Reducing Personal Care Waste through Innovation: A Study on the Feasibility of the Creation of a new platform for Selling Near-Expiry and Damaged Personal Care Products in the Portuguese Market

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ABSTRACT

The personal care industry has witnessed significant growth, with the COVID-19 pandemic further accelerating the shift towards online channels. Overall, consumers have become increasingly conscious of environmental issues, leading to higher demands for sustainable practices, circular economy and waste reduction. However, there's a significant portion of unmanageable waste from the industry that is hard to control, attributed to unsold, damaged, or near-expiry products that fail to reach the end consumer and end up in landfill.

Driven by the market growth and sustainability awareness among Portuguese consumers, this study examines the feasibility of establishing a new platform that enables consumers to purchase near-expired or damaged personal care products at discounted prices. The research investigates the potential consumer profile using the Theory of Planned Behavior (TPB) framework, as well as identifies the drivers and barriers that influence the purchase intention of these products among Portuguese consumers, drawing on relevant literature.

A mixed methods approach was used, resulting in 10 in-depth interviews from qualitative data, and an online questionnaire with 143 valid answers from quantitative data. The findings indicate that the purchase intention of these personal care products could be acceptable in the Portuguese market. Moreover, no significant barriers were identified as relevant, with consumers perceiving value for money and trying new products as key drivers of their purchase intention. Finally, two distinct consumer profiles emerged, reflecting different characteristics: one group focused on seeking bargains and saving money, while the other prioritized sustainability and preferred environmentally-friendly options.

Keywords: personal care industry, waste reduction, innovation, platform, near-expiry products, damaged products, Portuguese market, consumer profile, drivers, barriers, sustainability.

Title: Reducing Personal Care Waste through Innovation: A Study on the Feasibility of the Creation of a new platform for Selling Almost-Expired and Damaged Personal Care Products in the Portuguese Market

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SUMÁRIO

A indústria dos cuidados pessoais tem tido um crescimento significativo, com a pandemia COVID-19 a acelerar a transição para os canais online. No geral, os consumidores estão cada vez mais conscientes sobre questões ambientais, o que os leva a exigir práticas mais sustentáveis, economia circular e redução de resíduos. No entanto, uma parte deste desperdício está relacionado com má gestão de resíduos em produtos não vendidos, danificados, perto do fim de validade ou fora de stock, que acabam por nunca chegar ao consumidor final.

Motivado pelo crescimento do mercado e consciência ambiental portuguesa, este estudo analisa a viabilidade da criação de uma plataforma que permita aos consumidores adquirir produtos de cuidados pessoais a preço reduzido que estejam perto do fim de validade ou danificados. A pesquisa investiga o potencial perfil do consumidor, assim como os potenciais impulsionadores e barreiras que influenciam a intenção de compra dos consumidores portugueses, de acordo com a revisão de literatura.

A análise foi feita através de métodos mistos, onde foram realizadas 10 entrevistas qualitativas individuais e um questionário quantitativo online com 143 respostas válidas. Os resultados indicam que a intenção de compra tem um nível médio de aceitação no mercado português, não sendo identificadas barreiras significativas. Como principais impulsionadores, o custo-benefício e a experimentação de novos produtos influenciam positivamente a intenção de compra. Por último, dois perfis de consumidores foram identificados: um grupo que procura um bom negócio para poupar dinheiro, e o outro que prioriza a sustentabilidade e compras ecológicas.

Palavras-chave: indústria de cuidados pessoais, redução de resíduos, economia circular, inovação, plataforma, perto do fim de validade, produtos danificados, mercado português, perfil do consumidor, impulsionadores, barreiras, sustentabilidade.
Título: Redução de Desperdício de Produtos de Cuidados Pessoais através de Inovação: Um Estudo sobre a Viabilidade da Criação de uma Plataforma para Venda de Produtos Perto do Fim de Validade ou Danificados no Mercado Português
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“It’s a lesson that I have learned over and over again, but it bears repeating. No one achieves anything alone.” - Leslie Knope, 2014

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GLOSSARY

AI - Artificial Intelligence

CAGR - Compound Annual Growth Rate

CE - Cosmetics Europe

CO2 - Carbon Dioxide

COVID-19 - Coronavirus Disease 2019

EU – European Union

GDP - Gross Domestic Product

H_n - Hypothesis n

HMR - Health Market Research

SPSS - Statistical Package for the Social Sciences

INFARMED - Autoridade Nacional do Medicamento e Produtos de Saúde, I. P.

PM – Prescription Medicines

OTC: Over the Counter

RQ_n – Research Question n

TGTG : Too Good To Go

TNP: Try New Products

TPB: Theory of Planned Behavior

VFM: Value for Money

CHAPTER 1: INTRODUCTION

1.1. Background

The personal care industry has experienced significant global growth in recent years, especially with the impact of e-commerce and the growth of online channels. The COVID-19 pandemic accelerated its evolution and the shift to digital platforms, which forced businesses to adapt their strategies and have a digital presence (McKinsey, 2020). Online sales of personal care products represent a growing share of the industry's revenue, with a projected annual growth rate of 4.4% in the coming years (Statista, 2021). Despite its relatively smaller size when compared to other European markets, the Portuguese personal care market has shown remarkable resilience and growth over the years (Statista, 2021).

In general, consumers have become more aware and shown their preferences for innovative solutions and a strong focus on sustainability and circular economy products and services (Coderoni & Perito, 2020). Portuguese consumers are no exception (Casimiro, 2021). This is mainly due to the availability of information regarding these subjects that increased consumers' environmental awareness (Archer et al., 2022) and standards for product attributes (Sicilia & Ruiz de Maya, 2010). Consequently, personal care companies have recognized the need to adopt innovative strategies that align with their consumer expectations for product quality, performance, and sustainability (L'oréal Group, 2020). This includes sourcing and using sustainable ingredients, developing eco-friendly packaging, and reducing waste production at every stage, from production to post-consumption.

Thus, the personal care industry still faces considerable waste challenges. According to Zero Waste Europe (2019), the personal care industry is responsible for producing over 120 billion units of packaging annually, being that a major portion of it ends up in landfill. Besides packaging waste, a great percentage of waste in the industry comes from unsold items, including samples, expired goods or damaged products that are not and cannot be sold (Gov UK, 2019).

The management of near-expiry and damaged personal care products can be a challenge for companies. In order to reduce this waste, companies would need to develop effective stock and inventory management (Zhang et al., 2023). A good example of how industries can deal with this type of waste is the food industry, which has successfully addressed similar issues through the implementation of discounts and other promotional offers on a big scale, using platforms such as Too Good To Go (Haar & Zeinstra, 2019).

Drawing inspiration from this model and considering the context of the personal care industry, this study examines the feasibility of developing a new platform that allows consumers to purchase near-expired or damaged personal care products at discounted prices in the Portuguese market. By leveraging innovative technologies and integrating sustainability initiatives, such a platform could effectively reduce waste generated from near-expiry and damaged products and address consumers' demands for environmentally-friendly alternatives, while saving money.

1.2. Problem Statement

Although the topic of selling near-expiry and damaged products is not yet a known concept in the personal care industry, the focus on sustainability has led to a growing interest in purchasing these types of products (Song et al., 2021). Additionally, some companies, such as pharmacies, already sell these products on a small scale and at a discounted price. This concept aims to minimize waste, promote responsible consumption, and still generate profit while providing consumers with effective and high-quality products. Detailed definitions of personal care products can be found in Appendix I for better understanding of the correct terms used in the industry.

The research will examine if the personal care industry has the potential to develop a platform that offers near-expiry and damaged personal care products at discounted prices. Therefore, the objective of this research is to investigate the factors that influence consumers' purchase intention, focusing on (1) consumer drivers; (2) consumer barriers; and (3) consumer profiles.

By understanding these factors, the study will evaluate the feasibility and potential of developing a platform that addresses waste reduction and fosters sustainable practices in the personal care industry, while allowing consumers to purchase personal care prodcuts at a discounted price.

The number of studies and research on near-expiry and damaged products waste is very low, especially in the personal care industry, and although an urging subject, literature is still lacking on the topic. Other studies available in the industry focus on plastic surplus, packaging waste, harmful toxins and microplastics. Thus, in regard to the food industry, more studies are developed. In terms of studies regarding technological solutions to deal with waste from unsold items, little to no research was found.

The research will focus only on the Portuguese online market, in order to have a more clear in-depth perspective on the potential of the platform. In order to achieve the goals mentioned, the following research questions are developed:

RQ1: What is the potential consumer profile of near-expiry and damaged personal care products?
RQ2:What are the main barriers to purchase intention for near-expiry and damaged personal care products?
RQ3: What are the main drivers to purchase intention for near-expiry and damaged personal care products?

1.3. Academic Relevance

The academic relevance of this research lies in its potential to address a gap in the existing literature. Additionally, the number of studies on waste generated from damaged and near-expired products is low, especially in the context of the Portuguese market.

Furthermore, it is necessary to delve into the literature review and exploratory qualitative research to develop hypotheses, based on the research questions that can guide future quantitative investigations. By exploring this topic, the research not only contributes to a better understanding of the issue but also adds recent information to the existing literature on the Portuguese market perceptions of near-expiry and damaged products and their waste.

1.4. Managerial Relevance

The research has a significant managerial relevance by providing valuable insights for businesses' improvements in waste management practices. Through the examination of consumer profiles, drivers, and barriers, personal care companies can assess the feasibility of adopting a platform for selling near-expiry and damaged products. This information guides strategic decision-making and resource allocation, allowing businesses to address consumer demands effectively.

The findings of this research will be essential in determining the viability and potential impact of the proposed idea for future developments, fostering the creation of innovative solutions that promote sustainability, eco-conscious consumption, and cost-savings in the personal care industry.

1.5. Dissertation Structure

This thesis consists of seven chapters that comprehensively address various aspects of the research topic. Chapter 1 establishes the background and problem statement, development of research questions and academic and managerial relevance of the research. Chapter 2 focuses on conducting a market analysis, including the impact of COVID-19 on the industry, an assessment of the Portuguese and online markets, and forecasts for the industry. Chapter 3 explores the literature review on concepts of the personal care industry, such as digital innovation, sustainability, waste analysis and circular economy. Additionally, it examines the regulations for near-expiry and damaged products and examples of how companies currently manage that type of waste. As well as the explanation of the platform's concept. In Chapter 4 the hypotheses are developed, as well as their respective theoretical background. Chapter 5 presents a detailed analysis of the methodology and data collection structure. In Chapter 6 an in-depth analysis of the research findings is done and respective results are presented. Lastly, Chapter 7 shows the main findings and conclusions drawn from the study, as well as limitations and recommendations for future research.

CHAPTER 2: MARKET ANALYSIS

"*The cosmetics industry is a science-driven, fast-paced and highly innovative sector.*" -
(Cosmetics Europe, 2021)

2.1. Market Overview Personal Care Analysis

The history of personal care dates back thousands of years, with early civilizations using natural ingredients and traditional practices to maintain hygiene and promote overall well-being and looks (Diana Draelos, 2000).

Nowadays, the personal care industry is defined as a competitive and dynamic sector, facing significant growth in comparison to past years (Statista, 2021). It is expected to grow from 557.10 billion euros in 2023 to 619.67 billion euros by 2027, with an annual growth rate of 3.25% (CAGR) between these years. The rise in living standards, growing awareness of personal hygiene, and online social communities are some of the main drivers for the industry's growth (Polaris Market Research, 2021).

The market is segmented into different product categories (Figure 1). According to (STATISTA, 2021), the largest segment is skincare (cosmetics) and it is estimated to have a value of €247.10 billion by 2023. In terms of the gender distribution of European consumers, women take up 61% of the market (Cosmetics Europe, 2022) but men's purchases are increasing.

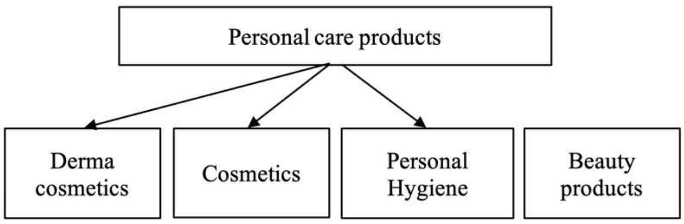


Figure 1: Categories of personal care products

Source: (HMR, 2023)

The trends for this market can be seen in more detail in Appendix II, and include a focus on sustainability (Howe & Strauss, 2000), natural and organic products (Thu et al., 2019; Wesley Schultz, 2001) personalization and customization (Chandra et al., 2022), and digital platforms with cost benefits (Carlson et al., 2021). Some of the larger companies in the market include Unilever, Procter & Gamble, and L'Oréal, with the latter having a big portfolio of products, from skincare to hair care (Mordor Intelligence, 2022).

2.2. COVID-19 Impact

As in most industries, COVID-19 changed consumers’ perspectives on personal care products (Gerstell et al., 2020). On one hand, the pandemic disrupted supply chains, closed down businesses and disturbed manufacturing operations, which led to a decrease in sales (Szász et al., 2022).

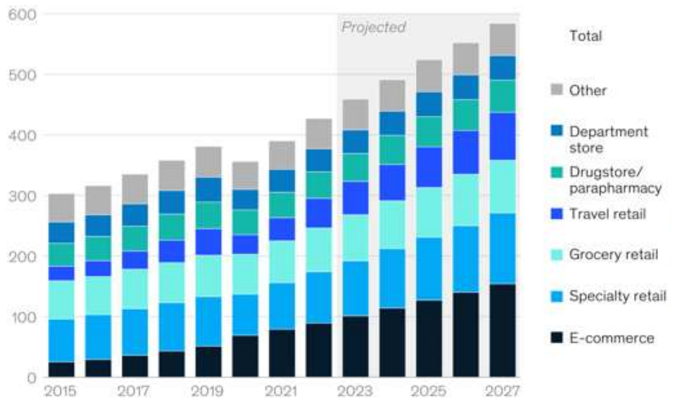
On the other hand, this led to a significant shift in shopping habits and consumer behaviour, emphasizing the importance of health and hygiene. Additionally, growing awareness towards appearance and prioritizing self-care arose from social media community platforms, such as TikTok (Li et al., 2021; Southwick et al., 2021), where viral content like "products TikTok made me buy" or #beauty hashtags have shaken the industry, leading to high conversion rates. Companies that adopted these shifts and changed to innovative strategies were better positioned to adapt and navigate the challenges and opportunities of this new market (McKinsey, 2023)

2.3. Online Global Personal Care Market

Although the main distribution channels include retailers, specialized stores, pharmacies, and online (Cosmetics Europe, 2017), the personal care industry has been shifting towards the use of the latter channel.

