dirt from the skin, without the need of rinsing with water (Aguiar et al., 2022). Consumers can apply it by rubbing it on the face with a cotton pad (Draelos, 2018).

Unlike a cleansing wipe that is only intended to be used once, a bottle of micellar that contains 400 ml allows for 200 usages approximately, according to the information that comes on standard micellar water packaging. For this reason, it can be considered as more sustainable that the previous option.

Nonetheless, a cotton pad itself is not sustainable. Not only it's production is associated with a huge water consumption (Chapagain et al., 2006), land occupation and use of pesticides (Ütebay et al., 2019), but also it is not recyclable, considering most times they are made of mixed material that is not recyclable nor composable. Additionally, cotton pads are also intended for one-use only, which has always a negative impact on the environment.

On the other hand, nowadays there are some alternatives to cotton pads that can be used with micellar water and represent a more sustainable option, such as reusable pads, that once used can be washed and will be ready to use again.

Hence, for the scope of this study, micellar water will be referred to as a neutral option in terms of sustainability.

2.1.3 Cleansing Balm

More recently, cleansing balms are becoming a trend among consumers who are concerned with the environment and are moving towards clean beauty options (Aguiar et al., 2022).

This product usually contains in its composition a mixture of natural oils that are combined either with beeswax or shea butter to create the thick consistency. The balm is intended to be rubbed onto one's face in circular motions, leading the product to become liquid. Afterwards, consumers can rinse their face with water or use a muslin cloth to wipe away the remaining residues (Draelos, 2018).

Although it isn't as practical and convenient to use as the previous options, it's natural ingredients and the fact that has a waterless formula, make it a more environmentally friendly option (Aguiar et al., 2022).

Thus, in the aim of this research, cleansing balm will be considered the more sustainable option.

2.2 Greenwashing

The concept of greenwashing is complex, and it can be analyzed through multiple perspectives. Therefore, as Lyon and Montgomery (2015) mentioned, there isn't just one universally accepted definition.

The term greenwashing first appeared in 1986 when the ecologist Jay Westervelt wrote an essay accusing some hotels of incurring in this practice, by requesting guests to reuse towels as part of the hotel's water conservation strategy, when, not only there was nothing more to this

strategy (de Freitas Netto et al., 2020), but also more significant environmental issues were being ignored. The main goal of this strategy was to reduce costs.

In their paper "Concepts and forms of greenwashing: a systematic review", de Freitas Netto et al. (2020) presented an overview of different forms that greenwashing can assume, which include selective disclosure, decoupling, signaling and corporate legitimacy theory. For each one they present many definitions of other authors regarding this topic, whereas I will only analyze the phenomenon of greenwashing as selective disclosure as I consider it to be the most relevant for this study.

Tateishi (2018) defines greenwashing as selective disclosure as "communication that misleads people regarding environmental performance/benefits by disclosing negative information and disseminating positive information about an organization, service, or product". On the same note, Lyon and Maxwell (2011) consider it as "selective disclosure of positive information about a company's environmental or social performance, without full disclosure of negative information on these dimensions". Although Tateishi focuses only on the environmental part, both definitions hence the fact that there is some level of omission of information that can be damaging to the positive reputation regarding social or environmental performance.

However, greenwashing can go beyond just telling half the truth. As Lyon and Montgomery (2015) pointed out, this idea only considers information that can be verifiable and does not account for the use of ambiguous affirmations nor the use of visuals that can be misleading.

Therefore, the definition I will follow is the one proposed by Lyon and Montgomery (2015) that consider greenwashing as "any communication that mislead people into adopting overly positive beliefs about an organization's environmental performance, practices, or products".

Furthermore, it's relevant to explain *the 7 sins of greenwashing* presented by TerraChoice in their report (2010). The first one, called the *Hidden Trade-off,* consists in marketing a product as green based on a few characteristics, while disregarding other important environmental issues. Secondly, it's the *sin of no proof* through which environmental claims are made without proper evidence nor third-party certification. Then, there are the vague claims with a wide understanding that tend to mislead consumers consisting in the *sin of vagueness.* Similarly, making truthful claims but without any relevance to the product in question is called the *sin of irrelevance.* The fifth sin is the *lesser of two evils* in which an environmental claim is made that, even though it may be truth within the product category, distracts consumer from the

bigger environmental impacts of the category as a whole. Additionally, the report also mentions the *sin of fibbing* that does not occur often as it consists in making environmental claims that are simply false. Lastly, the seventh sin, that is intimately related to the next topic, is *worshiping false labels* which happens when a product uses certain words and visuals to lead consumers into thinking that it is a third-party certification.

2.3 Eco-labels

Due to the increasing trend of consumers wanting to purchase more sustainable products, it became necessary to provide them with tools to allow them to effectively identify these products. Eco-labels were one of these tools.

According to Global Ecolabeling Network (Global Ecolabelling Network, n.d.), an eco-label is a communication sign that identifies that a product or a service to be environmentally better in a certain category. However, ecolabelling is something voluntary. Even though there are certified eco-labels provided from third parties that prove that a product or a service complies with defined environmental standards, many companies chose to present their own labels on the products, sometimes even accompanied by vague claims, like already existing eco-labels (Delmas & Burbano, 2011).

This happens with beauty products. Many times, the information consumers see on the products is part of companies' marketing strategy as an attempt to attract the more conscious consumers.

As Marrucci et al. (2019) mentioned, eco-labels can influence consumers' behavior by guiding them towards more sustainable purchase decisions. Consequently, one can deduce that signals, visuals, environmental claims that companies may use to portrait certified eco-labels, can have the same effect. Consumers may think they are purchasing more environmentally friendly products when it isn't in fact true.

On top of that, consumers are also often misled by what they see online, considering that everyone can say whatever they want about any topic without the need to back it up with any evidence, which is related with the user-generated content.

2.4 User-generated content (UGC)

User-generated content (UGC) is media content produced by regular creators that is shared on the Internet with other users (Daugherty et al., 2008). Blackshaw and Nazarro (2006) called it consumer-generated media to refer to the same phenomenon, but focusing on the aspect that the content is shared by consumers and posted online, usually on social media apps but also in

any other online platform, with the intent to inform others about products, services, brands and similar. Both these definitions enhance the fact that the content is shared by ordinary users online instead of the traditional media (Cheong & Morrison, 2008; Presi et al., 2014; van Dijck, 2009). So, they rely on their own experiences as consumers when sharing their content (Bahtar & Muda, 2016).

In their paper "Studies of user-generated content: A systematic review", Naab and Sehl (2017) present a literature review of the topic that concludes that UGC complies with three characteristics: being personally developed by the users at some level; it has to be published and accessible by others; and lastly, it can't be part of the job's description of the user that is sharing this content.

Considering the various and different platforms that exist, this type of content can assume many forms that can be divided into: (1) text; (2) photo and picture; (3) music and sound; (4) video and film (Organization for Economic Cooperation and Development (OECD), 2007; Özkan et al., 2015).

For the purpose of this study, I will particularly consider the user comments, such as product reviews, when mentioning UGC. Nowadays, this is a valuable information source for consumers as they are searching more for this kind of feedback from other customers to make their purchasing decisions (Özkan et al., 2015). There is an increase in trust in it, as people are perceiving it to be more reliable than marketing and advertising own from brands (Hawkins & Mothersbaugh, 2010).

