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Second-Hand Platforms: Leveraging Circular Principles to Foster Sustainability

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Master in Management of Services and Technology

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September, 2024

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Dedication and Acknowledgments

To the people who have always been there

To those who raised me

To those who helped me grow

To the mistakes I've made

To the ones I will make

To the future that awaits me

To the life that will come.

Resumo

Na era contemporânea, a rápida procura por novidades na indústria da moda tem contribuído significativamente para a degradação ambiental, especialmente na produção e gestão de resíduos. Apesar de esforços como a integração de energia renovável e o uso de fibras sustentáveis, desafios persistem, exigindo a exploração de alternativas para a moda sustentável. Esta tese desenvolve uma análise aprofundada da literatura existente, focando-se em práticas sustentáveis, produção e gestão de resíduos, ao mesmo tempo que examina as limitações das iniciativas atuais e explora possibilidades de melhoramento.

Central para a moda sustentável está a extensão da vida útil das peças por meio de reuso e reciclagem. O estudo destaca as plataformas de reuso na moda, especialmente as de segunda mão, utilizando uma metodologia quantitativa por meio de questionários aos usuários. O objetivo é avaliar como essas plataformas influenciam o comportamento do consumidor na adoção de práticas sustentáveis.

A tese procura identificar *insights* sobre a eficácia das plataformas de moda de segunda mão em fomentar o comportamento sustentável do consumidor, examinando as características das plataformas e seu impacto nos utilizadores. A pesquisa contribui com descobertas valiosas para o contínuo debate sobre moda sustentável, com o objetivo final de informar sobre estratégias e iniciativas futuras na indústria da moda. Essa abordagem visa cultivar um paradigma mais sustentável e responsável para a produção e o consumo.

Palavras-Chave: Moda Sustentável, Economia Circular, Plataformas de Reuso na Moda, Moda de Segunda Mão, Comportamento Sustentável do Consumidor

Classificação JEL: Q01 - Sustainable Development; L81 - Retail and Wholesale Trade; e-commerce

Abstract

In the contemporary era, the fashion industry's rapid pursuit of novelty has significantly contributed to environmental degradation, particularly in production and waste management. Despite efforts such as integrating renewable energy and using sustainable fibres, challenges persist, necessitating exploration of alternative approaches for sustainable fashion. This thesis conducts an in-depth analysis of existing literature, focusing on sustainable practices, production, and waste management, while scrutinizing the limitations of current initiatives and exploring possibilities for improvement.

Central to sustainable fashion is the extension of garment lifespan through reuse and recycling. The study highlights fashion reuse platforms, especially second-hand platforms, employing a quantitative methodology through user questionnaires. The aim is to assess how these platforms influence consumer behaviour in adopting sustainable practices.

The thesis seeks to unveil insights into the efficacy of Second-Hand Platforms (SHPs) in fostering sustainable consumer behaviour by examining platform characteristics and their impact on users. The research contributes valuable findings to the ongoing discourse on sustainable fashion, with the goal of informing future strategies and initiatives in the fashion industry. This approach aims to cultivate a more sustainable and responsible paradigm for both production and consumption.

Keywords: Sustainable fashion, circular economy, fashion reuse platforms, second-hand fashion, sustainable consumer behaviour

JEL Classification: Q01 - Sustainable Development; L81 - Retail and Wholesale Trade; e-commerce