However, it is predicted that the online market for personal care products is growing and will have an 8,47% CAGR between 2023 and 2028 (Mordor Intelligence, 2022). In order to encourage consumers to purchase online, the industry has developed a number of initiatives, such as delivery options, personalized content, and AI tools to try on online (Statista, 2021). The millennial generation is primarily responsible for changing the consumer shift, (Goldman et al., 2017) and focusing on experience in comparison to other generations in the market (Deloitte, 2019).

Thus, most consumers prefer to purchase these products in-store, due to the fact that they like to try and feel the products in person (Marks & Kamins, 1988). The convenience and accessibility offered are the main factors that will foster growth in online channels. McKinsey (2023) predicts that online sales in the personal care industry will continue to grow at a rapid pace, outpacing offline retail channels (Graphic 1). This trend highlights the importance for personal care companies to establish a strong online presence and leverage digital platforms to capture the attention of consumers and drive sales.



Graphic 1: Global personal care market, by channel ($ billion)

Source: McKinsey (2023)

2.4. Portuguese Personal Care Market

The Portuguese personal care market, though relatively small in comparison to other global companies, has shown remarkable resilience and growth in recent years (Statista, 2021). As part of the European market, this industry has been influenced by international trends and consumer preferences that shape the development and sales of personal care products in the country. Additionally, studies have shown that Portuguese consumers tend to be price-sensitive, often seeking out bargains and lower-priced products and services (Oliveira Brochado et al., 2015). As a result, many consumers in Portugal are drawn to discounted products, sales, and other promotional offers, which can significantly impact their purchasing decisions.

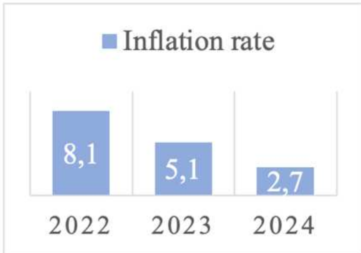
The market is expected to generate revenues of €1.89 billion in 2023, with a projected annual growth rate of 1.42% (CAGR) between 2020 and 2027 (Dominique Petruzzi, 2022). Personal hygiene represents the largest segment, and online sales are expected to account for 23.3% of total revenue by 2023. Again, the pandemic has accelerated the shift towards online shopping (Szász et al., 2022), and most consumers prefer to order online and collect in-store (Costa, 2023).

In order to analyse the Portuguese market in more detail, it is important to assess the potential of entering the market using a PESTLE analysis (Francis J. Aguilar, 1967) to overview the various factors influencing the personal care industry in the context of sustainable innovation and technology.

The PESTLE analysis highlighted sociocultural factors, such as stable and growing political factors that positively influence the stability of businesses. The economic factor that boosts the growth of the market, is highlighted by the constantly growing GDP rate (Graphic 2), and decreasing inflation rate (Graphic 3). Additionally, interest in sustainable and natural ingredients (Casimiro, 2021), and the use of technology for informed decision-making (Jornal Económico, 2023), as crucial influences on the industry's focus on sustainable innovation (Leal, 2022). Legal and regulatory factors present uncertainties that need to align with European and Portuguese industry requirements industry, and can pose barriers to this type of service (Cosmetics Industry, 2019). A more detailed analysis can be seen in Appendix III.

Graphic 2: Expected GDP growth in Portugal (%)

Source: European Commission, 2023



Graphic 3: Expected Inflation rate in Portugal (%)

Source: (European Commission, 2023)

CHAPTER 3: LITERATURE REVIEW

"Why should I be studying for a future that soon may not exist?"

- Greta Thunburg, 2019

As seen in the previous chapter, innovation and sustainability are the most important factors for the future of personal care products. Furthermore, these topics will be further explored.

3.1. Digital Innovation, Technology, and Sustainability in the Personal Care Industry

As seen before, consumers are more demanding and concerned about safety (Curlo, 1999), sustainability (Marks & Kamins, 1988) and effectiveness (Oumlil & Williams, 1994) when purchasing products. In order to answer consumers' needs, technology solutions and digital innovation emerged in the personal care market.

Additionally, digital innovation has the capability to improve personalization (Cooper, 2007) and consumer experiences (Hoyer et al., 2020), using tools such as virtual makeup try-on and AI skin analysis (L'Orèal Portugal, 2022), which are revolutionizing consumer-brand interactions in the online channels.

The focus on sustainability englobes various aspects, such as sourcing more green products, sustainable packaging and implementing circular economy practices in order to minimize waste and reduce the ecological footprint. And so, technological solutions are capable of transforming products into being more sustainable (Keränen et al., 2023) and ethical in their production (Laczniak & Murphy, 2006), either by formulating the products (Goyal & Jerold, 2023), adapting the packaging (Kotler P & Keller K. L., 2012), or recycling (Wang et al., 2021).

On this note, this research is going to deliver an in-depth study on the best solutions to avoid waste in the personal care industry.

3.2. Waste in the Personal Care Industry

The personal care industry, as in most industries, generates a significant amount of waste. The majority of this waste comes from plastic packaging which alone is estimated to contribute over 120 billion units annually (Zero Waste Europe, 2019). Additionally, other sources of waste are inaccurate forecasting (Smejkalová et al., 2020), packaging errors (European Union, 2009), and overproduction (Purushothaman et al., 2020).

In order to address this issue, the industry has been actively adopting its sustainable activities and products by reducing the use of plastic (Kumar et al., 2021), reduction of CO2 emissions (Cosmetics Europe, 2017), and implementation of sustainable ingredients and formulas (Lodén & Maibach, 2012). Additionally, to address these concerns, the European Union has implemented sustainability norms and certifications, including the Cosmetic Products Regulation, to encourage companies to adopt sustainable practices and foster innovation (Cosmetics Europe, 2021). The waste from near-expiry and damaged products is not mentioned in company's reports or waste numbers, which represents potential problems for companies.

In an interview with Vogue Business, Micaela Nisbet, founder of Neighbourhood Botanicals Ltd, estimated that 20% to 40% of product waste occurs even before items reach stores due to quality control issues, damaged packaging, and production errors (Rachel Cernansky, 2021). These figures emphasize the urgent need for improved waste management practices within the industry. Additionally, near-expiry products are not taken into account as "waste".

3.4. Circular Economy

Circular economy is an economic model that focuses on optimizing resource utilization, minimizing waste generation, and promoting sustainable production and consumption practices (Ellen MaCarthur Foundation, 2021; Morseletto, 2020).

In recent years, most industries have adopted circular economy approaches in order to minimize waste. The personal care industry has embraced this concept through the use of reusable packaging and re-fill products in order to reuse, recycle and repurpose products, minimizing waste (Kumar et al., 2021; Morea et al., 2021).

Additionally, the shift towards a circular economy is aligned with the growing consumer demands for sustainable practices, as consumers seek services and products that help minimize their ecological footprint (Hunka et al., 2021).

Thus, in order to produce products with this concept in mind, it is necessary to consider its entire lifecycle, from sourcing raw materials to end-of-life disposal and reuse (Kamal et al., 2022). It is necessary to source sustainable or biodegradable ingredients, develop innovative packaging solutions that came from recycled materials or can be recyclable or refillable, and understand the product's life after shelf and avoid landfill waste, through programs of take-back, product-sharing or purchasing unsold items, such as near-expiry or damaged products.

3.5. The concept of near-expiry and damaged personal care products

3.5.1. The concept of near-expiry products

Near-expired products are items approaching their expiration date (Zhang et al., 2023). These have gained popularity in recent years in the food industry and, due to shifts in consumer behaviour (Tsiros & Heilman, 2005a), the personal care industry has started to take some interest towards it.

3.5.2. Regulations for Near-Expiry Personal Care Products

According to the European Parliament (2009), information regarding durability for the use of cosmetics needs to be included and easy to understand in labelling. Consumers must be informed of the minimum durability until which the product is fulfilling its functions and it's still safe to use.

According to INFARMED (n.d.), most products are divided into two categories:

- Minimum durability of more than 30 months: meaning that shelf life is above 30 months, and products do not have an expiry date. Instead, they are regulated by the Period After Opening (PAO) date. Up until the date the product is not open, its integrity is ensured. From the moment it is open, it enters into contact with oxygen and other factors that might put in cause its effectiveness. In these cases, the reason to sell at a discounted price is for shelf-rotation and stock management reasons, as the product itself is "good as new" as long as it is not opened.
- Expiry date: the product must have written down "use before…", followed by the month, and day/year, and be used before that date.

The article declares that suppliers need to ensure that the products are not supplied or sold after the minimum durability period is passed. Additionally, all products need to be regulated by a set of certifications that guarantee product quality and safeness, such as the Cosmetic Product Regulation which has tools and mechanisms to ensure the highest level of consumer (CE, 2021). The State Members also need to ensure national laws regarding packaging-related information (INFARMED , n.d.).

For the purpose of this research, near-expiry products include those that have an expiry date and those that only have a PAO date (minimum durability of 30 months). Products that have been opened or stocked in bad condition, can never be sold so it does not compromise consumers' health.

3.5.3. The concept of damaged products

Packaging plays a crucial role in delivering product information to consumers, who often rely on it to perceive product quality (McDaniel & Baker, 1977), desirability (Underwood & Klein, 2002), and healthfulness (Scott et al., 2008). However, the impact of packaging imperfections on consumer behaviour and brand perception has received little attention in the literature (White et al., 2016).

A study found that 75% of shoppers would not purchase a product with damaged packaging (George, 2010). Intuitively, these findings align with the notion that packaging imperfections, such as a torn wrapper or a dented exterior packaging, may be perceived as potential risks associated with the product inside. Nevertheless, the avoidance of products with damaged packaging might lead to a decrease in purchase intention only when the imperfections are superficial and do not compromise the product's integrity or pose any risk to the consumer (White et al., 2016).

3.6. Strategies for Managing Near-Expiry Personal Care Products

Most retail stores, pharmacies, and other personal care points of sale already practice price discounts on items that are near-expiry or damaged. Although this is a good initiative, not all consumers are able to reach these promotions in-store. Due to the lack of tools or platforms to selling these items, warehouses, laboratories and stores don't have the resources to correctly sell these items, ending up discarding them to landfill or through internal sales.

In order to better understand how businesses deal with this type of waste, two expert interviews were done (Appendix IV). The first interview was conducted with an industry expert from a retail store, where damaged products are typically returned to the lab or warehouse. If returning is not feasible, the value of the product is reimbursed, and it remains in the store's warehouse for internal purchase by employees at a discounted price (Ana Pinho, Luso Helvética, SA). Alternatively, these products may be offered as samples. In the case of products reaching their expiry date or if formulations are discontinued, they are stored in a specific warehouse and eventually disposed of under the supervision of legal authorities to ensure safety.

On the other hand, in the case of pharmacies, if a product arrives with damaged packaging but the content is undamaged, it will be sold at a discounted price. Otherwise, it will be returned to the supplier, and the value will be refunded (Margarida Rito, pharmacist). Due to legal restrictions, most pharmacies cannot keep near-expiry products in their warehouses. Each month, products with four months until its expiration date are identified and sold at approximately a 50% discount. Once a product is within one month of expiration, it can no longer be sold and must be either returned to the supplier or purchased internally by employees.

Finally, as an example of the online channel, a few brands in the personal care industry implemented campaigns towards this goal, such as French brand Gallinée, has successfully launched an "Anti-Waste" campaign to sell near-expiry products, offering discounts of up to 70% (Gallinée, 2021). This strategy has attracted consumers who were not initially interested in the green movement, thus, today the campaign did not go through as it is a hard initiative to keep up in terms of stock and website management.

3.7. Platform for selling near-expiry and damaged personal care products

3.7.1. Food Industry: The Example of Too Good To Go

In the food industry, solutions for food waste on near-expiry and damaged products are already taking action. One example is the app Too Good To Go which connects consumers with local restaurants, bakeries, and grocery stores that have surplus food at the end of the day (Too Good To Go, 2021). These businesses offer "Magic Bags" at a discounted price, containing food items that are close to their expiration date or cannot be sold the following day.

Drawing inspiration from the success of Too Good To Go, the idea of this study is to understand if Portuguese consumers would be willing to purchase near-expiry, or damaged personal care products at a reduced price through an online service.

3.7.2. Types of products on the platform

The proposed innovation in this dissertation, as discussed before, will focus on an online service focused on the personal care market instead of Over-The-Counter (OTC) pharmaceuticals because the personal care market is accountable for the largest share of revenue and presents big margins for operations. The term OTC refers to medications that are available for purchase without a prescription from a healthcare provider and cannot be sold without a doctor’s prescription (HMR, 2023).

3.7.3. Benefits from consumer and supplier perspective

The consumer would have the opportunity to purchase products at a reduced price, resulting in cost savings (B. Do Kim et al., 1999). They would also be reducing waste in the industry, which corresponds to their environmental drive (Lin & Chang, 2012) and fosters a sense of satisfaction in making eco-friendly choices (Guath et al., 2022). Consumers would also have access to a variety of products, conveniently purchasing online and exploring and discovering new products that they might not have otherwise find or used before (Alba et al., 1997).

From a supplier perspective, brands and companies would be able to improve their inventory, as it gives an opportunity for brands to clear out excess inventory. This helps it minimize waste and associated costs, as well as optimize their inventory management. The app would allow partnerships with retailers, pharmacies, warehouses and even laboratories, so that all brands and companies could have the opportunity to sell items that otherwise would go to waste.

The platform would create a marketplace that bring together different brands and companies with different targets, building a space for collaboration and learning. Brands can learn from each other's experiences, share best practices, and collectively work towards more sustainable and environmentally friendly personal care industry practices (Cristofoli et al., 2022).

Additionally, brands can reassure their reputation by being associated with an environmental-friendly platform (Lubell et al., 2011), showing their commitment to sustainability and social responsibility. This can potentially attract new customers and foster loyalty among existing ones (Hu et al., 2019). One of the most important arguments for using this service is that by selling these products at discounted prices, brands are still able to generate revenue from products that may have otherwise gone unsold or been discarded, also contributing to the brands' overall profitability.

3.8. Market Feasibility and potential user base in the Portuguese Market

In order to access the feasibility of the Portuguese market, a SWOT analysis (Porter, 1980) was conducted and several key considerations were withdrawn (Appendix V).