Nonetheless, considering that anyone can share information online about a product, it is no surprise that it ends up existing a lot of information of this type that is readily accessible. As a result, one can easily find himself dealing with information overload.

2.5 Information overload

This phenomenon, as well as its effects, have been studied extensively in the literature across different fields (Roetzel, 2019). In business literature, information overload is defined as a situation in which an excessive amount of information is presented to someone, negatively affecting his capability of making effective decisions (Jiang & Benbasat, 2007). In psychology, this phenomenon results in a cognitive overload in which a person feels stressed and confused, affecting his ability to perform tasks (Eppler & Mengis, 2004). Thus, there isn't just one definition. Bawden and Robinson (2009) consider that "information overload occurs when

information received becomes a hindrance rather than a help". Koltay (2017) defined it "as an impediment to efficiently using information due to the amount of relevant and potentially useful information available".

For this study, I will consider the definition proposed by Özkan et al. (2015) that consider it to be "a mental negativity people encounter in the information search process while evaluating large amounts of information; it depends on the quality of the information, the available time and the available tasks" (p.31).

From a consumer's perspective, all the information that comes in the product's packaging, like the eco-labels, as well as the customer's reviews, can become overwhelming for an individual to process everything effectively. Online reviews, thought to be helpful, can confuse a consumer, considering that many even contradict each other (Özkan et al., 2015; J. Q. Zhang et al., 2010).

To summarize, if some companies are already providing misleading information regarding their products with all the visuals and claims, and on top of that consumers can also access unlimited reviews from other consumers, despite their quality or source, it is predictable they use up all of their cognitive resources by processing all these information and reviews (Gottschalk & Mafael, 2017; Hu & Krishen, 2019). Consequently, it can affect consumers' decision-making process, which in this study translates into buying cosmetics products thinking they are sustainable and environmentally better, when it is not the truth.

3. Research Question & Hypothesis

3.1 Problem Statement

Through the literature review presented in the previous section, it is possible to see that many factors influence consumers' green purchase intentions. Different researchers have already examined how information overload associated with user-generated content affects consumer behavior. Additionally, the influence of eco-labels on consumers' attitudes and how ecolabelling can be used as a tool for greenwashing has also been studied. However, the three ideas connected have yet little notability in research.

Therefore, the proposed research question is: Does information overload affect consumers' perceptions regarding cosmetics products?

3.2 Hypothesis

Thus, the general hypothesis developed is: H0: Information overload has no effects on Willingness to Pay, Attitudes and Sustainability Perceptions *versus* H1: Information overload has a positive effect on Willingness to Pay, Attitudes and Sustainability Perceptions.

4. Methodology

In order to test the pretend hypothesis, an experimental study was conducted based on quantitative methods. The study aims to measure consumers' willingness to pay, attitudes and sustainability perceptions towards three different face cleansing products.

4.1 Study Design

The study consisted in a survey that was distributed online using Qualtrics. With the intent of maintaining the drop rate low, the survey was kept short and had two blocks. The first one referred to sociodemographic questions. The second one included a presentation of a cleansing product followed by questions about it. To visualize the survey' script go to Appendix 1.

4.1.1 Sociodemographic questions

In the first part, participants were asked some questions that included their age, gender, education level, and current employment status in order to obtain a description of study's participants.

4.1.2 Cleansing Products and information overload manipulation

In order to assess the effect of information overload associated with the use of eco-labels and UGC in consumer' behavior, nine different scenarios were created. They can be split into three groups, each presenting a different face cleansing option: cleansing wipes, micellar water, and cleansing balm. No brand was named to avoid any potential biases that could influence participant's answers.

The goal was to increase the level of information presented about the product in each scenario, to manipulate the information overload condition. Therefore, each product was presented three times: (1) without any information, just the picture of the product; (2) the picture of the product with the respective description; (3) the picture of the product with the respective description and comments with product' reviews, that represented the UGC.

Each participant only saw one scenario that was randomly assigned to them, meaning they viewed one of the products manipulated with just one of the three levels of information previously mentioned. Regardless of the scenario, all participants answered the same questions.

4.2 Validated measures

To guarantee the reliability and credibility of this dissertation, only validated measures from previous studies were used.

For measure respondent's attitudes towards the presented products, the Affect – Behavior – Cognition (ABC) model was used. This ABC model is a generally recognized framework that has been studied and adapted by different author in field like psychology (Nuzum et al., 2019; van Harreveld et al., 2015) and consumer behavior (Ho et al., 2017; Hsu & Lin, 2016). The model considers that attitudes are constituted by three components: (1) the affective, that refers to the feelings and emotions one associates to the product; (2) the behavioral, that alludes to the concrete actions consumers have towards a product; (3) the cognitive, that consists in the ideas, perceptions and opinions consumers have regarding the product's features such as quality, value, performance, and packaging.

In light of this, the survey included the following six statements that participants had to rate through a 5-point-Likert scale being 1 – "strongly disagree" and 5 – "strongly agree": (1) I enjoy this product; (2) Using this product gives me a sense of satisfaction; (3) I would recommend this product to other; (4) I am likely to purchase this product again; (5) This product is effective in meeting my needs; (6) This product has high quality.

For the scope of this study, it will be calculated an average score of participants attitudes towards the product in each scenario. Results that show an average score between 1 and 2 will be considered as no intent of purchasing. On the contrary, scores within the range from 4 to 5 will be regarded as a strong intent of purchasing, while ratings of 3 will be seen as neutral position.

To assess respondent's perceptions of the sustainability of the product, the Sustainability Perception Index (SPI) was applied. This model was jointly created by GlobeScan, which is a *B Corp* certified consultancy, and SustainAbility, also a consultancy well-noted for its expertise in sustainability and corporate responsibility. They have been using this tool over the years in several surveys (GlobeScan & SustainAbility, 2012, 2013, 2017, 2022) they conduct together across

different industries to gather insight of how sustainability actions from companies are perceived.

Thus, the survey included the following five statements that respondents had to rate through a 5-point-Likert scale being 1 – "strongly disagree" and 5 – "strongly agree": (1) This product is environmentally friendly; (2) This product is made with sustainable ingredients and materials; (3) I value a product's sustainability features when making purchasing decisions; (4) I am likely to recommend this product to others based on its sustainability; (5) This product is made by a company that cares about the environment.

For the purpose of this dissertation, it will be calculated an average for each scenario of the ratings respondents gave to these statements. Ratings ranging from 1 and 2 will be considered as participants not considering the product sustainable. On the other hand, scores between 4 and 5 will be seen as participants considering the product sustainable, whereas results equaling 3 will be regarded as neutral.

To measure respondent's willingness to pay, I applied the Van Westendorp Price Sensitivity Meter (Kloss & Kunter, 2016, as cited in Westendorp, 1976) framework. So, participants were asked to answer the following four questions: (1) "At what price do you consider the product to become inexpensive, but you would still consider it to be a bargain?"; (2) "At what price do you consider the product to become expensive, but you would still consider buying it?"; (3) "Above what price would the product become too expensive so that you would not consider buying it?"; (4) "Below what price would the product become so inexpensive that you would doubt its quality and not consider buying it?".