Glossary

CE: Circular Economy

CO₂: Carbon Dioxide

CO₂e: Carbon Dioxide equivalent

EEA: European Environment Agency

EU: European Union

FRPs: Fashion Rental Platforms

GenZ: Generation Z

HISP (SH): Highest Increase of Second-Hand Purchases in general

HISP (SH/NEW): Highest Increase of Second-Hand over New Purchases

HISP: Highest Increase of Second-Hand Purchases

P2P: Peer to Peer

SH: Second-Hand

SHF: Second-Hand Fashion

SHPS: Second-Hand Platform

SHPSs: Second-Hand Platforms

VABH: Value-Attitude-Behaviour Hierarchy

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1. Introduction

1.1. Contextual Background

Clothing is a basic necessity for all humans. The textile and fashion industry ranks among the largest industries worldwide, both in terms of production and employment. The global fashion market is projected to reach \$770.90 billion in revenue by 2024, with China generating the most revenue at \$236.80 billion. The market is expected to grow at a CAGR of 8.94%, reaching \$1,183.00 billion by 2029. User penetration will rise from 33.3% in 2024 to 37.8% by 2029, with an estimated 2.8 billion users (Statista, March 2024). The average revenue per user is projected to be \$369.20, as stated by Amed et al. (2023) and InternetRetailin (2024). This growth is driven by increasing consumer spending, digital transformation, and the rising influence of emerging markets.

Due to this, the textile industry is accountable for a substantial extent of environmental degradation. In recent years, issues such as global warming, driven by the rise in carbon dioxide emissions from the combustion of fossil fuels, depletion of natural resources, toxic waste disposal, and pollution of water, air, and soil emanating from textile industries have garnered considerable attention from both the public and governmental bodies (Karthik & Gopalakrishnan, 2014).

Fast fashion, that is a fast-moving practice which relates to the low-priced clothing products designed according to highly priced recent fashion trends, significantly contributes to environmental degradation. In fact, the volume of waste and environmental pollution generated by the textile and fashion industries has increased dramatically with its rising. as Pandit et al. (2020) and Pandey et al. (2020) analyse in their chapters of the book “Solutions for Sustainable Fashion and Textile Industry”; This is also confirmed by other authors like Peters et al. (2021).

It is evident that the main problem needed to be fixed is the unsustainability of the fast fashion industries, therefore it is pertinent to make a difference and improve the impact that it has. The pressing environmental concerns have compelled textile manufacturers to enhance their processes to sustain the environment.

Sustainability encompasses various forms and interpretations depending on the affected areas. It can manifest socially, environmentally, and economically.

This study will primarily concentrate on environmental sustainability within the textile and fashion industries. This can be addressed at various stages, from manufacturing to end-use consumers, by incorporating practices from the "Three Rs of sustainability": Reduce, Reuse, and Recycle.

1.2. Research Problem and Research Question

Concerns regarding environmental problems have grown considerably and are today one of the most discussed topics worldwide. To overcome this problem requires the commitment of all, from textile producers to consumers. All need to assume this responsibility and consequently change their production and consumption behaviours to one that is more sustainable. This thesis intends to follow this new trend and to understand it more deeply. Therefore, this research aims to address the following question: “*How do second-hand platforms influence the promotion of sustainable behaviour?*”.

It must be specified that the research question is strictly defined by the consumer behaviour, which, in this specific research it is described by the frequency of buying/selling Second-Hand Fashion (SHF). Therefore, an increase in reuse practices is assumed to reflect positive consumer behaviour toward sustainability.

To address this question will be taken under analysis the following hypotheses regarding the population under study, the Italian e-commerce users:

Hypothesis 1: Younger consumers (up to the age of 35) are more likely to participate in Second-Hand (SH) practices, because more aware of Second-Hand Platforms.

Hypothesis 2: Long-term users of Second-Hand Platforms have significantly reduced their consumption of new fashion products.

Hypothesis 3: Long-term users of Second-Hand Platforms have significantly increased their consumption of second-hand fashion products.

1.3. Research Objectives

By achieving the following objectives, this research aims to fill a gap in understanding the role of SHPs in encouraging more sustainable fashion practices and it intends to provide valuable insights that entities like government, fashion brands, and resale fashion platforms could use to

identify improvement areas and develop further sustainable improvements for the Italian e-commerce users.

The primary aim of this research is to examine and evaluate how Second-Hand Platforms impact consumer behaviour, particularly in promoting sustainable fashion consumption. For this reason, analyses will be directly performed on online second-hand buyers and sellers of the sample, to better assess any type of improvements they made by using SHPs.