Strengths such as cost savings for consumers, unique value propositions, and environmental impact align well with the growing demand for sustainable products (Hu et al., 2019). However, consumer scepticism regarding near-expiry and damaged products can make adoption difficult (Tsiros & Heilman, 2005a). To counter this, it is essential to establish trust and educate customers about the quality, safety, and benefits of these products (Zhang et al., 2023). Additionally, developing strong partnerships, promotions, and loyalty programs can help achieve this brand recognition (Lemon & Wangenheim, 2009).

CHAPTER 4 – HYPOTHESIS DEVELOPMENT

After examining the personal care market, sustainability and waste, circular economy, and near-expiry and damaged products, this fourth chapter will develop the hypotheses to analyse each research question, according to previous literature. The goal is to develop hypotheses that will allow to answer the research questions developed regarding the feasibility of the development of a platform that sells near-expiry and damaged personal care products in the Portuguese market.

4.1. Consumer Profile

Literature on sustainable consumer profile and behaviour bring attention to the fact that there are not only socio-demographic factors (age, sex, education, income, needs, motivation, personal values, norms, habits, abilities to act, etc) that influence sustainable purchase intention (Gidaković et al., 2022; Nekmahmud et al., 2022; Pieniak et al., 2010).

4.1.1. Theory of Planned Behaviour

In the last decades, the Theory of Planned Behaviour (TPB) framework has been applied to a number of environmental studies, including skincare products (Chen, 2016; Chen & Tung, 2014; Han & Kim, 2010; Hsu et al., 2017a) in order to predict consumer behaviour and subsequently its profile (Bamberg, 2003; Kalafatis et al., 1999) towards environmentally-friendly products.

The TPB model will help understand the factors that influence consumer attitudes, subjective norms, and perceived behavioural control, leading to their intention to purchase these products.

4.1.1.1. Consumer Values and Attitudes

Vaske & Donnelly (1999) define value as the most fundamental element an individual's belief system. As a result, if an individual has a positive attitude towards a certain idea, they are more likely to behave accordingly.

Furthermore, Stone et al. (1995) studied that consumers who are more environmentally responsible have a higher influence on purchasing sustainable products and services. Hence, in order to understand how environmental responsibility influences the purchase intention of near-expiry and damaged personal care products, the following hypothesis is assumed:

H1a: Environmental Responsibility positively influences the purchase intention of near-expiry and damaged personal care products.

4.1.1.2. Subjective Norms

Subjective norms are usually described as the perceived social pressure or influence a consumer feels to act a certain way (Hsu et al., 2017a).

Lennox & Wolfe (1984) assessed influence as an evaluation of what other individuals think about them and looks “for clues as to the nature of others' reactions toward them”. In the case of sustainability, this factor is extremely important, as feelings of belonging and a like-minded community can further drive the adoption of sustainable consumption habits, reinforcing their social identity (White et al., 2019). Hence, the following hypothesis is developed:

H1b: Social influence positively influences the purchase intention of near-expiry and damaged personal care products.

4.1.1.3. Perceived Behavioral Control

Perceived Behavioral Control is an individual’s perceived level of control in performing a behaviour (Sun et al., 2020). According to Ajzen (1991), individuals that have a stronger behavioural intention to engage in a certain behaviour, have a higher degree of perceived behaviour control.

Consequently, Hsu et al., (2017b), used the TPB to explore the purchase intention of green skincare products and concluded that the bigger the price sensitivity, the stronger the relationship between perceived behavioural control and purchase intention, concluding that price sensitivity is an important factor when purchasing green products. Hence, the following hypothesis:

H1c: Price Sensitivity positively influences the purchase intention of near-expiry and damaged personal care products.

4.2. General Perceptions towards Near-expiry and damaged products

Perceptions of near-expiry and damaged products are significantly influenced by performance and psychological factors. The literature defines these perceptions as positive or negative influences (Aschemann-Witzel, 2018).

Although some literature exists in the context of risks for the near-expired products in the food industry, little to no literature exists for the personal care industry. This means that assumptions towards the personal care industry are going to be done

4.2.1. Potential Barriers

Potential barriers to selling near-expiry and damaged products in the Portuguese market can negatively influence consumers' behaviour towards purchase intention (Morrison, 1979).

4.2.1.1. Perceived quality

For this research, the perceived quality difference between near-expiry and damaged personal care products and normal products will be analyzed. According to Stylidis et al. (2020), the perceived quality of a product is the judgment of the customer in regard to the product's overall excellence and attributes that influence satisfaction and purchase intentions.

Consequently, when products are near expiry or are damaged, consumers' perceptions may decline on the perceived quality (Tsiros & Heilman, 2005).

And so, the higher the perceived quality difference between a not-near-expiry or damaged product compared to a near-expiry or damaged product, the lower the willingness to purchase. Consequently, the following hypothesis is proposed:

H2a: Perceived Quality negatively influences the purchase intention of near-expiry and damaged personal care products.

4.2.1.2. Perceived Performance

Perceived product performance is the ability of a product to meet consumers' expectations in terms of effectiveness, overall satisfaction, and functionality (Burton et al., 2003). Additionally, it is one of the dimensions studied by Sweeney & Soutar (2001), as a consumption value that drives purchase intention.

As a result, the difference in perceived performance is an interesting factor to study as when a product has a perceived low functional value, when compared to a "normal" product, it is less likely to satisfy consumer preferences, decreasing the likelihood of purchasing (Woodruff, 1997).

And so, it can be studied that the higher the performance difference between a not-near-expiry or damaged product compared to a near-expiry or damaged product, the lower the willingness to purchase. Consequently, the following hypothesis is proposed:

H2b: Performance Difference negatively influences the purchase intention of near-expiry and damaged personal care products.

4.2.2. Potential Drivers of Near-expired and Damaged personal care products

Despite the challenges, there are several drivers and opportunities to sell near-expiry and damaged products in the Portuguese market that can positively influence consumers' behaviour and intention towards purchasing (H. Y. Kim & Chung, 2011).

4.2.2.1. Value for Money

According to Mitchell (1896), Value for Money (VFM) refers to the product's perceived worth in terms of satisfaction with its consumption with an emphasis on obtaining the maximum utility for the price paid.

Additionally, Lichtenstein et al. (1993) assess price as a negative and a positive role. The negative role is regarding the mental weight of engaging in a costly transaction and the positive role is regarding the price-quality relationship that positively affects purchase intention. In this research, VFM will be viewd from a positive perspective.

As a result, these strategies offer price reductions for products near their expiration dates, making them more appealing to price-sensitive consumers, which is the case in the Portuguese market. Consequently, the following hypothesis is proposed:

H3a: Value for Money positively influences the purchase intention of near-expiry and damaged personal care products.

4.2.2.2. Try New Products

Innovators are consumers who are described as open to trying new experiences. This innovativeness's feeling is assumed to be a personality trait for the adoption of new products (Leavitt & Walton, 1975).

Consumers' willingness to try new products is connected with the opportunity to try out new products and brands (Popielarz, 1967). In the case of near-expired and damaged products, it is a factor that can influence purchase intention, as it is a way of trying new products at a reduced price (Taylor et al., 1975). Consequently, the following hypothesis is proposed:

H3b: Try New Products positively influences the purchase intention of near-expiry and damaged personal care products.

4.2.2.3. Brand Trust

Hess (1995) defines brand trust as when a brand is perceived as reliable, competent, honest and altruistic and when the consumer knows what to expect from the brand.

As a result, when a consumer trusts the brand, there is likely that the purchase intention likelihood increases (Morgan & Hunt, 1994). Additionally, if the consumer trusts the brand, it doesn't affect brand image if a product is sold at a discount. Consequently, the following hypothesis is proposed:

H3c: Brand Trust products positively influences the purchase intention of near-expiry and damaged personal care products.

CHAPTER 5 – RESEARCH METHODOLOGY AND DATA COLLECTION

5.1 Research Approach

The goal of this research is to understand the consumer profile, barriers and drivers towards the intention to purchase near-expiry and damaged personal care products in the Portuguese online market through an online platform.

Firstly, the research focused on secondary data, using an exploratory review of important literature about the research objective that was followed by primary research. For the second part, qualitative data was collected through in-depth interviews in order to collect important information about consumers' perceptions of near-expiry and damaged personal care products and their sustainability perceptions. After, quantitative data was collected using an online questionnaire to further explore the research questions and further hypotheses.

5.2 Secondary Data

The secondary data collected information that was essential for the literature review. It included information from academic journals, books, official publications, statistics, reports and standards. This data was the foundation for the hypothesis development and essential to understanding the topics of this research (Rayner & White, 2014).

5.3 Primary Data

For this research, explanatory and descriptive research were developed to analyze the research questions formulated in the first chapters, using a mixed-method approach. This approach is a combination of collecting, analyzing and mixing qualitative and quantitative research, to better understanding of the topic studied (Tashakkori & Teddlie, 2010).

5.3.1 Qualitative Data Collection

The data collection was done through individual in-depth interviews as these are a rich source of information with the purpose of answering the research questions and identifying other important information regarding the topic (Creswell, 2009).

Individual in-depth interviews also ensure that interviewees have a face-to-face conversation with the interviewer, allowing participants to not have any social pressure on their opinions, especially about the environmental aspect, avoiding biased answers (Macura et al., 2019). Reliability and validity also need to be ensured. It is important to use day-to-day language and adapt the speech depending on who was being interviewed (Oliver, 2012).

The beginning of the interview started with closed questions, where the participants had the opportunity to understand the context of the subject and then it led up to open questions, as it probes to more sensitive and specific areas.

By the end, a coding analysis of relevant information in order to "reveal patterns of data which describe and identify situations or settings" assuring integrity, validity and accuracy in the findings was done (Bannister et al., 2011). It was possible to assess the hypothesis developed in the literature review to later be tested using the quantitative method. No hypothesis were developed, due to the small sample size.

5.3.2. Quantitative Data Collection

Following the qualitative research, a survey was developed in the format of an online questionnaire. The purpose was to collect primary statistical data from a sample of the desired population to understand the consumer profile, barriers, and drivers of the purchase intention of near-expiry and damaged personal care products. This research method was chosen because it is possible to collect a large number of answers at no to little cost (Munn & Dreyer, 2004).

The online platform Qualtrics was used to create the survey which enables data to be exported directly to IBM SPSS, which was later used to analyze the data collected. The questionnaire was pre-tested by 4 participants in order to make sure all the questions were aligned and the research was not compromised. The survey was translated into Portuguese and English, and only those living in Portugal answered, since the research studies the Portuguese market.

The nature of the questionnaire was cross-sectional, with the data collected at one point in time, for 4 days and it was distributed through different platforms and social media. It was shared in WhatsApp and Instagram via private message to reach a young-adult target, and on Facebook and LinkedIn via posts to reach an older target. Also on Instagram, it was shared in the stores for 24h over 4 days and multiple reshares occurred, allowing more respondents from different groups.

The questionnaire was composed of 21 questions and was aimed at consumers that currently live in Portugal and that purchased any type of personal care in the last year (Appendix VII). It was divided into 9 sections: introduction, screening questions, personal care purchase habits, consumer behaviour, introduction of near-expiry and damaged personal care, barriers, drives, intention to purchase and app usage, and demographics.

The first section introduced the goal of the questionnaire. The second one was composed of 2 screening questions that ensured that the sample was as targeted. The first one asked if the participant was living in Portugal, and if yes, the second question asked whether they have purchased any personal care items in the last year. If the participants did not meet both conditions, they would be forwarded to the end of the survey. If not, they would proceed to the questionnaire. After these questions, the following questions were developed in guideline with the qualitative data and literature review previously analysed.

The third section was composed of 3 questions about consumers' consumption and purchasing habits of personal care products. The frequency and type of product were asked in order to create a better understanding of the user profile and the type of product they would purchase for the analysis.

The fourth section was composed of e questions regarding the user profile research question, that analyses sustainable consumer behaviour. Each question had between three and four items and was made in the format of a Likert scale and the respondents had to answer accordingly to their level of agreement on a scale of 1 to 7 (1- Strongly Disagree and 7- Strongly Agree).

Then, the fifth section explained the concept of near-expired and damaged personal care products and asked respondents to think about these types of products for the rest of the questionnaire, introducing the next section.

Sections six and seven questioned barriers and drivers of the purchase intention of near-expired and damaged personal care products. These questions were also organized in 3 to 4 items and a Likert scale format for respondents to consider how the statements would affect their purchase intention on a scale of 1 to 7 (1- Strongly Disagree and 7- Strongly Agree). An additional question was also made for control purposes, where respondents were asked to choose "option 3" to make sure the questionnaire was being answered truthfully.

Section eight asked about the level of purchase intention of these products on a Likert scale of 1 to 7 (1- Extremely Unlikely and 7- Extremely Likely). After, they were asked about only the purchase intention of only near-expiry and only damaged products, to see if the finding from the qualitative regarding the difference between these two products, had any impact on the purchase intention.

Finally, the last section was regarding the demographics where consumers were asked about their gender, age, level of education, employment status, and monthly income.

The data was collected between the 29th of April and the 2nd of May 2023. A total of 226 questionnaires were started, of which 212 were successfully finished and sent, having a 94% completion rate. Extracted from the screening questions, 48 participants did not live in Portugal and 4 didn't buy any personal care products in the last year. Additionally, 8 answers did not pass the control section. After eliminating the answers that failed to meet the required considerations of the study, there were a total of 152 valid answers that were going to be analyzed by IBM SPSS and Microsoft Excel.

In order to analyze the data collected, some statistical tests were conducted, such as descriptive and frequency statistics to have a general understanding of the sample information and characteristics.

5.4. Qualitative Data Analysis

To gain insights regarding the drivers, barriers, and consumer profiles associated with the purchase intention of near-expiry and damaged personal care products, in-depth interviews were conducted. A total of ten participants, who requested confidentiality, took part in the interviews. The coding of each interview question can be found in Appendix VI.

The population was not homogeneous, as 60% were female and 40% were male. All of the people chosen had at least purchased one personal care product in the last year and were living in Portugal. Their ages were between 20 and 56 years old and the majority had between 18-24 years old (40%). In regards to their occupation, the majority are working. Each interview took around 20 to 30 minutes and 70% were held in person and the rest via phone call.

In terms of products the participants use the most, the category of skincare and personal hygiene were the ones with the most answers, which shows a good variety of product categories. Depending on the product type, brand, and price, consumers will purchase both online (N=4) and in person (N=10). If the level of involvement with the product is high (such as face cream), or if the person has skin problems, they chose national brand products, if not, they mostly chose private labels.