The answers are then registered and plotted into curves that represent prices which respondents consider to be "cheap", "expensive", "too expensive", and "too cheap". Van Westendorp's method adds two more curves that the author names "not cheap" and "not expensive", which are the opposite points of "cheap" and "expensive", respectively (Kloss & Kunter, 2016). Four critical points result from the intersections of these curves, that consequently provide an acceptable price range (Kupiec & Revell, 2001, p. 14): (1) Point of Marginal cheapness represents the intersection point of "too cheap" and "not cheap" which indicates the price beyond which consumers start doubting the quality of the product due to consider it inexpensive; (2) Point of marginal expensiveness is the intersection point in which the same number of individuals considers the product as "not expensive" and "too expensive", meaning that beyond this threshold consumers start perceiving the product as costly; (3) Optimal pricing point consists

in the point where the same proportion of consumers considers the product both too expensive and too cheap, representing the price which consumers believe to be fair considering the product's value; (4) Indifference point demonstrates the intersection between "cheap" and "expensive" curves, which can be seen as the price range that consumers perceive it to be normal.

After plotting what is explained above, it will be possible to see that between the point of marginal cheapness and the point of marginal expensiveness it is the "acceptable price range" (Kloss & Kunter, 2016). For the purpose of the study, the goal is to see if the acceptable price range regarding the same product changes across the different levels of information. This framework is useful as a complementary analysis since it will allow to infer if consumers are willing to pay more for the same product if they believe it has more sustainable features.

5. Results

5.1 Sample Characterization

During the data collection period, April 20th to May 24th, 393 responses were recorded with a dropout rate of 25.7%, meaning that only 292 surveys were fully completed. In order to provide a comprehensive understanding of the surveyed sample, a descriptive statistical analysis was conducted on all demographic indicators. Among the 292 participants, the majority surveyed were female, representing 60.3%. Regarding age, it was concentrated withing two age ranges, namely 35.6% between 18 and 24 years and 28% between 25 and 34 years. As for the level of education, Bachelor's had the highest incidence with 39.4% followed by Master's with 31.2%. Almost half of the respondents were employed, representing 46.2%. For a detailed presentation of sociodemographic data see Table 1.

Table 1 *- Sociodemographic Statistics*

Scenario	1		2		3		4		5		6		7		8		9		Full Sample	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Gender																				
Female	27	77.14	16	53.33	15	48.39	25	71.43	23	65.71	14	46.67	18	60	17	56.67	21	58.33	176	60.3
Male	8	22.86	14	46.67	16	51.61	10	28.57	12	34.29	15	50	12	40	13	43.33	15	41.67	115	39.4
Non-binary	0	0	0	0	0	0	0	0	0	0	1	3.33	0	0	0	0	0	0	1	0.3
Age																				
Under 18	1	2.86	2	6.67	1	3.23	3	8.57	2	5.71	2	6.67	3	10	1	3.33	3	8.33	18	6.2
18-24	15	42.86	9	30	12	38.71	13	37.14	14	40	11	36.67	12	40	10	33.33	8	22.22	104	35.6
25-34	13	37.14	9	30	6	19.35	9	25.71	7	20	9	30	12	40	6	20	11	30.56	82	28.1
35-44	3	8.57	6	20	4	12.90	5	14.29	3	8.57	5	16.67	1	3.33	5	16.67	6	16.67	38	13
45-54	1	2.86	1	3.33	3	9.68	3	8.57	4	11.43	3	10	2	6.67	5	16.67	5	13.89	27	9.2
55-64	2	5.71	3	10	4	25.81	2	5,71	5	14.29	0	0	0	0	3	10	2	5.56	21	7.2
65-74	0	0	0	0	1	3.23	0	0	0	0	0	0	0	0	0	0	1	2.78	2	0.7
Education																				
Not finished High School	1	2.86	2	6.67	1	3.23	3	8.57	2	5.71	1	3.33	3	10	1	3.33	2	5.56	16	5.5
High School	6	17.14	7	23.33	5	16.13	4	11.43	10	28.57	7	23.33	5	16.67	5	16.67	7	19.44	56	19.2
Bachelor	17	48.57	8	26.67	9	29.03	13	37.14	14	40	12	40	14	46.67	12	40	16	44.44	115	39.4
Master	11	31.43	10	33.33	14	45.16	14	40	7	20	9	30	8	26.67	10	33.33	8	22.22	91	31.2
Phd or higher	0	0	3	10	2	6.45	1	2.86	2	5.71	1	3.33	0	0	2	6.67	3	8.33	14	4.8
Employment																				
Employed	19	54.29	12	40	14	45.16	19	54.29	14	40	13	43.33	12	40	13	43.33	19	52.78	135	46.2
Retired	0	0	0	0	2	6.45	0	0	0	0	0	0	0	0	0	0	2	5.56	4	1.4
Self-employed	1	2.86	6	20	4	12.90	4	11.43	6	17.14	1	3.33	1	3.33	5	16.67	6	16.67	34	11.6
Student	7	20	8	26.67	6	19.35	9	25.71	8	22.86	9	30	11	36.67	8	26.67	6	16.67	72	24.7
Unemployed	1	2.86	0	0	0	0	1	2.86	1	2.86	1	3.33	0	0	1	3.33	1	2.78	6	2.1
Working - Student	7	20	4	13.33	5	16.13	2	5.71	6	17.14	6	20	6	20	3	10	2	5.56	41	14
Full Sample	35	11.99	30	10.27	31	10.62	35	11.99	35	11.99	30	10.27	30	10.27	30	10.27	36	12.33	292	100

Scenario's Legend: (1) Cleansing Wipes with no information; (2) Cleansing wipes without information overload; (3) Cleansing wipes with information overload; (4) Micellar Water with no information; (5) Micellar Water without information overload; (6) Micellar Water with information overload; (7) Cleansing Balm with no information; (8) Cleansing Balm without information overload; (9) Cleansing Balm with information overload.

5.2 Reliability and Consistency

In addition of using already validated measures, the internal consistency of the scales was assessed using Cronbach's Alpha, demonstrating high reliability, as demonstrated in Table 1. The Cronbach's Alpha values were α = 0.977 for Attitudes and α = 0.936 for Sustainability Perceptions, indicating great internal consistency and high reliability. For more details regarding these calculations, see Appendix 2.

Table 2 *- Reliability Statistics*

	Cronbach's Alpha	N of Items
Attitudes	0.977	6
Sustainability Perception	0.936	5

5.3 Two-way MANOVA

A two-way multivariate analysis of variance (MANOVA) was conducted to examine the effects of Product and Information on Consumer's Attitudes and Sustainability Perceptions.

All the multivariate tests revealed a significant effect of the product presented and the level of information on consumer's attitudes and sustainability perceptions. Using Pillai's trace, there was a significant effect of the product on consumer's attitudes and sustainability perceptions, V = 0.41, F (4, 566) = 36.38, $p < .01$. Likewise, the significant effect of the information on consumer's attitudes and sustainability perceptions is demonstrated by Pillai's test, V = 0.41, F (4, 566) = 36.48, $p < .01$. For a detailed presentation of the multivariate tests go to Appendix 3 and for the test of between – subjects effects see Appendix 4.