Secondly, another important objective of this thesis is to identify different consumer segments based on their awareness and engagement with second-hand fashion, in the context of Italian e-commerce users. To assess it, an analysis will be performed on all the sample representing the Italian e-commerce users.

1.4. Dissertation Structure

This dissertation is divided into five main chapters. The first chapter introduces the context, research questions, and objectives, setting the basis for the study. The second chapter provides a comprehensive review of the literature on pollution and sustainability in fashion, second-hand platforms, and consumer behaviour. The third chapter outlines the methodology, including the data collection and analysis methods used in the study. The fourth chapter presents the findings, followed by a discussion of the results in the context of the research objectives. Finally, the fifth chapter concludes with key insights, managerial implications, contributions to the literature, and suggestions for future research.

1.5. Summary of Methodology

The study adopts a quantitative methodology using a questionnaire to analyse and assess second-hand fashion platforms usage among Italian e-commerce consumers. It was distributed via social media and WhatsApp. The survey reached 208 respondents, and it contains sections on demographics, sustainability awareness, and second-hand buying/selling behaviours. Answers were converted into data sets following precise rules.

To translate data into outcomes three cluster analyses were performed regarding these specific datasets: Customer Awareness of Sustainability in Fashion, Online Buyer Behaviour, and Online Seller Behaviour.

Each analysis is followed by “general considerations”, “segmentation” and “interpretation of results” sections, as well as the “implications for practice” sections.

2. Literature Review

2.1. The Fashion Industry's Pollution Problem

The fashion industry is one of the largest polluters in the world, responsible for 10% of global carbon emissions and nearly 20% of wastewater (European Parliament, 2020) and from the perspective of European consumption, textiles have on average the fourth highest negative life cycle impact on the environment and climate change, after food, housing, and mobility. More specifically, in 2020 according to the European Environment Agency (EEA), textile consumption was the consumption area with the third highest impact on water and land use, and the fifth highest in terms of raw material use and greenhouse gas emissions (EEA, 2022).

Concerning raw material usage large amounts of raw materials are used for textile production. To produce all clothing, footwear and household textiles purchased by European Union (EU) households in 2020, an estimated 175 million tonnes of primary raw materials were used, reaching 391kg per person. Approximately 40% of this is due to clothing, 30% to household textiles, and 30% to footwear (EEA, 2022).

The stages of the product life cycle that have the biggest effects on the consumption of water and chemicals are fibre growth, wet pre-treatment, dyeing, finishing, and washing (Koszewska, 2018). A substantial amount of water is needed for producing and handling textiles. To produce all clothing, footwear, and household textiles purchased by EU households in 2020, about 4,000 million m³ of blue water were required, amounting to 9m³ per person. Additionally, about 20,000 million m³ of green water was used, mainly for producing cotton, which amounts to 44m³ per person (EEA, 2022). In terms of chemical pollution textile dyeing is the second-largest polluter of water globally, and it takes about 200 tons of fresh water to dye one ton of fabric. The use of chemicals in the fashion industry also affects the environment. For instance, the creation of polyester textiles and other fibres derived from non-renewable fossil fuels necessitates substantial energy inputs, massive crude oil consumption, and significant greenhouse gas emissions. Furthermore, manufacturing facilities release wastewater along with the residues of polyester manufacture, such as volatile monomers and solvents (Koszewska, 2018).

Greenhouse gas emissions that are generated from resource extraction, production, laundering, and waste incineration. In 2020, producing textile products consumed in the EU generated greenhouse gas emissions of 121 million tonnes Carbon Dioxide equivalent (CO₂e)

in total, or 270kg CO₂e per person (EEA, 2022). In addition to these methods of Carbon Dioxide (CO₂) production, there are also direct CO₂ emissions. A major portion of the carbon footprint of the fashion sector is attributed to transportation throughout globally distributed supply chains (Caniato et al., 2012).