Interviewers had an average level of environmental responsibility (M=5.2). Thus, most consumers look at personal care brands as greenwashing and not really sustainable. When asked if they checked the expiry date or the PAO symbol on personal care products before using them, the majority said no. This helped conclude, as mentioned before, that, for this research, near-expiry and long-shelf life will be addressed as “near-expiry”. Additionally, participants were asked if they would purchase a product with a damaged package at a discount, and all of them said yes (N=10) as long as the product condition stayed assured.

When asked if they knew the app TGTG, 50% did hear about it, but never used it. For those who never tried it, one of the main reasons was the inconvenience to pick up (*N*=2) and low trust in the products sold (*N*=2). On the other hand, of those who used it, most felt liked the feeling of being able to try new things, especially for a reduced price (*N*=2).

When asked about the potential barriers, most people (*N*=6) did not perceived a difference between the quality of a near-expiry product compared with the exact product when with normal expiry. Additionally, when asked the same about performance, more people (*N*=4) perceived a difference between the two. This indicates that these barriers need to be studied with a larger sample.

As for drivers, the price was the most important attribute (*N*=8). Additionally, participants referred to the benefits of trying new products (*N*=3) as a positive aspect.

To finalize, consumers were asked about their interest in an app that sold these personal care products and if they would use it and 90% said yes, as they would like to have access to cheap good brands deals, avoid waste, try new brands, purchase from the comfort of their homes and bulk buy products to save money in the future. No further potential barriers or drives were mentioned.

CHAPTER 6: RESULTS AND DISCUSSION

This chapter aims to analyze the data collected in the quantitative research and find bridges between these findings and the theory collected (Babbie, 1990). Additionally, it will serve to test hypotheses and understand if they are supported and validated or rejected for the statistical tests performed. The outputs can be found in Appendix VIII.

6.1. Results

6.1.1. Data Cleaning

The first step before starting the analysis was to clean the data, check for missing values and rename the variables. Before developing the constructs, the items were checked for outliers in order to remove unusual values from the dataset. The technique used was the Mahalanobis distance (Ghorbani, 2019) due to its ability to consider the covariance structure of the variables and identify multivariate outliers. To ensure robustness and maintain the integrity of the analysis, all values with a probability above 0.001 were deleted. In the end, 9 answers were deleted and the valid answers to the survey were 143.

6.1.2. Sample Characterization

The sample characterization was analyzed with the data from the demographics and using frequency tables (Table 1, Appendix VIII). Of the 143 respondents, 92 participants were female (64.3%) and 50 participants were male (35%). Regarding age, participants were distributed between the groups of 25-34 years old and 18-24 years old which together represent 77.7% of the sample, with percentages of 40.6% and 37.1, respectively.

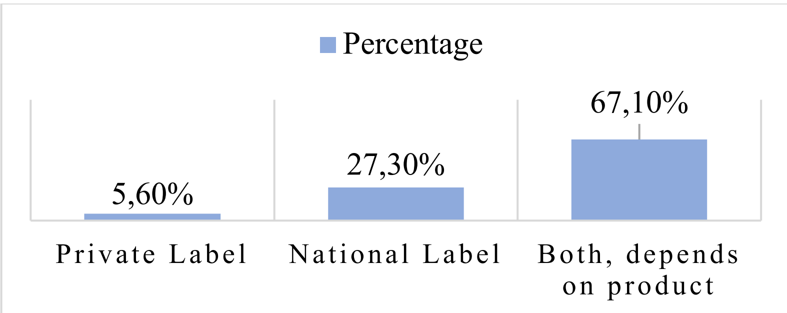
In terms of participants' highest level of education, 45.5% have completed a master's degree, 39.9% have completed a bachelor's degree and a small percentage have completed high school and secondary education, 9.8% and 4.9% respectively. As for current employment status, the majority are working full-time (63.6%), followed by students (26.6%). And finally, as for the monthly income level, the groups are more scattered, as 36.4% state they earn from 1000€ to 1499€, 15.4% say they earn €1500 to €1999, 14.7% don't have an income, and 12.6% earn the minimum salary between €600 to €900.

6.1.3. Descriptive Statistics

After the first screening questions, participants were asked about their consumption frequency and habits. A frequency analysis was done (Table 2, Appendix VIII). The majority of consumers (47.6%) stated that they purchase on a monthly basis, followed by every 3 months (33.6%), depending on the product.

Following this analysis, consumers were asked where they usually purchase those items, to understand which channel is the most common (Table 3, Appendix VIII). The most common place to purchase personal care products is at retailers (n=126), followed by online channels (n=57), pharmacies and drugstores (n=55) and specialist stores (n=51). It is important to note that the online channel is one of the most used channels and most consumers chose more than one channel, depending on the involvement of the personal care product. This goes in line with what was found in the literature.

After, participants were asked about their preference between private-label products and national-label products (Graphic 4). As in coherence with the qualitative research, the majority (67.1%) of consumers choose private or national labels depending on the product. Still, 27.3% of participants purchase more national labels and only 5.6% purchase exclusively private labels. This is an interesting insight, due to the fact that the app would initially sell branded products.



Graphic 4: Descriptive statistics for label type of personal care

Additionally, of those who purchase online, 77.2% purchase both national and private labels, and 21.1% purchase only national labels, which is in accordance with the literature in regard to the growing shift to online channels and it is important to understand because, in the app, mostly national brands would be sold (Table 4, Appendix VIII).

6.1.4. Hypothesis testing

6.1.4.1. Internal Reliability Check

In order to analyze each research question, it is important to first analyze the reliability of internal consistency using Cronbach's (1951) alpha. Cronbach's coefficient is not only the most used estimator of reliability, but also it has been the subject of methodological and analytical studies (Cortina, 1993). According to (Peterson, 1994) the coefficient should be higher than 0.6 to have acceptable reliability for research.

And so, Cronbach's Alpha was used on the items. The consumer profile scale obtained a value of 0.715 (Table 5, Appendix VIII) followed by the scale of barriers which had also a value of 0.809 (Table 6, Appendix VIII), and finally the scale of drivers with a value of 0.862 (Table 7, Appendix VIII). All of them are above 0.6, so they are accepted and reliable to reproduce in future research regarding near-expiry and damaged personal care products (Blaikie, 2003).

6.1.4.2. Variables Creation

The 8 variables were created after the data cleaning and based on the hypotheses developed and theoretical foundations. The main scale was a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Each construct has between 3 and 4 items in order to access the purchase intention of consumers.

6.1.4.3. Linear Regression

In order to understand the relationship and test each hypothesis, a linear regression was performed. Linear Regression was the method chosen due to the fact that the data were parametric and the method allows to measure of the "direction and size of the linear relationship between two variables, where Y is predicted from X" (Tabachnick & Fidell, 2013).

Additionally, it can analyze the influence of each attribute individually and how each variable is related (Anderson et al., 2008). The independent variables are Environmental Drive, Social Influence, Price Sensitivity, Quality Difference, Performance Difference, Value for Money, Try New Products, and Brand Trust and the dependent variable is purchase intention of near-expiry and damaged products.

6.1.4.4. Assumption Check

Linear regression relies on several important assumptions for its validity (Field, 2009) The first assumption is (1) normality, which assumes that residuals exhibit a normal distribution. Visual inspection of the normal P-P plot (Graphic 5, Appendix VIII) and histogram (Graphic 6,

Appendix VIII) reveals a normal distribution of residuals, allowing us to assume normality. The second and third assumptions are (2) linearity, where the linear relationship between independent and dependent variables is tested and (3) homoscedasticity, which assesses the variance of error terms that should be similar across the independent variables. These can be confirmed by examining the scatterplot of standardized residuals versus standardized predicted values, which cannot demonstrate an equal distribution of residuals (Graphic 7, Appendix VIII). The fourth assumption is regarding (4) multicollinearity, which examines the correlation level among independent variables (Table 8, Appendix VIII). Since none of the VIF values was below 0.1 and none of the Tolerance values was above 10, the assumption of no multicollinearity has been met. Lastly, the (5) autocorrelation of residuals requires that they are not influenced by one another. This was evaluated by analyzing the Durbin-Watson statistic, which yielded a value of 1.507 (Table 9, Appendix VIII). Thus, indicating that the assumption of no autocorrelation of residuals has been met as well.

6.1.4.5. Analysis

A significance level of 5% and a 95% confidence interval were applied to all statistical tests. The Descriptive Statistics table (Table 10, Appendix VIII) concludes that, overall, all variables are above the average (>4). The higher mean is Brand Trust (*M*=5.63, *SD*=0.89) followed by Price Sensitivity (*M*=5.33, *SD*= 1.02) and the lowest are Social Influence (*M*=4.09, *SD*=1.18) and Environmentally Driven (*M*=4.68, *SD*=1.38).

Before looking at the correlations table (Table 11, Appendix VIII), normality needs to be assured. As mentioned previously, the variables are normally distributed and the Pearson Correlation can be analysed. The coefficient is presented with values between -1 and 1 (Water, 2011), if any value is above 0.8 it suggests collinearity. In this case, none of the variables has a coefficient greater than 0.8, meaning that collinearity does not exist and one can proceed with the analysis and there's a strong positive relation.

The ANOVA table (Table 12, Appendix VIII) displays the significance of the model, that is assumed to be 5%. In this case, the significance level is below 1%, meaning that the model reached a significance difference, and successfully purchase intention scores ($F(8,134) = 35.09$, $p < .001$). For the Model Summary (Table 9, Appendix VIII), the R-square is 0.677 meaning that the model explains 67.7% of the variance of purchase intention.

In order to reject or accept each hypothesis, the model's coefficients need to be analyzed (Table 8, Appendix VIII). Using a significant level of 5%, the model had significance for the following variables: environmental drive (β=0.477, t=7.78, p-value<0.001). So when the environmental drive increases by one unit, the purchase intention increases by 0.477, meaning that there is a statistically significant relationship between environmental awareness and purchase. The next variable is price sensitivity (β=0.234, t=3.37, p-value<0.001). So, when the quality difference increases by one unit, the purchase intention increases by 0.234, meaning that there is a statistically significant relationship between environmental awareness and purchase intention. The value for money (β=0.206, t=3.55, p-value<0.001) is also statistically significant. So, when the value for money increases by one unit, the purchase intention increases by 0.206, meaning that there is a statistically significant relationship between environmental awareness and purchase intention. And finally, try new products (β=0.176, t=2.14, p-value<0.034) is also statistically significant. So, when the try new products increases by one unit, the purchase intention increases 0.176. Meaning that there is a statistically significant relationship between try new products and purchase intention. The variables social influence, quality difference, performance difference, and brand trust are not statistically significant and so cannot be proved that influence the purchase intention.
Moreover, each research question and hypothesis can be analysed.

RQ1: What is the consumer profile of near-expiry and damaged personal care products?

In terms of the consumer profile for purchasing near-expiry and damaged personal care products, the independent variables are Environmental Drive, Social Influence, and Price Sensitivity (Table 14, Appendix VIII). The variable with more weight is Price Sensitivity (*M*=5.33), followed by Environmental Responsibility (*M*=4.68) and lastly, Social Influence (*M*=4.09). In this case, all means are above average.
Hence, from the analysis of the coefficients above, the following hypothesis will be accepted or rejected:

H1a: Environmental Responsibility positively influences the purchase intention of near-expiry and damaged personal care products.

It is possible to **accept** this hypothesis because the p-value<0.001<0.05. So, the environmental drive of consumers has a positive influence on the purchase intention of near-expiry and damaged personal care products.

H1b: Social influence positively influences the purchase intention of near-expiry and damaged personal care products.

This hypothesis is **rejected** because the p-value is higher than 0.05 (p-value=0.285). So, it is not possible to conclude that the social influence of consumers has a positive influence on the purchase intention of near-expiry and damaged personal care products.

H1c: Price Sensitivity positively influences the purchase intention of near-expiry and damaged personal care products.

It is possible to **accept** this hypothesis because p-value<0.001<0.05. So, the price sensitivity of consumers has a positive influence on the purchase intention of near-expiry and damaged personal care products.

RQ2: What are the barriers to near-expiry and damaged personal care products?

In terms of barriers to purchasing near-expiry and damaged personal care products, the independent variables are perceived quality and perceived performance (Table 15, Appendix VIII). The variable with more weight is perceived performance (M=5.32), followed by perceived quality (M=5.08). All the means are above average, meaning that most consumers perceive a high difference in quality and performance when comparing near-expiry and damaged personal care products with long-expiry and non-damaged products. Thus, the variables are not significant for the research.

Using a significant level of 5%, there are no significant variables. Hence, from the analysis of the coefficients above, the following hypothesis will be rejected:

H2a: Perceived Quality negatively influences the purchase intention of near-expiry and damaged personal care products.

This hypothesis is **rejected** because the p-value is higher than 0.05 (p-value=0.232). Meaning that there is no statistically significant negative influence between perceived quality and purchase intention at the 5% significance level.

H2b: Performance Difference negatively influences the purchase intention of near-expiry and damaged personal care products.

This hypothesis is **rejected** because the p-value is higher than 0.05 (p-value=0.114). Meaning that there is no statistically significant negative influence between perceived performance and purchase intention at the 5% significance level.

RQ3: What are the drivers of near-expiry and damaged personal care products?

In terms of the drivers for purchasing near-expiry and damaged personal care products, the independent variables are valued for money, trying new products, and brand trust (Table 15, Appendix VIII). The variable with more weight is Brand Trust (*M*=5.63), followed by value for money (*M*=5.28) and lastly, trying new products (*M*=5.06). All means are above average.

Hence, from the analysis of the coefficients above, the following hypothesis will be rejected:

H3a: Value for Money positively influences the purchase intention of near-expiry and damaged personal care products.

It is possible to **accept** this hypothesis because the p-value<0.001<0.05. So, the value for money has a positive influence on the purchase intention of near-expiry and damaged personal care products.

H3b: Opportunity to Try New Products positively influences the purchase intention of near-expiry and damaged personal care products.

It is possible to **accept** this hypothesis because the p-value<0.034<0.05. So, the opportunity to try new products has a positive influence on the purchase intention of near-expiry and damaged personal care products.

H3c: Brand Trust positively influences the purchase intention of near-expiry and damaged personal care products.

This hypothesis is **rejected** because the p-value is 0.588 (p-value>0.05). So, it is not possible to conclude that brand trust has a positive influence on the purchase intention of near-expiry and damaged personal care products.

6.5. Cluster Analysis

A cluster analysis was conducted using the K-means method to further define the user profile (Table 17, Appendix VIII). Due to the limited number of significant variables, a factor analysis was not necessary. This analysis aimed to identify distinct groups or clusters within the dataset based on similarities and differences in the selected variables, providing insights into the different user profiles present in the sample.