Descriptive Statistics for the dependent variables, Consumer's Attitudes and Sustainability Perceptions, across the levels of the factors Product and Information are presented in Table 2.

Table 3 *- MANOVA Descriptive Statistics*

		Product								
		Not Sustainable			Neutral			Sustainable		
Information		None	Without Overload	With Overload	None	Without Overload	With Overload	None	Without Overload	With Overload
Attitudes	M	2.20	2.10	4.12	3.55	3.53	4.39	3.97	3.89	4.45
	SD	0.83	0.99	0.77	0.73	0.65	0.83	0.58	0.70	0.60
Sustainability Perceptions	M	2.23	2.23	4.26	3.15	3.13	4.29	3.81	3.83	4.43
	SD	0.63	0.67	0.67	0.65	0.77	1.05	0.78	0.72	0.72

5.3.1 Scenarios

For a deeper understanding of in each way participants' answers translate in their attitudes and sustainability perceptions, the descriptive statistics presented above will be analyzed in each scenario considering the ABC Attitudes Model and the Sustainability Perception Index framework, as explained in the previous chapter.

5.3.1.1 Cleansing Wipes without any information

Regarding their attitudes, the average was calculated on the sample of N = 30 participants, and it demonstrated that the intent of purchasing the cleansing wipes is low (M = 2.20).

In terms of sustainability perceptions, the average rating calculated based on the sample of N = 30 showed that the perception of this product as sustainable was low (M = 2.23).

5.3.1.2 Cleansing Wipes without information overload

The average attitude towards purchasing the cleansing wipes in this scenario, based on sample of N = 30 respondents, revealed a low level of interest in purchasing this product (M = 2.10).

In terms of sustainability perceptions, the average was calculated based on the same sample (N = 30), evidencing participants showed a low level of perceiving the product as sustainable (M = 2.23).

5.3.1.3 Cleansing Wipes with information overload

Among the sample of N = 35 participants, the average calculated of their attitudes indicated that participants showed a high level of intent to purchasing the product (M = 4.12).

In what concerns the sustainability perceptions, an average score was computed based on the same sample (N = 35), highlighting that the level of perceiving this product as sustainable was high (M = 4.26).

5.3.1.4 Micellar water without any information

In terms of the attitudes recorded regarding this product, the average calculated based on the sample of N = 35 respondents demonstrated that the intent of purchasing the micellar water was somewhat high (M = 3.55).

In what regards the sustainability perceptions, the average rating was obtained from the sample of N = 35 and it showed that the level of perceived sustainability of the micellar water was neither low nor high (M = 3.15).

5.3.1.5 Micellar water without information overload

In relation to the attitudes towards this product, the average derived from the sample of N = 30 revealed that respondents showed a moderate intention of purchasing the micellar water (M = 3.53).

As for the sustainability perceptions, the average computed based on the same sample (N = 30) evidenced that the level of perceived sustainability features of the micellar water was neither low nor high (M = 3.13).

5.3.1.6 Micellar water with information overload

Among this sample of N = 35 surveyed, the average calculated revealed that the intention of purchasing the micellar water was high (M = 4.39).

Regarding the sustainability perceptions, the average score obtained from the sample N = 35 highlighted that the level of perceiving the micellar water as sustainable was high (M = 4.29).

5.3.1.7 Cleansing balm without any information

In this sample of N = 31 participants, the average calculated regarding their attitudes' ratings revealed there was a moderated level of intention of purchasing the cleansing balm (M = 3.97).

As for how its sustainability features were perceived, the average derived from the same sample (N = 31) demonstrated a moderated level of perceived sustainability of the cleansing balm (M = 3.81).

5.3.1.8 Cleansing balm without information overload

In this context, the average score among the sample of N = 36 respondents indicated that the level of intent in obtaining the cleansing balm was somewhat high (M = 3.89).

Regarding how the sample of N = 36 participants perceived the product's sustainability features, the average rating obtained determined that the cleansing balm was seen with a fair level of sustainability (M = 3.83).

5.3.1.9 Cleansing balm with information overload

Among the sample N= 30, the average inclination towards purchasing the cleansing balm revealed a high level of intent to acquire the product (M = 4.45).

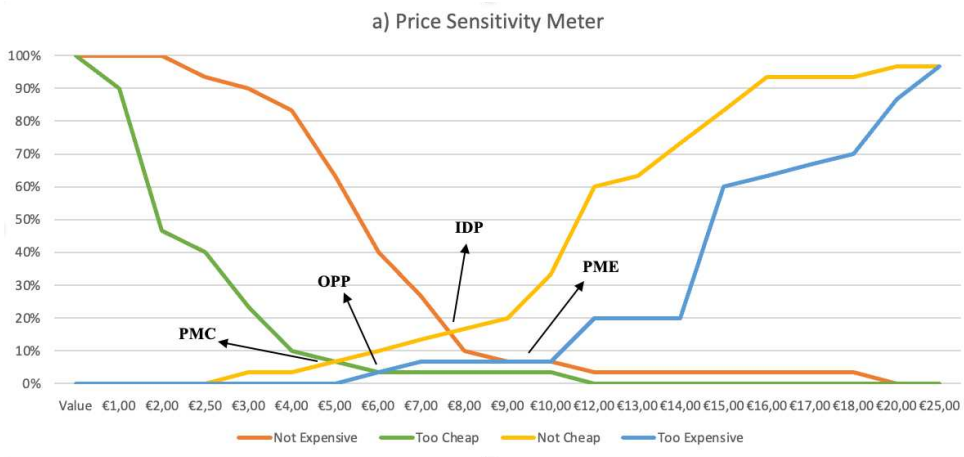
As for how sustainable it was perceived, the average derived from the same sample (N = 30) indicated a high level of perceived sustainability of the cleansing balm (M = 4.43).