The cluster analysis was performed by comparing the values and mean attributes of the four significant variables. The ANOVA table presents the results of tests to determine whether there are statistically significant differences between the means of clusters for each variable of interest (Table 18, Appendix VIII). In this case, there is a significant in the mean of that variable across all clusters, as p-value is <0.05.

These results suggest the presence of 3 distinct user profiles within the sample (Table 20, Appendix VIII). However, considering the small number of cases in Cluster 3, this will be discarded and focus only on Clusters 1 and 2, which have larger sample sizes and together are more representative of the overall population (n=136).

Additionally, to the analysis, and in order to understand the demographics of each cluster, a cross-tab analysis was performed, concluding that the possible user profiles have the following characteristics (Table 19, Appendix VIII):

Cluster 1: Bargain Lover

In Cluster 1 (Table 21, Appendix VIII), the variables with relatively higher importance are Price Sensitivity (5.06) and Value for Money (4.96), indicating that individuals in this cluster prioritize affordability and cost-effectiveness. Environmental Responsibility (2.82) and Try New Products (4.08) are comparatively lower in importance for this cluster. This cluster represents 24.45% (35 individuals) of the sample, with a majority of females (54%). The age group primarily falls between 25-34 years old (40%). The majority of individuals in this cluster have bachelor's and master's degrees (82.86%) and work full-time (74.29%). Their average monthly income ranges from 1000 to 1999 euros (45.71%). When purchasing personal care products, they tend to do so on a monthly basis (51.43%) from retail (80%) and pharmacy (42.86%) channels. They show a preference for both national and private brands (91.43%).

Cluster 2: Environmentally Driven

In Cluster 2 (Table 22, Appendix VIII), all variables have relatively high importance, with Environmental Driven (5.42), Price Sensitivity (5.52), Value for Money (5.57), and Try New Products (5.49) all scoring above 5. This suggests that individuals in this cluster are driven by environmental concerns, while also considering price, value, and willingness to try new products as significant factors in their decision-making process. This cluster represents 70.63% (101 individuals) of the sample, with a majority of females (69.30%). The age group is primarily composed of individuals between 25-34 and 18-24 years old, accounting for a combined total of 78.22%. The majority of individuals in this cluster have bachelor's and master's degrees (86.14%). They are predominantly full-time workers (60.40%) or students (28.71%), with a monthly average income of 1000 to 1499 euros (41.59%) or no income (15.84%). When purchasing personal care products, they typically do so on a monthly basis (44.55%) from retail (91.09%) and online (44.55%) channels. They show a preference for both national and private brands (75.25%).

6.1.5. Overall Purchase Intention

Overall, the purchase intention for near-expiry and damaged products was found to be high and above the mean (*M*=4), indicating a positive inclination towards these products. Specifically, the mean purchase intention for near-expiry and damaged products was 5.24. Notably, when examining the intention to purchase only near-expired or only damaged products, it was observed that the mean for purchasing only damaged products (*M*=5.43) exceeded that of purchasing only near-expiry products (*M*=5.03), as well as purchasing both near-expiry and damaged products. This suggests a stronger preference to purchase intention for damaged products among consumers in terms of purchase intention (Creswell, 2009).

6.2. Discussion

The results of this study are discussed in relation to the objective of this research, which is to examine the feasibility of establishing a new platform that enables consumers to purchase near-expired or damaged personal care products at discounted prices.

Overall, consumers are more demanding and worried about sustainability issues (Gidaković et al., 2022) with a growing awareness of sustainability responsibility that leads to a higher purchase intention (Stone et al., 1995). Thus, waste is still a problem in the industry and, as seen in the literature, although most brands are adapting their strategies to a more sustainable process (Cosmetics Europe, 2017), there is still some doubtfulness about their truth that leads to feelings of greenwashing. In regards to circular economy, it can’t be concluded if consumers perceive this platform as a circular economy model or not.

Additionally, consumers don't perceive themselves as influenced by others to purchase these products. In the case of sustainable consumption, this factor is extremely important to incentivize purchase behaviours (White et al., 2019). Thus, social and ideal self are two distinct concepts that can influence other's influence (Sirgy, 1982). On the other hand, they perceive themselves as price sensitive, especially when purchasing green products (Hsu et al., 2017a).

Interestingly, the chosen barriers were not confirmed. Perceived quality plays a big role in purchase intention, especially when products are perceived as not "unperfect" (Tsiros & Heilman, 2005b). If consumers perceive near-expiry and damaged products as less quality than "normal" products, the likelihood of purchase decreases. In this case, the results are in accordance, as consumers don't see quality as a negative influence on purchase intention, but they still see a quality difference between the two types of products. The same happens when a product has a perceived low performance, when compared to a "normal" product, it is less likely to satisfy consumer preferences, decreasing the likelihood of purchasing (Woodruff, 1997). In this case, it does not negatively influence the purchase intention, but consumers still perceive a performance difference between near-expiry and damaged products and "normal" products.

Following this, the price is assessed as having a positive effect on purchase intention, as its price-quality relationship (Lichtenstein et al., 1993) between these products and their discounted price is perceived as an opportunity to save money and also try new products. The latter is usually associated with an innovativeness feeling that is assumed to be a personality trait for the adoption of new products (Leavitt & Walton, 1975), which is the case. Additionally, consumers do not perceive brand trust as a positive influence towards the purchase intention of these products, which goes against the literature that suggests that brand trust increases the credibility of quality perceptions, and may not affect the image of the brand if a product is sold at a discount (Morgan & Hunt, 1994).

Finally, two main user profiles with the same characteristics resulted from the analysis, being that one is more price sensitive and values price-quality products, and the other is more concerned with environmental issues, although still price sensitive. In both groups, the majority are young women who are working or studying. In the first group, the majority is working full time and purchases personal care products at least once a month usually from retail stores or pharmacies, buying both not national and private brands, depending on the product. In general, they do not care about environmental issues but are interested in trying new products. The second group, the majority is working full time or studying, so some of them have no income. Usually purchase personal care products on a monthly basis from retail stores or online channels, buying both not national and private brands, depending on the product. In general, they do not care about environmental issues but are interested in trying new products. Although very concerned about the price, these consumers are equally interested in the environment as well.

To conclude, the methodology and data collection was appropriate to ensure the research's relevance and broader subject context. Overall the methodology was aligned with the research questions and objectives, providing results for the hypotheses. The data collection techniques used were the most suitable, as they englobed a mixed-methods approach, being able to collect data from multiple perspectives, that can later be used to test the effect on professional and academic practices.

CHAPTER 7: CONCLUSIONS AND LIMITATIONS

7.1 Main Findings & Conclusions

This research aimed at understanding the potential consumer profile, and main drivers and barriers of the intention of purchasing near-expiry and damaged personal care products. The idea of creating a new platform where consumers can purchase near-expired or damaged personal care products avoiding waste in the industry and contributing to a circular economy. And so, three research questions were developed:

RQ1: What is the potential consumer profile of near-expiry and damaged personal care products?
RQ2: What are the main barriers to purchase intention for near-expiry and damaged personal care products?
RQ3:What are the main drivers to purchase intention for near-expiry and damaged personal care products?

First, to answer the questions, market analysis was done for context and a literature review about the topics of sustainability, waste management, circular economy, and near-expiry and damaged personal care products.

In addition, an explanation about the concept of a new platform that sells near-expiry and damaged personal care products was included. This information was then organized to develop eight hypotheses to study multiple various to help answer each research question.

These hypotheses were done through appropriate theoretical models and literature. The results of the quantitative and qualitative analysis supported some of the hypotheses and their influence on the purchase intention of near expired personal and damaged care products.

After conducting the analysis and testing the hypothesis, the following findings were obtained. Regarding the first research question on consumer profiles, variables positively influencing purchase intention include environmental drive and price sensitivity, with price sensitivity carrying more weight.

The variable social influence did not show any positive influence on purchase intention. The sample was categorized into different groups based on willingness to purchase, with one group focused on looking for the best price-quality products, and another more on environmentally-driven choices. Personas for each type of potential consumer profile was developed and can be analysed in more detail in Appendix IX.

For the second research question, the variables chosen as barriers did not demonstrate significant positive influence, as perceived performance and perceived quality were not confirmed to negatively influence purchase intention. Therefore, their impact on purchase intention remains inconclusive, and consumers see differences in the near-expiry and damaged products and normal ones.

Regarding the third research question on drivers, the variables value for money and trying new products positively influenced purchase intention, with trying new products carrying more weight. Brand trust did not show a significant influence on the purchase intention of near-expiry and damaged products.

7.2 Managerial Implications

To start, the overall perceptions of developing a platform to sell these products suggest potential for the personal care industry. The results show an average level of acceptance towards the purchase intention of these items, but some are dubious about the concept itself. Clear communication is the key to success.

Next, it is important to emphasize the impact on sustainability and the environment. The results suggest that consumers are becoming more concerned about the environment and by informing consumers of how the app can help reduce waste and contribute to a circular economy in the industry, consumers might be more prone to its use.

Additionally, consumers have a low perception of brand trust and perceive most brands to engage in greenwashing. This indicated that the platform should focus on transparency and genuine sustainability efforts. It is important to address this situation in order to create credibility and trust amongst all consumers.

The results highlight two main groups, that are the potential consumer and target. In this case, the platform could orient its marketing strategies in two ways: price-quality opportunity and environmental impact.

The business model of the app is still to determine upon future research oriented to this goal. Thus, given the preference of consumers towards retailers and pharmacies, the platform could partner with these channels to make them more appealing to their target. In this way, these channels could have their online presence on the platform and profit from what would’ve been wasted.

In conclusion, this research reveals that despite consumers' lack of awareness regarding this type of waste in the industry, their overall purchase intention for near-expiry and damaged products is high. While this study cannot definitively determine the success of developing an innovative platform for selling these products, it highlights several intriguing variables that suggest the subject warrants further investigation in the future, particularly within the Portuguese market.

7.3. Limitations and Further Research

Although this research was able to conclude interesting results, there are some limitations to the study and future research recommendations.

The first limitation is regarding the scarcity and lack of availability of literature and reports on personal care waste and its impact on the environment. Additionally, the lack of available reliable information due to the absence of the product in the Portuguese market, makes it challenging to access up-to-date and accurate data on the topic.

The second limitation concerns the small sample size of 143 participants. As a result, this research cannot be significantly representative of the Portuguese market and may be prone to statistical uncertainty. Another limitation is the potential bias in the questionnaire sample, as a majority of participants belong to the same demographic group.

Moving forward, it is recommended to add additional variables to understand possible barriers to future research. For this research, the number of barriers was conditioned by the number of literature reviews available on the topic, especially focused on the Portuguese market. A recommendation would be to develop qualitative research methods such as in-depth interviews, focus groups, or observations that could provide valuable insights into the barriers faced by Portuguese consumers.

Furthermore, it is important to refer that some hypotheses were not supported, potentially due to the limited statistical power to detect small sample sizes or high variability in data. It is important to explore other variables and consider the influence of nationality, which was not investigated in this study focused solely on the Portuguese market.

As a future research direction, it is recommended to delve into the acceptance of technology, particularly exploring the characteristics and business model of the app. Additionally, only studying the intention to purchase might be misleading as there are other factors that can be studied, such as the technology acceptance of consumers, user friendly, etc.

Additionally, further investigation into the differences between near-expiry and damaged products would be of interest, as well as their target difference.

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APPENDICES

Appendix I: Definitions of the Personal Care Industry

a) Personal care products*:* As defined by Health Market Research (2023), personal care products include all products, items, or substances designed for individual care, personal hygiene maintenance, or appearance enhancement. This category includes health and wellness products such as derma cosmetics, cosmetics, personal hygiene items, and beauty products (see Figure I). Typically, these products are for external skin or hair use (Krutmann & Humbert, 2011).

b) Dermacosmetics: are specially formulated products that provide therapeutic effects on the skin in addition to their cosmetic benefits (INFARMED, n.d.). They are commonly used to address specific skin conditions, such as acne or ageing skin, and are primarily sold in pharmacies and drugstores.

c) Cosmetics: Substances or mixtures designed to come into contact with the external parts of the human body (hair, epidermis, lips, nail systems, and external genital organs) or with teeth and oral mucosa (INFARMED, 2009). Their primary purpose is to clean, perfume, alter the appearance, protect, maintain well-being, or neutralize body odours (European Union, n.d.).

c) ***Minimum Durability Date***: date up until when the product fulfils its initial functions in the appropriate conditions (INFARMED, n.d.)

d) ***Period After Opening (PAO)***: period to which, after opening, the product can be used safely (INFARMED, n.d.).

e) ***Expiry Date***: the period between the date of production and the minimum durability date (INFARMED, n.d.).

f) ***Labelling***: a group of mentions and indications, including images, or symbols that state the information on the product (INFARMED, n.d.).

g) Borderline Products: products that have uncertainty in their classification due to their mode of action, presentation, or where they are applied (INFARMED, n.d.). These products will be excluded from this research as each case is different and needs a different understanding of each case. Products intended for ingestion, inhalation, injection, or implantation into the human body are not classified as cosmetics (INFARMED, n.d.) and will also not be considered within the scope of this study.

For the purpose of this research, the term personal care products will refer to any substance or preparation designed to come into contact with various superficial parts of the external human body (INFARMED, n.d.). These products primarily serve to clean, perfume, alter the appearance, protect, maintain well-being, and/or neutralize body odours and include skincare products, perfumes, makeup, and others.

Appendix II: Market Trends

Sustainability	As consumers become increasingly aware of the environmental impact of their purchasing decisions, there will be a heightened demand for sustainable, eco-friendly personal care products.
Natural and Organic Products	The trend towards natural and organic personal care products is expected to continue, driven by consumer concerns about the safety and health benefits of using products made with minimal chemical ingredients.
Personalization and Customization	Advances in technology are starting to enable brands to offer personalized and customized personal care products that consider individual consumer needs and preferences, using big data, artificial intelligence, and digital technologies. An example is L'Oréal's Modiface AI-powered virtual makeup try-on, that allows customers to virtually put on lip shades to match their preferences.
E-commerce and Digital Marketing	The continued growth of e-commerce platforms and the increasing importance of digital marketing is shaping the personal care industry's sales channels and promotional strategies.
Influence of social media and digital platforms	Social media platforms like Instagram, TikTok, and YouTube are playing a significant role in driving consumer awareness, interest, and purchasing behavior. Brands are leveraging these channels to engage with consumers, showcase their products, and drive sales through targeted marketing campaigns and collaborations with influencers.
Asia-Pacific Fast Growing Market	Geographically, the Asia-Pacific region is the largest market for beauty and personal care products with a 35% market share, driven by a growing middle class, growing millennial segment, increased consumer spending, and the influence of local beauty trends, such as K-beauty.

Source: Mordor Intellegence, 2023

Appendix III: PESTEL Analysis of the Portuguese Market

Domain	Parameters	Relevance	Uncertainty
Political	P1. Stable Political Environment	H	L
	P3. Business-Friendly Climate	H	L
	P4. EU is a well-regulated and large market	H	L
	P5. INFARMED is responsible for the regulation	H	L
Economic	Ec1. Constant GDP growth rate	H	M
	Ec2. Decline of the unemployment rate	M	M
	Ec4. Improvement of income	H	M
	Ec5. Decreasing inflation rate	H	M

Sociocultural	S1. Healthier lifestyle from Portuguese consumers	H	L
	S2.A growing interest in environmentally-friendly products	H	L
	S3. Consumers are informed and engage in social media	H	L
	S4. Ageing Population	M	L
	S5. Millennials and Gen Z becoming more influential	H	M
	S6. Attention to ethical practices	H	L
		L	L
Technological	T1. Use technology to compare products and purchase online	H	L
	T2. AI, AR, and big data applications to help purchase	M	M
	T3. Specific customer experiences	H	L
	T4. AI-powered tools	M	M
		M	M
Legal	L1. Regulatory entity (INFARMED, n.d.)	H	L
	L2. Strict Regulations towards Product Safety	M	M
	L3. Labeling provide the necessary information	H	L
	L7. Advertising is regulated to avoid misleading claims	M	M
Environmental	En1. Consumers are more environmental conscious	H	L
	En2. Companies are adapting their resources	H	L
	En3. Waste management: zero-waste production processes	H	L
	En4. Circular economy and CSR trends	H	L

Appendix IV: Expert Interviews

1. Ana Pinho - Luso Helvética SA

How do you deal with damaged products?

When we receive damaged merchandise, the first step is to contact the supplier to determine if the fault lies in their warehouse or during transportation. This helps improve packaging methods. If the quantity is significant, it may need to be sent back, although this is rarely done due to the high additional cost.

For products packaged in cardboard (which is increasingly common to avoid plastic sealing), the supplier sometimes sends us the number of damaged packaging units, and LH replaces them in our Portuguese warehouses. Brands that have sealed products (especially perfumes) issue a credit note for the value of the damaged merchandise. This unsellable merchandise is stored in a specific warehouse on standby. LH employees have the opportunity to purchase it at a reduced price, and in the last quarter,

we evaluate the need for a Christmas sales fair. During this fair, all employees are invited to bring friends/family to physically visit our warehouse and purchase these products at a reduced cost.
Another destination for these products is to transform them into testers or offer them to clients (for example, loyalty cards where products must be sold without an EAN code).

How do you deal with near-expiry products?
For our products, it is rare to have expired deadlines. Orders for stores are in very small and automated units, so as long as the customer has good FIFO logistics, this problem is avoided. Nonetheless, it occasionally happens, and there are also ingredients that are no longer allowed in the market, requiring us to collect them. In these cases, when the damage is to the product/composition rather than the packaging, there is nothing to be done except to destroy it. These products are kept in a specific warehouse awaiting scheduled destruction, which takes place once a year in the presence of an authorized official (at full cost to LH, as conducting it without authorized supervision would result in fines).

2. Margarida Rito - Pharmacist

How do you deal with damaged products?
It depends on the condition of the product. If it can be remedied, we keep the product without any issues. If it's slightly damaged cardboard, we use tape to fix it, and it's barely noticeable. Sometimes, we offer a discount to the customer due to the damage. However, if the packaging is completely torn, with products leaking, etc., we send it back and file a complaint with the supplier. Eventually, they provide us with a credit note for the product.

How do you deal with near-expiry products?
Clearly, we cannot have products for sale to the public that are expired. To control expiration dates, at the beginning of each month, we create a list of products with a specific deadline. Usually, for Prescription Medicines (PM) and Over-The-Counter Medicines (OTC) with only three months left until expiration, we return them to the main supplier (in the case of my group, it is Plural). For PM and PM with four months left until expiration, we label them with the month of expiration to try to sell them first, before other products with longer expiration dates, in order to avoid returning them. For Cosmetic Products/Dietary Supplements/Medical Devices, what we do in our group (not sure if it's common practice) is that we have a "friendly price" section where products approaching their expiration date are sold at a 50% discount to try to sell them and prevent returning them to the suppliers. When we reach the month of expiration, we can no longer sell the product, so we remove it internally. If someone from the team wants the product, they can take it home; otherwise, we send it to VALORMED. For Cosmetic Products/Dietary Supplements/Medical Devices, depending on the return process, some go to VALORMED, while others cannot, so we return them to the brand. PM, obviously, cannot be in the

"friendly price" section because they cannot be easily accessed by the public. PM cannot be included either since they are medications, so we cannot offer a 50% discount. This discount only applies to cosmetics, dietary supplements, and medical devices, but, as I mentioned before, it depends on the return protocol we have with the product brand.

Appendix V: SWOT Analysis

Strengths	***Weaknesses***
- Unique Value Proposition - Cost Savings for consumers - Opportunity to try products that otherwise would be too expensive - Innovative features - Environmental and Social Impact - Convenience and Accessibility - Strong partnerships - Promotions and loyalty programs - Limited product availability (FOMO) - Value for Money	- Consumer skepticism - Limited product availability - Logistical and Distribution Challenges - Competitive landscape - Lack of brand recognition - Limited resources - Challenges in navigating the regulatory environment - Brand perceptions
Opportunities	***Threats***
- Growing demand for sustainable products - Reach of new market segments that are untapped - Technological advancements that can enhance the user experience - Reducing Waste in the personal care industry - Expanding product range - Collaboration with brands and suppliers	- Competition - Changing consumer preferences - Regulatory changes that are always updating - Economic fluctuations

Source: Multiple sources

Appendix VI: Qualitative Analysis coding: In-depth Interviews

1. Which type of personal care products you use most? Give me 3.	**Body Cream**	**Face Cream**	**Oils**	**Face wash**	**Sunscreen**	**Handmade Soap**	**Shampoo/ Shower Gel**	**Makeup**	**Lip Balm**	**Deodorant**	**Toothpaste**	**Shaving/ Waxing**	**Perfume**
FR: body creams, shampoo, argan oil	1		1				1						
LP: deodorant, cream, makeup remover		1						1		1			
CG: shampoo, face cream		1					1						
PL: face cream, shampoo, handmade soaps		1				1	1						
MR: sunscreen, facial cream, lip balm		1			1				1				
CC: face wash, sunscreen, face cream		1		1	1								
PP: toothpaste, shower gel, wax							1				1	1	
MS: toothpaste, shaving tools, perfume											1	1	1
CS: toothpaste, face cream, makeup		1						1			1		
ST: Shampoo, shower gel, toothpaste							1				1		
Count	1	6	1	1	2	1	5	2	1	1	4	2	1

2. Where do you usually purchase your personal care products? Online? Retail? Pharmacy?	Online	Retailers	Specialized stores	Pharmacies	Handmade
FR: Mix: online (skin problem products) and retailers (others)	1	1			
LP: Mostly retailers; Specific ones such (face creams) in pharmacy		1		1	
CG: Mostly retail stores or specialized beauty stores, and specific ones in pharmacy		1	1	1	
PL: Supermarkets and I make my own		1			1
MR: Mostly online (to compare the cheapest) and when retail has cupoun I buy there	1	1			
CC: Online, retail, and pharmacy for specific ones	1	1		1	
PP: Retail and specialized		1	1		
MS: Retail and specialized		1	1		
CS: Pharmacy, Retailers, Specialized		1	1	1	
ST: Mostly retail and sometimes online	1	1			
Count	4	10	4	4	1

3. Do you usually purchase private brand or national brand personal care products?	Private Brand Products	Branded Products	Depends on the product
FR: Specific for skin problems (eczema) I buy high-quality			1
LP: if level of involvement is low (shampoo) I don't care about brand; but for more specific (like face cream) I do			1
CG: A mix of both. Depends on the product: hair products high-quality; shower gel: no-brand			1
PL: Always buy branded products		1	
MR: Branded products for face creams but sometimes I private brand for different products			1
CC: Mainly branded products, except low involvement products like shower gel			1
PP: It depends on the product			1
MS: Depends on the product, toothpaste branded; other private-label			1
CS: Always branded		1	
ST: A mix, it depends on the product			1
Count	0	2	8

4. Do you consider yourself highly environmentally driven? On a scale of 1 to 10.	General Attitude	Level
FR: yes (5/10)	Yes	5
LP: yes (6/10)	Yes	6
CG: More or less (4/10). There's room for improvement	More or less	4
PL: Sometimes (4/10)	More or less	4
MR: No (2/10)	No	2
CC: Medium (4/10)	More or less	4
PP: Yes (9/10)	yes	9
MS: High (6/10)	yes	6
CS: High (8/10)	yes	8
ST: Medium (4/10)	More or less	4
Count	0	5,2

5. When a PC product claims they are "environmentally-friendly or "eco" what do you understand by that?	Greenwashing	Production Process	Brand Awareness	Biodegradable	Packaging
FR: I think its green washing, but try to change production and supply chain.	1	1			
LP: Connection with the brand: if I perceive the brands as sustainable, everything the brand puts out, I'll perceive it as sustainable.			1		
CG: Less negative impact on environment. Biodegradable, recyclable materials.		1		1	
PL: Packaging					1
MR: Greenwashing	1				
CC: Greenwashing	1				
PP: Maybe packaging and transport		1			1
MS: Greenwashing	1				
CS: They are trying, but mostly greenwashing	1				
ST: Reduced plastic					1
Count	5	3	1	1	3

6. Do you usually check the expiry date before using the PC product?	Yes	No
FR: No, and in general as well		1
LP: No		1
CG: No, unless is derma cosmetic		1
PL: No		1
MR: Sim, always	1	
CC: No		1
PP: No		1
MS: No		1
CS: No, except face creams		1
ST: No		1
Count	1	9

7. Do you know what this symbol is (PAO)? If yes, do you follow is?	Yes	No
FR: I know what it is and I don't care		1
LP: I don't follow it, I stop using it when I finish the product		1
CG: In some products I do	1	
PL: I don't care		1
MR: I don't care, also because my products finish before		1
CC: I don't care		1
PP: I don't know what it means		1
MS:I don't follow I don't care		1
CS: I know and I follow it	1	
ST: No, I forget about it		1
Count	2	8

8. Which one would you buy? Is there a difference in the decision making process between the two?	Yes	No
FR: I would buy both, It's a good bargain	1	
LP: Yes, both are from good brands. I would buy both in multiple quantities	1	
CG: Yes, I would buy both, good deal	1	
PL: It's a discount, it's always worth it	1	
MR: If I knew I was gonna use them, I would buy both	1	
CC: Because it's not for the face, I would buy both	1	
PP: Yes, if I knew I would use both	1	
MS: Yes, it's a good discount for both	1	
CS: Yes, I could still use them for a long time	1	
ST: Yes, for sure. A discount is a discount	1	
Count	10	0

9. Would you buy this damaged packaging product at discount?	Yes	No
FR: Yes, but only because of the discount	1	
LP: No		1
CG: Yes, if the product inside was no damaged	1	
PL: Yes, as long as the product itself is fine	1	
MR: Yes, if the product inside is sealed	1	
CC: Yes, as long as the product was in good condition	1	
PP: Yes, sure!	1	
MS: Yes, of course	1	
CS: Sim, no problems	1	
ST: Of course.	1	
Count	9	1

10. Have you ever heard of Too Good To Go or similar app? Have you ever purchased a near-expiry or damaged good?	Cheap	Try new things	I did not feel like reducing waste/ being sustainable	Not convinient to pick up	I felt like I was hleping the environment	Not a lot of variety/ available places	Low trust	Never tried
FR: Yes, I liked it a lot because it was cheap and I could try new things. I did not feel like I was helping reducing waste.	1	1	1					
LP: Yes, and also *Good After Mercearia* , but I never used it because I'm lazy to go pick it up.				1				1
CG: Yes, I liked saving food and it was cheap	1							
PL: No, but I think it's a nice initiative.								1
MR: I heard about it, but never used it, the pick-up time is not nice because I work and I cannot get it on time				1				1
CC: Yes, I like the surprise factor and the price	1	1						
PP: Yes, good value for money, but sometimes the bundles don't have a lot of variety and not a lot of available places.	1					1		
MS: No, and I wouldn't trust things were still fresh.							1	1
CS: No, and I would not use it because it's not fresh food.							1	1
ST: Yes, I use it a lot. I love the cheap-quality relationship and the environmental aspect	1				1			
Count	5	2	1	2	1	1	2	5

11. If you have the following scenario: a normal personal care product with no indication towards its expiry date, and another same one with a near-expiry tag. Do you see any difference in quality between the two?	Yes	No	I'm not sure
FR: No, it's like the food, there's no difference		1	
LP: No		1	
CG: Maybe, it depdns on the porduct			1
PL: I think so	1		
MR: Yes	1		
CC: No, i don't think so		1	
PP: No, as long as it is closed		1	
MS: I don't see a difference		1	
CS: Yes, i don't trust it	1		
ST: I don't think so, as long as it is in good conditions		1	
Count	3	6	1

12. If you have the following scenario: a normal personal care product with no indication towards its expiry date, and another same one with a near-expiry tag. Do you see any difference in performance between the two?	Yes	No	I'm not sure
FR: For me it's like the quality, no big difference		1	
LP: nop		1	
CG: Yes, performance and effectiveness may be down	1		
PL: No, i dont think so		1	
MR: It may be yes, it's less sure than quality	1		
CC: In this case i'd be more concerned	1		
PP: Maybe			1
MS: No		1	
CS: Yes, i wouldnt buy the near expired one	1		
ST: No		1	
Count	4	5	1

13. What are other main barriers that come to mind when thinking of buying these products?	Nothing	Availability	Performance	Waiting time	Quality	Condition
FR: I dont know	1					
LP: Maybe availability of products		1				
CG: Performance			1			
PL: Waiting time for products to arrive				1		
MR: Quality, performance			1		1	
CC: i don't have a clue	1					
PP: Product condition						1
MS: nothing	1					
CS: Quality, performance			1		1	
ST: None	1					
Count	4	1	3	1	2	1

14. What are other main drivers that come to mind when thinking of buying these products?	Price	Sustainability	Trying new products	Low availability	Brand awareness/ trust
FR: Price	1				
LP: Price, sustainability, try new things	1	1	1		
CG: Low availability of the product makes it more likely to buy				1	
PL: Save waste, price	1	1			
MR: Price	1				
CC: Price	1				
PP: Price, trying new products	1		1		
MS: Brand awareness/trust					1
CS: Price and try new products	1		1		
ST: Price and try new products	1		1		
Count	8	2	4	1	1

15. Would you be interested in an app that offers NE&DPC products at discounted prices? Why or why not?	No, i don't trust online	Yes	Purchase online	Try new brands	Bulk purchasing
FR: Yes, new opportunities with new bands that I wouldn't buy usually				1	
LP: Yes, i prefer online so I can see everything rather than going there like Too Good To Go			1		
CG: Yes, for sure!		1			
PL: No, because I don't trust online websites	1				
MR: Yes		1			
CC: Yes, and I would buy more than one					1
PP: Yeah, to save money, because I normally buy it in discount anyways					
MS: Yes, to avoid waste and products being thrown away					
CS: Yes, depending on the type of product I want to buy		1			
ST: Yes, for sure		1			
Count	1	4	1	1	1

Appendix VII: Online Survey

First Block: Introduction

Dear Participant,

Thank you for taking the time to participate in this survey as part of my master's thesis in New Product Innovation at Católica Lisbon School of Business and Economics.