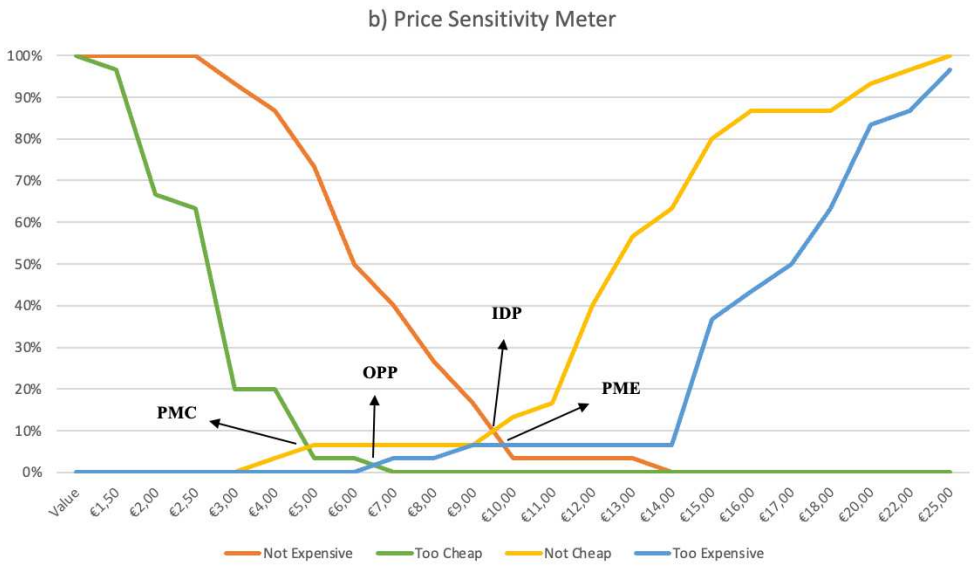
5.4 Overall Willingness to Pay

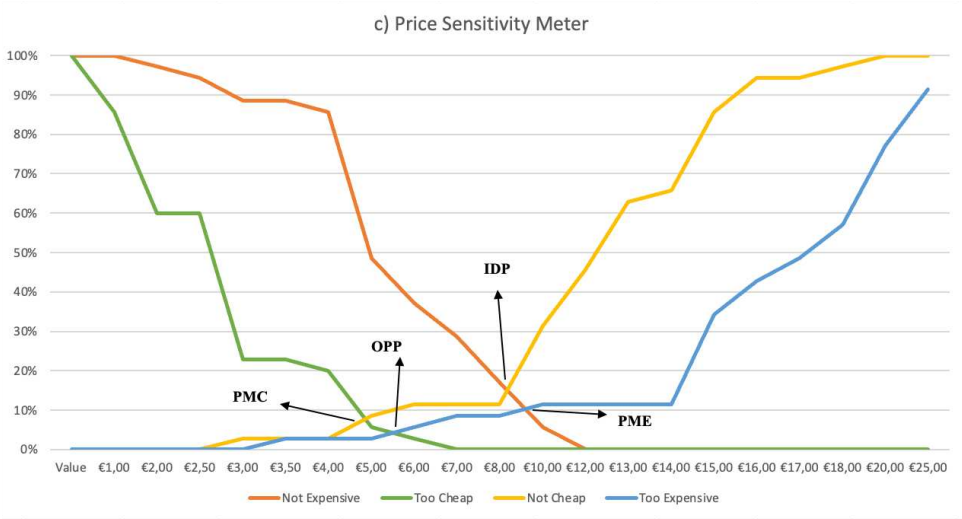
As previously explained in the antecedent chapter, trough the Westendorp Price Sensitivity Meter, participants' willingness to pay will be analyzed to comprehend what they considered to be the acceptable price range for the scenario they saw. The goal is to determine if consumers are willing to pay a higher price for a product they perceive as sustainable when compared to one not as sustainable.

5.4.1 Cleansing Wipes

***Graph 1** - Price Sensitivity Meter for cleansing wipes a) without any information, b) without information overload and c) with information overload*





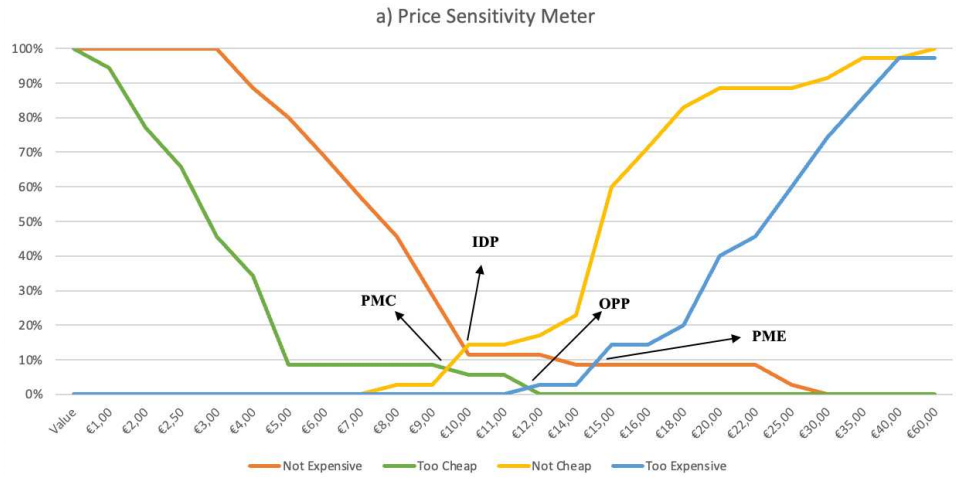


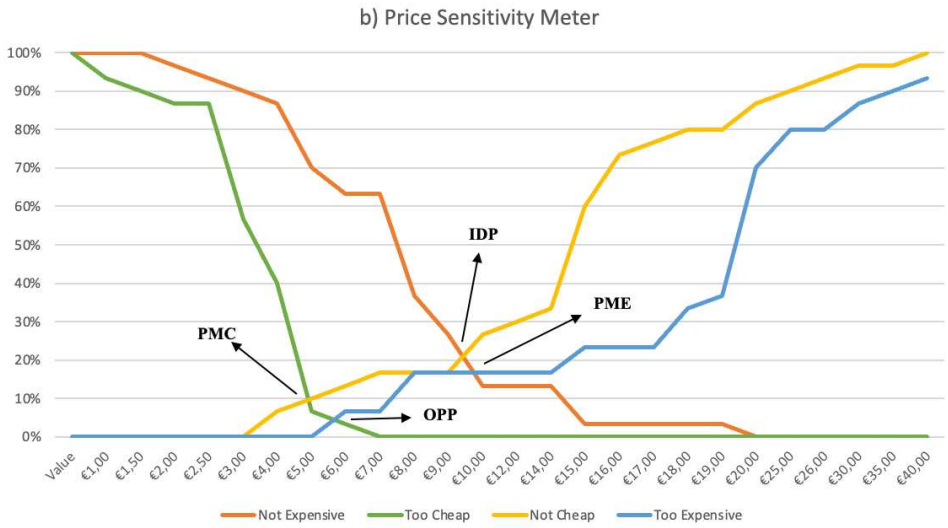
Through the analysis of the previous Price Sensitivity Meters, we find that the Point of Marginal Cheapness (PMC) and the Point of Marginal Expensiveness (PME) are actually the same in all scenarios, being 5€ and 9€ to 10€, respectively. Thus, according to this Accepted Price Range (APR), it is evident that participants are willing to pay between 5€ and 10€ for the cleansing wipes, regardless the level of information.

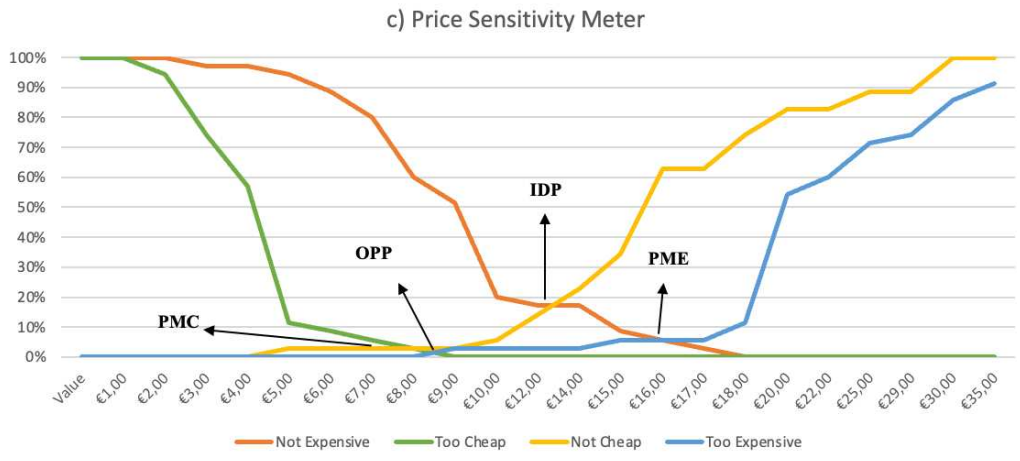
These findings have revealed an unexpected result regarding the impact of information overload on participants' willingness to pay. Despite the level of information provided in each scenario, respondents' willingness to pay for the cleansing wipes remained unchanged. In other words, information overload had no effect on consumers' willing to pay. The expected outcome was that consumers would be willing to pay more for the cleansing wipes perceived as sustainable due to the information overload. Consequently, it was anticipated that the lower and upper bounds of the Accepted Price Range would have higher values in the scenario with information overload.

5.4.2 Micellar Water

Graph 2 *– Price Sensitivity Meter for Micellar Water a) without any information, b) without information overload and c) with information overload*





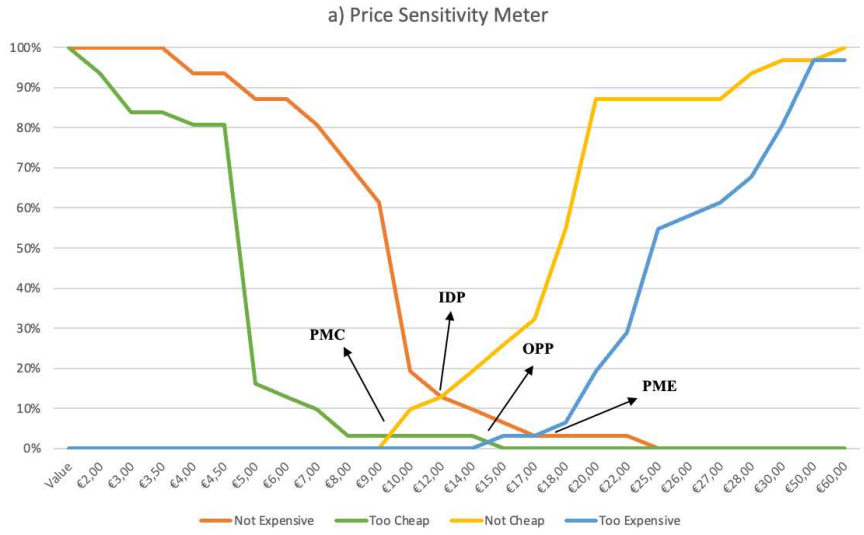


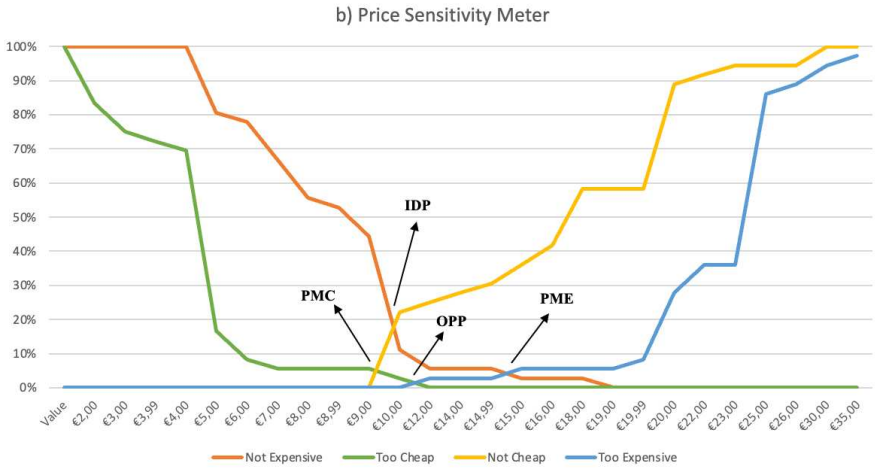
The analysis of the previous Price Sensitivity Meters reveals that the Accepted Price Range (APR) in the scenario where there is no information ranges from 9€ to 14€. In turn, when there is information, but without overload, the Point of Marginal Cheapness (PMC) and the Point of Marginal Expensiveness (PME) are lower, delimiting an APR of 5€ to 10€. As for when there is information overload, the price participants' are willing to pay falls in a range slightly higher than in the first scenario, namely, in an APR ranging between 9€ and 16€.

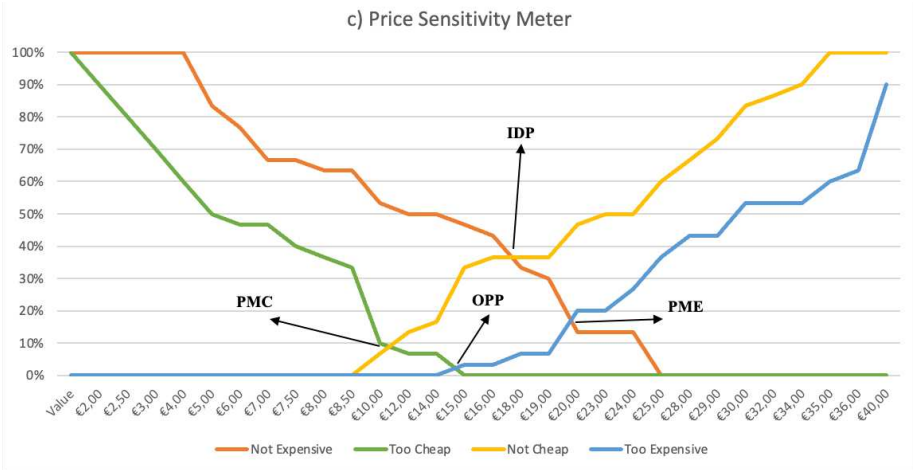
Once again, these findings have revealed an unexpected result concerning the impact of information overload on participant's willingness to pay. Despite the level of information provided in each scenario, respondent's willingness to pay for the micellar water did not increase as expected. The anticipated outcome was that consumers would be willing to pay more for the micellar water as the level of information increased, influencing their perception of sustainability. Thus, it was anticipated that the PMC and the PME would show higher values in each scenario, as the level of information increased.

4.4.3 Cleansing Balm

Graph 3 - Price sensitivity meter for Cleansing Balm a) without any information, b) without information overload and c) with information overload







The analysis conducted in graph 3 reveals that the Point of Marginal Cheapness (PMC) is the same when there is no information and just a little of it, being set at 9€. However, when there is some information, but without overload, the Point of Marginal Expensiveness (PME) is lower than the others, being establish at 15€, which delimits an Accepted Price Range (APR) of 9€ to 15€. Whereas, in the scenario with no information the PME is set at 17€, establishing an APR ranging between 9€ to 17€. As for the scenario with information overload, the PMC and the PME delimit a slightly higher Accepted Price Range that goes from 10€ to 20€.

To some extent, these findings have confirmed what was expected regarding the impact of information overload on participants' willingness to pay. Consumers are indeed willing to pay more for the cleansing balm they perceive as sustainable due to the information overload than for the one with no information. However, the expected difference in their willingness to pay between both scenarios was not as clear or significant as anticipated. In other words, even though they were willing to pay more for cleansing balm perceived sustainable due to the

information overload, it was very similar to what they were willing to pay for the cleansing balm with no information. Surprisingly, their willingness to pay was lower when there was some information but without overload, which was unexpected. The expected outcome was that consumers would be increasingly willing to pay more for the cleansing balm as the level of information increased, influencing their perception of the product's sustainability.