This survey will take approximately 8 minutes to complete.

Your honest opinions and perceptions on the topic are crucial for the research, so please answer the questions truthfully. There are no right or wrong answers, and your responses will be kept confidential, ensuring your anonymity. The data collected will be used solely for the purpose of a master's dissertation.

May you have any questions or concerns, please feel free to contact me at s-sarsousa@ucp.pt.

If you are ready to begin the survey, please click on the "Next" button.

Obrigada!

End of first Block

Second Block: Screening Question

Q1: Do you live in Portugal?

- Yes (1)
- No (2)

Skip to the end of the survey if: Q1= "No"

Q2: In the last year, did you buy any personal care product? (ex. shampoo, toothpaste, makeup, deodorants, perfume, ...)

- Yes (1)
- No (2)

Image 1- Examples of personal care products (by Unilever)

Skip to the end of the survey if: Q2= "No"

End of Block

Third Block: Personal Care Purchase Habits

Q3: How often do you purchase personal care products?

- Weekly (1)
- Monthly (2)
- Every 3 months (3)
- Every 6 months (4)
- Yearly (5)

Q4: Where do you usually purchase these products? (you can choose more than one option)

- Pharmacy/ para pharmacy (ex. Wells) (6)
- Online (7)
- Retail/ supermarket (ex. Continente, Pingo doce) (8)
- Specialist stores (ex. Sephora, Douglas, Boticário, ...) (9)
- Small businesses (10)
- Other (11) ________

Q5: Do you usually purchase private label or branded labels of personal care products?

- Private Label (1)

- National Label (2)
- Both, it depends on the type of product (3)

End of Block

Fourth Block: Sustainable Consumer Behaviour

Q6a (environmental Responsibility): From 1 to 7, indicate the extent to which you agree or disagree with each of the following statements using the scale below (1- strongly disagree; 7- strongly agree):

	(1) Strongly disagree	(2) Disagree	(3) Somewhat disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree
I search and purchase personal care products that are labelled as environmentally friendly or sustainable (1)	o	o	o	o	o	o	o
I make an effort to reduce waste by recycling products I consume (2)	o	o	o	o	o	o	o
I prefer to support brands that prioritize sustainable practices and use eco-friendly ingredients (3)	o	o	o	o	o	o	o

Q6b (social influence): From 1 to 7, indicate the extent to which you agree or disagree with each of the following statements using the scale below (1- strongly disagree; 7- strongly agree):

	(1) Strongly disagree	(2) Disagree	(3) Somewhat disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

Before making a purchase, I often consider what products others are buying (1).	○	○	○	○	○	○	○
The opinions of people I respect influence my decision to purchase a product (2).	○	○	○	○	○	○	○
I am more likely to buy a product if it is popular or trending among my friends or social media (3).	○	○	○	○	○	○	○
I often purchase products that I believe will improve others' perceptions of me (4).	○	○	○	○	○	○	○

Q6c (price sensitivity): From 1 to 7, indicate the extent to which you agree or disagree with each of the following statements using the scale below (1- strongly disagree; 7- strongly agree):

	(1) Strongly disagree	(2) Disagree	(3) Somewhat disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree
The price of a product greatly influences my decision to purchase it (1).	○	○	○	○	○	○	○
I frequently compare prices between different brands before making a purchase (2).	○	○	○	○	○	○	○
I am more likely to buy a product if it's on sale or discounted (3).	○	○	○	○	○	○	○
I often wait to buy a product until its price drops (4).	○	○	○	○	○	○	○

End of Block

Sub-block to explain near-expiry and damaged personal care products:

Personal care waste is a big issue, contributing to environmental pollution and resource depletion. This waste includes not only the packaging materials but also the unused or discarded products themselves.

These unsold items can be categorized as:

A. Damaged Packaging: Products with damaged or imperfect packaging that are less visually appealing to consumers, but still in good condition to be used.

B. Near-Expiry: Products that are approaching their expiration dates to use in a limited time frame, but still in good condition to be used.

Image 2- Damaged and Near-expiry products sold at discounted price

For the following questions, consider **damaged** or **near-expiry** personal care products.

Fourth Block: Barriers towards purchasing near-expiry and damaged personal care products

Q7a (perceived quality): From 1 to 7, indicate the extent to which you agree or disagree with each of the following statements using the scale below (1- strongly disagree; 7- strongly agree):

	(1) Strongly disagree	(2) Disagree	(3) Somewhat disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree
I perceive near-expiry and damaged personal care products as high quality. (1)	○	○	○	○	○	○	○
I perceive near-expiry and damaged personal care products to have the same quality compared to products that are within their normal shelf life. (2)	○	○	○	○	○	○	○
I have the expectation that near-expiry and damaged personal care products will have good quality compared to products that are within their normal shelf life. (3)	○	○	○	○	○	○	○

Q7b (perceived performance): From 1 to 7, indicate the extent to which you agree or disagree with each of the following statements using the scale below (1- strongly disagree; 7- strongly agree):

	(1) Strongly disagree	(2) Disagree	(3) Somewhat disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree
I perceive near-expiry and damaged personal care products with high perfromance. (1)	○	○	○	○	○	○	○
I perceive near-expiry and damaged personal care products to have the same performance compared to products that are within their normal shelf life. (2)	○	○	○	○	○	○	○
I have the expectation that near-expiry and damaged personal care products will have good performance compared to products that are within their normal shelf life. (3)	○	○	○	○	○	○	○

End of Block

Fifth Block: Drivers towards purchasing near-expiry and damaged personal care products

Q8a (Value for Money): From 1 to 7, indicate the extent to which you agree or disagree with each of the following statements using the scale below (1- strongly disagree; 7- strongly agree):

	(1) Strongly disagree	(2) Disagree	(3) Somewhat disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree
Discounts on near-expiry or damaged personal care products increase my perception of their value for money (1)	○	○	○	○	○	○	○
Even if a personal care product is near-expiry or damaged, I would buy it if the price is lower than that of a perfect product (2)	○	○	○	○	○	○	○
I believe that purchasing discounted near-expiry or damaged personal care products is a smart shopping strategy to save money (3)	○	○	○	○	○	○	○

Q8b (Try New Products): From 1 to 7, indicate the extent to which you agree or disagree with each of the following statements using the scale below (1- strongly disagree; 7- strongly agree):

	(1) Strongly disagree	(2) Disagree	(3) Somewhat disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree
I enjoy trying new products, even if they are near-expiry or damaged (1).	o	o	o	o	o	o	o
I believe trying near-expiry or damaged personal care products is a good way to discover new favorites (2).	o	o	o	o	o	o	o
Choose the number 3 (3).	o	o	o	o	o	o	o
I am more open to trying new personal care products if they are near-expiry or damaged, as it allows me to assess their performance at a lower cost (4).	o	o	o	o	o	o	o

Q8c (Brand trust): From 1 to 7, indicate the extent to which you agree or disagree with each of the following statements using the scale below (1- strongly disagree; 7- strongly agree):

	(1) Strongly disagree	(2) Disagree	(3) Somewhat disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree
If I trust a brand, I am more likely to buy its near-expiry or damaged personal care products (1)	o	o	o	o	o	o	o
I believe that if I already know the brand I know it offers high-quality personal care products, even if they are near-expiry or damaged (2)	o	o	o	o	o	o	o
If I have had positive experiences with a brand in the past, I am willing to buy its near-expiry or damaged personal care products (3)	o	o	o	o	o	o	o

End of Block

Sixth Block: App usage and purchase intention

Q9 (Buy NE_D): How likely would you be to purchase **near-expiry** and **damaged** personal care products if there was an app that sold them online at a discounted price? (1- Extremely unlikely; 7- Extremely likely):

	(1) Extremely unlikely	(2) Unlikely	(3) Somewhat unlikely	(4) Undecided	(5) Somewhat Likely	(6) Likely	(7) Strongly Likely
Purchase Near-expiry and Damaged							

Q10 (Buy NE): How likely would you be to purchase **near-expiry** personal care products if there was an app that sold them online at a discounted price? (1- Extremely unlikely; 7- Extremely likely):

	(1) Extremely unlikely	(2) Unlikely	(3) Somewhat unlikely	(4) Undecided	(5) Somewhat Likely	(6) Likely	(7) Strongly Likely
Purchase Near-expiry personal care products							

Q11 (Buy D): How likely would you be to purchase **damaged** personal care products if there was an app that sold them online at a discounted price? (1- Extremely unlikely; 7- Extremely likely):

	(1) Extremely unlikely	(2) Unlikely	(3) Somewhat unlikely	(4) Undecided	(5) Somewhat Likely	(6) Likely	(7) Strongly Likely
Purchase Damaged							

End of Block

Seventh Block: Demographics

Q12: How do you describe yourself?

- Male (1)
- Female (2)
- Non-binary/ third gender (3)
- Prefer not to describe myself (4)
- Prefer not to say (5)
- Other (6) _____

Q13: How old are you?

- Under 18 (1)
- 18-24 years old (2)
- 25-34 years old (3)
- 35-44 years old (4)
- 45-54 years old (5)
- 55-64 years old (6)
- 65x years old (7)

Q14: What's your level of education?

- No formal education (1)
- Primary education (2)
- Secondary education (3)
- High school diploma (4)
- Bachelor's degree (5)
- Master's degree (6)
- Doctorate degree (7)
- Prefer not to say (8)
- Other (9) ________

Q15: What best describes your employment status over the last three months?

- Working full-time (1)
- Working part-time (2)
- Unemployed and looking for work
- Homemaker or a stay-at-home parent
- Student
- Retired
- Other _________

Q16: What's your average monthly income after tax?

- Under €600 (1)
- €600 to €999 (2)
- €1,000 to €1,499 (3)
- €1,500 to €1,999 (4)
- €2,000 to €2,499 (5)
- €2,500 to €2,999 (6)
- €3,000 to €3,499 (7)
- €3,500 to €3,999 (8)
- €4,000 and above (9)

- Prefer not to say (10)
- I don't have an income (11)

End of Block

Appendix VIII: SPSS outputs

(N=143)		Frequency	Percentage
Gender	Male	50	35%
	Female	92	64.3%
	Non binary	1	0.7%
Age	Under 18 years old	1	0.7%
	18-24 years old	53	37.1%
	25-34 years old	58	40.6%
	35-44 years old	11	7.7%
	45-54 years old	13	9.1%
	55-64 years old	7	4.9%
Education	Secondary Education	7	4.9%
	High School Diploma	14	9.8%
	Bachelor's Degree	57	39.9%
	Master's Degree	65	45.5%
Employment	Working full-time	91	63.6%
	Working part-time	7	4.9%
	Unemployed	2	1.4%
	Homemaker	3	2.1%
	Student	38	26.6%
	Retired	1	0.7%
	Other	1	0.7%
Income	Under €600	9	6.3%
	€600 - €999	18	12.6%
	€1000 - €1499	52	36.4%
	€1500 - €1999	22	15.4%
	€2000 - €2499	9	6.3%
	€2500 - €2999	3	2.1%
	€3000 - €3499	3	2.1%
	€3500 - €3999	0	0

	€4000 and above	2	1.4%
	Prefer not to say	4	2.8%
	I don’t have an income	21	14.7%
	Total	143	100%

Table 1: Sample Characterization (N=143)

(N=143)	Frequency	Percentage
Weekly	11	7.7%
Monthly	68	47.6%
Every 3 months	48	33.6%
Every 6 months	16	11.2%

Table 2: Descriptive statistics for personal care products purchase frequency (N=143)

(N=143)	Frequency	Percentage
Pharmacy	55	38.5%
Online	57	39.9%
Retail	126	88.1%
Specialist	51	35.7%
Small business	8	5.6%
Other	0	0

Table 3: Descriptive statistics for purchasing channel of personal care

		Private_National label			
		Private Label	National Label	Both, depends on the products	Total
Online	Count	1	12	44	100%
	% Online	1.8%	21.1%	77.2%	100%
	% Private and National Label	100%	100%	100%	100%
	% of Total	1.8%	21.1%	77.2%	100%

Table 4: Descriptive statistics cross tab between online channels and type of brand purchased

Reliability Statistics	
Cronbach's Alpha	N of Items
0.751	11

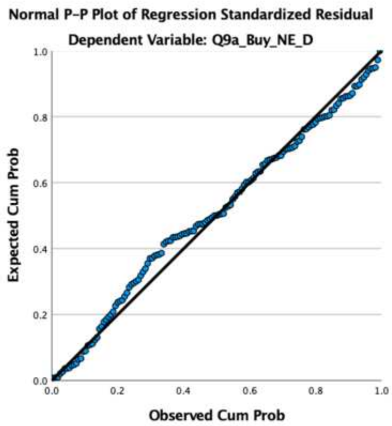
Table 5: Cronbach's reliability statistics for items of consumer profile