6. Discussion

Taking into consideration the results previously presented, this section aims to gather the main conclusions that can be drawn from the findings of the research.

The objective of this dissertation was to assess if information overload had any impact on consumers' purchasing decisions regarding cosmetics' products. An experimental study was conducted where participants saw different cleansing products and the information relating to them, that had three different levels. Each participant only saw one cleansing product with one level of information. Overall, the results show unequivocally that information overload exerts a significant influence on consumer's perceptions. More specifically, the results show that due to the information overload, consumers had intention of purchasing the cleansing products and perceived them as sustainable, even the ones that weren't in fact sustainable. This study supports the claim that companies and marketeers can take advantage of this, adding to the existing abundance of information and user-generated content available, by frequently resorting to vague claims about the products sustainability, further intensifying consumer confusion.

We consider that information overload potentially impacts consumers' cognitive resources and capability of discerning the information, which leads participants to rely on a more heuristic processing. Consequently, they may perceive a product as having a higher value just because of the number, and not the specific characteristics, of the sustainability claims. The impact occurs on both attitudes and sustainability perceptions. Despite this, the same effect wasn't observed in consumer's willingness to pay, considering that it didn't differ that much across varying levels of information.

This phenomenon was verified regarding the cleansing wipes, micellar water, and the cleansing balm. In the scenarios where an excessive amount of information was presented, participants perceived the non - sustainable or neutral sustainable products, such as cleansing wipes and micellar water, as sustainable, resulting in a higher intention of purchasing it compared to the scenarios with lower levels of information. This effect even extended to a product already considered sustainable, like the cleansing balm, where a higher purchase intent was noted.

However, consumers were not willing to pay significantly more for products perceived as sustainable compared to their regular counterparts, which was a trend that applied to cleansing wipes, micellar water, and cleansing balm. Nonetheless, it is important to note that when comparing the products against each other, the product consumers were willing to pay more was the cleansing balm, followed by the micellar water, and in last are the cleansing wipes. In other words, participants are willing to pay more for what is the actual sustainable product, the cleansing balm, over the non – sustainable product, the cleansing wipes. As for why this happens, it's difficult to find a single explaining reason based solely on the results of this dissertation, considering various factors can be at play here. But, within the scope of this research, it can be inferred that when it comes to the exact same product, consumers might not be particularly price – sensitivity to sustainability features. On the other hand, when comparing different products within the same category, consumers seem more inclined to pay a higher price for those they perceive as having superior quality, designated the premium products.

Overall, the results gathered sustain the hypothesis that the information overload increases indeed consumers' likelihood to fall into greenwashing in the cosmetics industry. Therefore, it's crucial consumers be aware of this effect so they can be better prepared when making purchasing decisions. It is time for companies to start acting with more transparency and better principles in order to make the shift in the cosmetics industry towards sustainability happen.

7. Conclusion

7.1 Managerial Implications

Sustainability is a trending topic in the cosmetics industry. Even if it's a result of outside pressures or due to businesses actually believing they can have a meaningful impact in the future of the planet, a shift is happening in the beauty sector. Managers are becoming aware that there is a switch in consumer's demand. Therefore, they are increasing the offer of allegedly more sustainable options in their portfolio.

The study demonstrates that consumers are influenced by sustainability information advertised in the products, especially if there is information overload that instigates a more heuristic judgment. This benefits companies who are only seeking profit by reaching a new customer segment, as the cases analyzed showed that vague claims, false labels, and some customer' reviews are enough for some people to believe the products are eco – friendly. On the other hand, it can also be helpful for managers who are in fact trying to make this important change.

It allows them to understand what the best communication strategies are to educate consumers, not only about their products, but also about those of their competitors. In this way, they can draw attention to companies that practice greenwashing.

However, the analysis conducted unveils that even though consumers show an interest in buying more sustainable products, it doesn't necessarily mean they are willing to pay a higher price for them. Then, managers must be aware that providing more sustainable products won't translate in instant profits. It is important they carry out a thorough analysis to understand the price points consumers will be responsive to.

This study also sheds a light on the importance of third – party companies that certify and distinguish genuine sustainable products. This can be accomplished through stronger regulations that protect consumers by requiring companies to comply with regulatory standards and always present information from a third party that backs up the claims they advertise in their products.

7.2 Limitations and Future Research

The experimental study faced some limitations that will be now presented. Based on this, a few recommendations will be proposed for a more in-depth investigation.

The study should be repeated with a bigger and more diverse sample. The results obtained from a sample that has a better representation of all age groups, employment status and education level might demonstrate different purchasing intention, sustainability perceptions or even willingness to pay. Especially in older consumers that may be even more overwhelmed with information overload.

This study focuses only on cosmetic' products, but it would be useful to conduct a similar study that would include different product' segments from different industries, since this a problematic observed across many industries. It would be interesting to comprehend how consumers react to information overload and greenwashing tactics in different business sectors.

Regarding how the phenomenon of information overload was manipulated in the different scenarios, it only included the representation of user-generated content, namely customers' reviews. An additional study may include a more realistic representation of what information overload looks like in social media nowadays, through the simulation of Instagram posts or TikTok videos that review products. This way, respondents would be in similar conditions they are in their day to day when answering the questionnaire, allowing for more detailed results.

In this experimental study, participants are only asked to reveal some sociodemographic information and answer according to what they are seeing in the scenario assigned to them. In a further study, it could be relevant to assign a section related to their purchasing behaviors and sustainability practices in their daily life. This way it would be possible to explain and justify in more detail the results.

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9. Appendix

Appendix 1 – Survey Script

Start of Block: Introdução

Introdução Thank you for taking the time to participate in this research study. This survey is being conducted as part of a Master's thesis project by Joana Moreira at Católica Lisbon School of Business & Economics. The purpose of this study is to analyse the effect of information overload when purchasing cosmetic products.
The survey will take no more than 5 minutes to complete. Please provide your honest and thoughtful responses to the questions. There are no right or wrong answers, and your opinions are highly valued.
Your participation in this survey is voluntary, and your responses will be kept confidential and used only for research purposes.
By accepting these conditions, you are indicating your informed consent to participate in this research study.

○ I accept these conditions. (1)

End of Block: Introdução

Start of Block: Sociodemographic

Q1 How old are you?

- ○ Under 18 (1)
- ○ 18 - 24 (2)
- ○ 25 - 34 (3)
- ○ 35 - 44 (4)
- ○ 45 - 54 (5)
- ○ 55 - 64 (6)
- ○ 65 - 74 (7)
- ○ 75 - 84 (8)
- ○ 85 or older (9)

Q2 What is your gender?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Prefer not to say (4)

Q3 What is the highest level of education you have completed?

- ○ I have not finished High School (1)
- ○ High School (2)
- ○ Bachelor's Degree (3)
- ○ Master's Degree (4)
- ○ PhD or higher (5)

Q4 What is your current employment status?