Reliability Statistics	
Cronbach's Alpha	N of Items
0.809	6

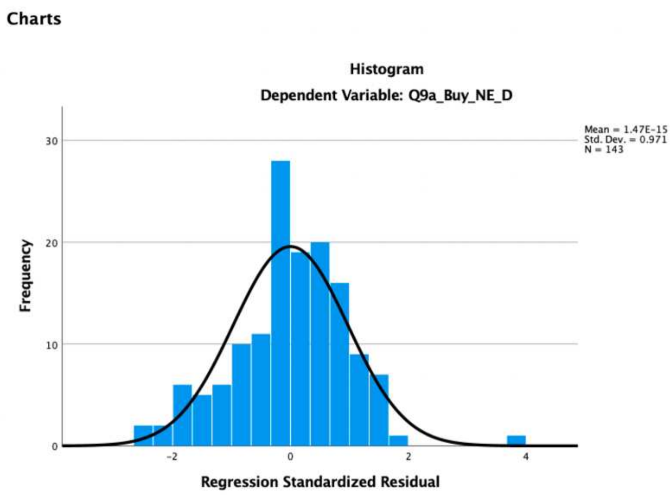
Table 6: Cronbach's reliability statistics for items of barriers

Reliability Statistics	
Cronbach's Alpha	N of Items
0.862	9

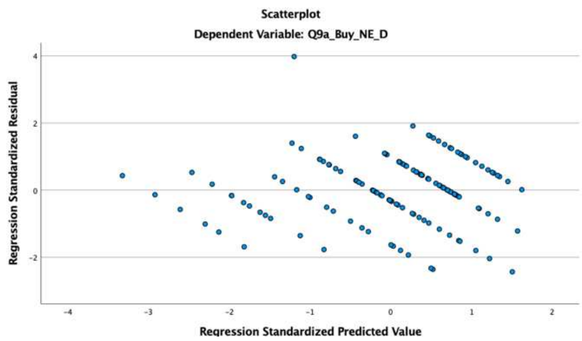
Table 7: Cronbach's reliability statistics for items of drivers



Graphic 5: Normal Q-Q Plot of Residuals from Linear Regression Analysis



Graphic 6: Histogram of Residuals from Linear Regression Analysis



Graphic 7: Scatterplot of standardized residuals versus standardized predicted values

	Unstandardized	Coefficients	Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig	Tolerance	VIF
(constant)	-0.773	0.574		-1.348	0.180		
Env_Drive	0.477	0.061	0.504	7.780	<0.001	0.574	1.742
Social_Influ	-0.062	0.058	-0.056	-1.073	0.285	0.874	1.144
Price_Sens	0.234	0.070	0.183	3.367	<0.001	0.821	1.218
Quality_diff	0.098	0.082	0.077	1.200	0.232	0.587	1.704
Perf_diff	0.111	0.070	0.093	1.592	0.114	0.707	1.414
VFM	0.206	0.058	0.186	3.545	<0.001	0.880	1.136
TNP	0.176	0.082	0.157	2.143	0.034	0.450	2.223
Brand_trust	-0.049	0.090	-0.033	0.588	0.588	0.640	1.562

Table 8: Coefficients Table from the Linear Regression Analysis

Model	R	R Square	Adjusted R Sqaure	Std. Error of the Estimate	Durbin-Watson
1	0.823	0.677	0.658	0.76460	1.507

Table 9: Model Summary from the Linear Regression Analysis

	Mean	Std. Deviation	N
Buy NE_D	5.2448	1.30663	143
Env_Drive	4.6830	1.38136	143
Social_Influ	4.0909	1.17992	143
Price_Sens	5.3252	1.01790	143
Quality_diff	5.0793	1.02699	143
Perf_diff	5.3217	1.09231	143
VFM	5.2821	1.17506	143
TNP	5.0559	1.16682	143
Brand_trust	5.6270	0.89118	143

Table 10: Descriptive statistics from the Linear Regression Analysis

Correlations

		Q9a_Buy_NE_D	ENV_DRIVE	SOCIAL_INF	PRICE_SENS	QUALITY_DIFF	PERFORM_DIFF	VFM	TNP	BRAND_TRUST
Pearson Correlation	Q9a_Buy_NE_D	1.000	.729	.160	.448	.453	.374	.409	.645	.299
	ENV_DRIVE	.729	1.000	.252	.267	.390	.277	.242	.627	.268
	SOCIAL_INF	.160	.252	1.000	.060	.196	.082	.163	.148	-.070
	PRICE_SENS	.448	.267	.060	1.000	.252	.209	.210	.403	.203
	QUALITY_DIFF	.453	.390	.196	.252	1.000	.434	.191	.534	.469
	PERFORM_DIFF	.374	.277	.082	.209	.434	1.000	.199	.336	.456
	VFM	.409	.242	.163	.210	.191	.199	1.000	.263	.065
	TNP	.645	.627	.148	.403	.534	.336	.263	1.000	.418
	BRAND_TRUST	.299	.268	-.070	.203	.469	.456	.065	.418	1.000
Sig. (1-tailed)	Q9a_Buy_NE_D	.	<.001	.028	<.001	<.001	<.001	<.001	<.001	<.001
	ENV_DRIVE	.000	.	.001	.001	.000	.000	.002	.000	.001
	SOCIAL_INF	.028	.001	.	.239	.009	.164	.026	.038	.202
	PRICE_SENS	.000	.001	.239	.	.001	.006	.006	.000	.008
	QUALITY_DIFF	.000	.000	.009	.001	.	.000	.011	.000	.000
	PERFORM_DIFF	.000	.000	.164	.006	.000	.	.009	.000	.000
	VFM	.000	.002	.026	.006	.011	.009	.	.001	.219
	TNP	.000	.000	.038	.000	.000	.000	.001	.	.000
	BRAND_TRUST	.000	.001	.202	.008	.000	.000	.219	.000	.

Table 11: Correlations table from the Linear Regression Analysis

Model	Sum of Squares	df	Mean Sqaure	F	Sig.
Regression	164.095	8	20.512	35.086	<0.001
Residual	78.338	134	0.585		
Total	242.434	142			

Table 12: ANOVA table from the Linear Regression Analysis

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	ENV_DRIVE	SOCIAL_INF	PRICE_SENS	QUALITY_DIFF	PERFORM_DIFF	VFM	TNP	BRAND_TRUST
1	1	8.729	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.072	11.036	.00	.00	.77	.01	.00	.01	.00	.01	.01
	3	.061	11.963	.01	.48	.00	.01	.00	.03	.04	.04	.01
	4	.041	14.592	.00	.02	.06	.02	.06	.06	.67	.00	.03
	5	.031	16.871	.01	.03	.00	.56	.01	.19	.16	.02	.00
	6	.024	19.246	.01	.22	.00	.08	.34	.29	.04	.19	.00
	7	.018	21.822	.15	.10	.01	.09	.00	.40	.00	.13	.26
	8	.016	23.425	.01	.15	.04	.12	.57	.01	.00	.55	.07
	9	.009	31.898	.82	.00	.12	.11	.01	.01	.08	.05	.62

a. Dependent Variable: Q9a_Buy_NE_D

Table 13: Collinearity table from the Linear Regression Analysis

Model	Sum of Squares	Env_Respons	Social_Infl	Price_Sens
N	Valid	143	143	143
	Missing	0	0	0
Mean		4.6830	4.0909	5.3252
Median		5.0000	4.2500	5.2500
Std. Deviation		1.38136	1.1799	1.0179

Table 14: Descriptive Statistics for Variables of consumer profile

Model	Sum of Squares	Perceived Quality	Perceived Performance
N	Valid	143	143
	Missing	0	0
Mean		5.0793	5.3217
Median		5.3333	5.6667
Std. Deviation		1.0269	1.0923

Table 15: Descriptive Statistics for variables of barriers

Model	Sum of Squares	VFM	TNP	Brand_trust
N	Valid	143	143	143
	Missing	0	0	0
Mean		5.2821	5.0559	5.6270
Median		5.333	5.3333	5.6667
Std. Deviation		1.17506	1.16682	0.89118

Table 16: Descriptive Statistics for variables of drivers

	Change in Cluster Centers		
Model	1	2	3
1	3.173	2.497	2.825
2	0.370	0.116	0.391
3	0.160	0.054	0
4	0.145	0.051	0
5	0.056	0.020	0
6	0	0	0

Table 17: Iteration History of clusters

	Cluster		Error			
	Mean Square	df	Mean Square	df	F	Sig.
Env_Respons	94.786	2	0.581	140	163.051	<0.001
Price_Sens	10.302	2	0.904	140	11.399	<0.001
VFM	29.086	2	0.985	140	29.529	<0.001
TNP	33.145	2	0.907	140	36.526	<0.001

Table 18: ANOVA table from cluster analysis

	Clusters		
Model	1	2	3
Env_Resp	2.82	5.42	3.33
Price_Sensit	5.06	5.52	3.89
VFM	4.96	5.57	2.71
TNP	4.08	5.49	3.67

Table 19: Final Cluster Center

Cluster	1	35
	2	101
	3	7
Valid		143
Missing		0

Table 20: Number of participants in each cluster

Cluster 1		
Number		35
% over sample		24.45%
Variables	Price Sensitivity	5.06
	Value for Money	4.96
	Environmental Responsibility	2.82
	Try New Products	4.08
Sex	Males	46%
	Females	54%
Age	Under 18 years old	40%
	18-24 years old	0%
	25-34 years old	31,43%
	35-44 years old	40%
	45-54 years old	2,86%
	55-64 years old	22,86%
Education	Secondary Education	5,71%
	High School Diploma	11,43%
	Bachelor’s Degree	40%

	Master's Degree	42,86%
Employment	Working full-time	74,29%
	Unemployed	5,71%
	Student	20%
Income	Under €600	8,57%
	€600 - €999	8,57%
	€1000 - €1499	22,86%
	€1500 - €1999	22,86%
	€2000 - €2499	20%
	€3000 - €3499	5,71%
	Prefer not to say	2,86%
	I don't have an income	8,57%
Frequency	Weekly	2,86%
	Monthly	5,14%
	Every 3 months	28,57%
	Every 6 months	17,14%
Channel	Pharmacy	42,86%
	Online	25,71%
	Retail	80%
	Specialist	40%
	Small business	8,57%
Label	Private	8,57%
	National	45,71%
	Both, depends on the product	45,71%

Table 21: Demographics and consumer behavior of cluster

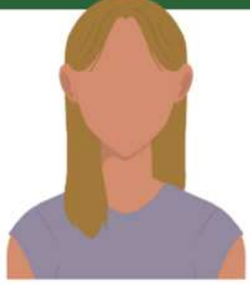
Cluster 2		
Number		101
% over sample		70,63%
Variables	Price Sensitivity	5.52
	Value for Money	5.57
	Environmental Responsibility	5.42
	Try New Products	5.49
Sex	Males	30,69%
	Females	69,30%
	18-24 years old	38,61%

	25-34 years old	39,60%
	35-44 years old	9,90%
	45-54 years old	4,95%
	55-64 years old	5,94%
Education	Secondary Education	4,95%
	High School Diploma	8,91%
	Bachelor's Degree	39,60%
	Master's Degree	46,53%
Employment	Working full-time	60,39%
	Working part-time	6,93%
	Homemaker	1,98%
	Student	28,71%
Income	Under €600	5,94%
	€600 - €999	14,98%
	€1000 - €1499	41,58%
	€1500 - €1999	11,88%
	€2000 - €2499	1,98%
	€2500 - €2999	2,97%
	Prefer not to say	2,97%
	I don't have an income	1,6%
Frequency	Weekly	9,90%
	Monthly	44,55%
	Every 3 months	35,64%
	Every 6 months	9,90%
Channel	Pharmacy	37,62%
	Online	44,55%
	Retail	91,09%
	Specialist	33,66%
	Small business	3,96%
Label	Private	3,96%
	National	20,79%
	Both, depends on the product	75,25%

Table 22: Demographics and consumer behavior of cluster 2

Appendix IX- Personas

Carla Mota



"Protecting the planet, one product at a time."

Age: **28**
Work: **Accountant**
Family: **Single, no children**
Location: **Lisbon, Portugal**
Character: **Eco-conscious advocate**

Personality

Utilitarian – Hedonic
Thinking – Feeling
Sensing – Intuition
Analytic – Creative

Eco-conscious | Ethical, Knowledgeable | Adventurous

Goals

- Live a sustainable lifestyle
- Purchase good deals on personal care products
- Try new products without spending too much money

Frustrations

- Lack of transparency and greenwashing in the personal care industry
- Hard to find the products she's looking for at a discounted price
- Doesn't try more sustainable personal care products

Bio

Emma grew up in a small town surrounded by nature, which instilled in her a deep appreciation for the environment. As an environmental activist, she is committed to promoting eco-friendly practices and raising awareness about the importance of sustainable living. Emma actively researches and seeks out personal care products that are cruelty-free, made with natural ingredients, and packaged sustainably. She values brands that demonstrate a genuine commitment to the environment and actively support ethical and sustainable practices.

Motivation

Products with environmental values
Find quality products at affordable prices
Desire to make a positive impact
Minimize waste

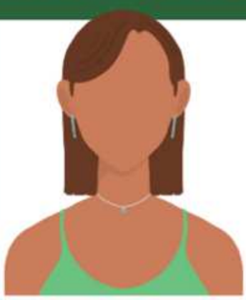
Brands & Influencers

Emma follows eco-conscious bloggers and influencers who provide recommendations for sustainable personal care products. She is particularly influenced by brands that have certifications such as cruelty-free, organic, and vegan.

Preferred Channels

Retail stores
Pharmacies
Online
Specialists

Sofia Martins



"A smart shopper always looking for the best deals."

Age: **32**
Work: **Marketing Specialist**
Family: **Married with one child**
Location: **Lisbon, Portugal**
Character: **Savvy Shopper**

Personality

Utilitarian – Hedonic
Thinking – Feeling
Sensing – Intuition
Analytic – Creative

Budget Conscious | Resourceful | Practical

Goals

- Save money on personal care products without compromising quality.
- Make conscious purchases
- Try new products without spending too much money

Frustrations

- Limited options for affordable personal care products.
- Sometimes personal care products are too expensive, so she doesn't try new ones
- She can't find good deals on personal care products that easily

Bio

Sofia is a diligent and budget-conscious professional who values the importance of making smart purchasing decisions. As a marketing specialist, she is well aware of pricing strategies and always seeks the best deals. With a busy schedule and a family to support, Sofia aims to save money on personal care products without sacrificing quality. She prefers to shop monthly at retail and pharmacy channels, where she can find discounted prices on both national and private brands. Sofia is always on the lookout for promotions and special offers, and she enjoys the thrill of finding great bargains.

Motivation

Saving money
Find quality products at affordable prices
Getting value for her money
Try New Products

Brands & Influencers

Sofia pays attention to brand reputation and relies on customer reviews to inform her purchasing decisions. She also follows personal finance influencers who share money-saving tips and recommendations.

Preferred Channels

Retail stores
Pharmacies
Online
Specialists