- ○ Student (1)
- ○ Working - student (2)
- ○ Employed (3)
- ○ Self - employed (4)
- ○ Unemployed (5)
- ○ Retired (6)

End of Block: Sociodemographic

Start of Block: intro manipulacao

Q6 Imagine you want to add a new cleansing product to your skincare routine. While searching, you find the following option:

End of Block: intro manipulacao

Start of Block: PN_SEM

PN_SEM_pic

PN_SEM_time Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: PN_SEM

Start of Block: PNS_SEM

PNS_SEM_pic

PNS_SEM_time Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: PNS_SEM

Start of Block: PS_SEM

PS_SEM_pic

PS_SEM_time Timing

First Click (1)
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Page Submit (3)
Click Count (4)

End of Block: PS_SEM

Start of Block: PN_CO

PN_CO_pic

PN_CO_time Timing

First Click (1)
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Page Submit (3)
Click Count (4)

End of Block: PN_CO

Start of Block: PNS_CO

PNS_CO_pic

PNS_CO_time Timing

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Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: PNS_CO

Start of Block: PS_CO

PS_CO_pic

PS_CO_time Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: PS_CO

Start of Block: PN_SO

PN_SO_pic

PN_SO_time Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: PN_SO

Start of Block: PNS_SO

PNS_SO_pic

PNS_SO_time Timing

First Click (1)
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Page Submit (3)
Click Count (4)

End of Block: PNS_SO

Start of Block: PS_SO

PS_SO_pic

PS_SO_time Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: PS_SO

Start of Block: Perguntas

WTP Considering the information you saw before, please answer to the following questions:

○ At what price do you consider the product to become inexpensive, but you would still consider to be a bargain? (Cheap) (1)
_____

○ At what price do you consider the product to become expensive, but you would still consider buying it? (Expensive) (2) _____

○ Above what price would the product become too expensive so that you would not consider buying it? (Too expensive) (3) _____

○ Below what price would the product become so inexpensive that you would doubt its quality and not consider buying it? (Too cheap) (4)
_____

PERCEPTIONS Considering the information you saw before, please rate from 1-5 how much do you agree with the following statements:

	1 - Stongly Disagree (1)	2 (2)	3 (3)	4 (4)	5 - Strongly Agree (5)
I enjoy this product. (ATT_1)	○	○	○	○	○
Using this product gives me a sense of satisfaction. (ATT_2)	○	○	○	○	○
I would recommend this product to others. (ATT_3)	○	○	○	○	○
I am likely to purchase this product again. (ATT_4)	○	○	○	○	○
This product is effective in meeting my needs. (ATT_5)	○	○	○	○	○
This product has high quality. (ATT_6)	○	○	○	○	○
This product is environmentally friendly. (Sustain_1)	○	○	○	○	○
This product is made with sustainable ingredients and materials. (Sustain_2)	○	○	○	○	○
I value a product's sustainability features when making purchasing decisions. (Sustain_3)	○	○	○	○	○

I am likely to recommend this product to others based on its sustainability. (Sustain_4)	○	○	○	○	○
This product is made by a company that cares about the environment. (Sustain_5)	○	○	○	○	○

End of Block: Perguntas

Appendix 2 – Reliability Statistics

Appendix 2.1 – Attitudes reliability statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.977	.977	6

Inter-Item Correlation Matrix

	att_1	att_2	att_3	att_4	att_5	att_6
att_1	1.000	.886	.916	.910	.887	.888
att_2	.886	1.000	.890	.897	.855	.839
att_3	.916	.890	1.000	.907	.846	.888
att_4	.910	.897	.907	1.000	.843	.850
att_5	.887	.855	.846	.843	1.000	.836
att_6	.888	.839	.888	.850	.836	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
att_1	18.01	29.800	.950	.905	.970
att_2	18.05	29.547	.920	.855	.973
att_3	18.08	29.739	.940	.892	.971
att_4	18.12	29.306	.931	.880	.972
att_5	17.99	30.639	.895	.814	.975
att_6	18.04	30.545	.903	.829	.974

Appendix 2.2 – Sustainability Perceptions reliability statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.936	.926	5

Inter-Item Correlation Matrix

	sustain_1	sustain_2	sustain_3	sustain_4	sustain_5
sustain_1	1.000	.963	.398	.908	.951
sustain_2	.963	1.000	.383	.920	.944
sustain_3	.398	.383	1.000	.395	.396
sustain_4	.908	.920	.395	1.000	.893
sustain_5	.951	.944	.396	.893	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
sustain_1	14.15	17.409	.953	.945	.897
sustain_2	14.21	17.270	.951	.944	.898
sustain_3	13.48	25.233	.404	.168	.981
sustain_4	14.20	17.830	.912	.856	.906
sustain_5	14.21	17.527	.938	.917	.900

Appendix 3 – MANOVA Multivariate Tests

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.963	3719.764[b]	2.000	282.000	<.001
	Wilks' Lambda	.037	3719.764[b]	2.000	282.000	<.001
	Hotelling's Trace	26.381	3719.764[b]	2.000	282.000	<.001
	Roy's Largest Root	26.381	3719.764[b]	2.000	282.000	<.001
Product	Pillai's Trace	.409	36.379	4.000	566.000	<.001
	Wilks' Lambda	.609	39.744[b]	4.000	564.000	<.001
	Hotelling's Trace	.614	43.154	4.000	562.000	<.001
	Roy's Largest Root	.563	79.654[c]	2.000	283.000	<.001
Information	Pillai's Trace	.410	36.478	4.000	566.000	<.001
	Wilks' Lambda	.591	42.412[b]	4.000	564.000	<.001
	Hotelling's Trace	.691	48.509	4.000	562.000	<.001
	Roy's Largest Root	.688	97.392[c]	2.000	283.000	<.001
Product * Information	Pillai's Trace	.155	5.946	8.000	566.000	<.001
	Wilks' Lambda	.846	6.143[b]	8.000	564.000	<.001
	Hotelling's Trace	.180	6.338	8.000	562.000	<.001
	Roy's Largest Root	.172	12.192[c]	4.000	283.000	<.001

a. Design: Intercept + Product + Information + Product * Information

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Appendix 4 – MANOVA Tests of Between – Subject Effects

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	ATT_Global	186.928[a]	8	23.366	41.369	<.001
	SUST_Global	180.450[b]	8	22.556	39.731	<.001
Intercept	ATT_Global	3717.760	1	3717.760	6582.235	<.001
	SUST_Global	3520.584	1	3520.584	6201.231	<.001
Product	ATT_Global	88.749	2	44.375	78.564	<.001
	SUST_Global	60.152	2	30.076	52.976	<.001
Information	ATT_Global	81.286	2	40.643	71.958	<.001
	SUST_Global	104.455	2	52.228	91.995	<.001
Product * Information	ATT_Global	25.298	4	6.325	11.198	<.001
	SUST_Global	22.094	4	5.523	9.729	<.001
Error	ATT_Global	159.843	283	.565		
	SUST_Global	160.666	283	.568		
Total	ATT_Global	4151.278	292			
	SUST_Global	3943.360	292			
Corrected Total	ATT_Global	346.771	291			
	SUST_Global	341.116	291			

a. R Squared = .539 (Adjusted R Squared = .526)

b. R Squared = .529 (Adjusted R Squared = .516)