Figure 2.1 provides an overview of the supply chain of the textile and fashion industries, highlighting areas with the highest pollution and the methods involved. This aligns with the data results from EEA (2022) and Karthik & Gopalakrishnan (2014).

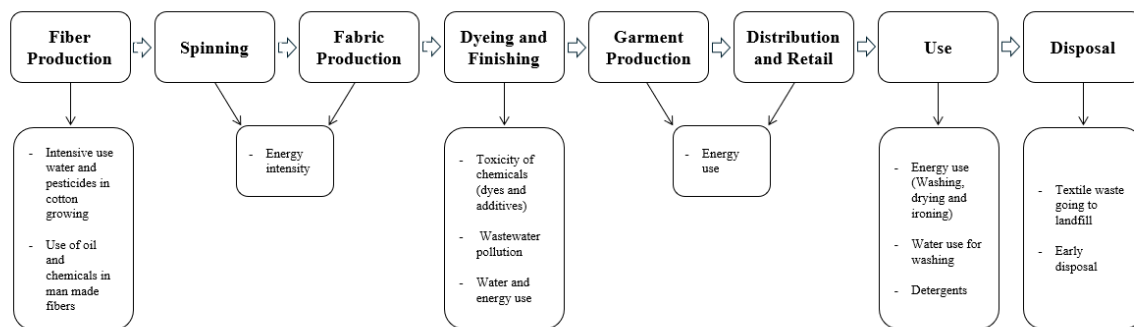


Figure 2.1: Environmental impact of textile and fashion supply chain

Adap. from Pandit et al. 2020

Summarizing, according to the EEA data of 2020, about 80% of the total climate change impact of textiles occurs in the production phase. A further 3% occurs in distribution and retail, 14% in the use phase (washing, drying and ironing), and 3% during end of life (collection, sorting, recycling, incineration and disposal).

2.1.1. Demand and Disposal overview

These data easily confirm that most of the pollution comes from the production phase, but the quantity produced is determined by the demand of the customers for new products. The latter, in this specific era, is strictly related to the trend of fast fashion, which drives customers to buy more and more new products discharging the used ones. The following data of 2020 highlights this trend: “of the total textile waste, 82% was post-consumer waste. The rest was textile waste generated from manufacturing or unsold textiles”(EEA, 2024, pp. 6). Fast fashion is a particular driver of post customer waste production because garments are cheap, flimsy and get non-fashionable very soon. Therefore, they are discarded even before they get damaged (Peters, Li, & Lenzen, 2021).

The problem persists, as a matter of fact, despite advances in recycling technologies, a considerable amount of textile waste still ends up in landfills. Recycling processes are often hindered by the intricate nature of textile materials and the presence of non-recyclable components (EEA, 2022). At the end of their life cycle, most textiles are either sent to the landfill or incinerated. Both disposal methods have significant environmental impacts. Landfills release methane, a potent greenhouse gas, while incineration produces toxic emissions and ash (Karthik & Gopalakrishnan, 2014).

Besides this, sorting and recycling capacities are not scaled up in Europe. Therefore, there is a risk that significant amounts of collected textile waste will continue to end up in incinerators, landfills or be exported to regions outside the EU (EEA, 2024).

One of the most significant examples of the impact of second-hand clothing which is exported from Europe and America into the African market is Ghana. Approximately 15 million second-hand clothing arrive in Ghana every week (Priya, 2022). Studies show that much second-hand clothing becomes unusable and is eventually discarded in landfills or water bodies, releasing harmful chemicals and odours during decomposition or incineration. This improper disposal has raised concerns among citizens, environmental organizations, and government authorities (Acquaye et al., 2023).

2.2.Circular Economy and Fashion

Due to the aforementioned and numerous additional reasons, some measures must be taken. Indeed, government regulatory pressures must encourage businesses to make significant changes at several levels: technical, material, organizational, economic and socio-cultural. Textiles are identified as a key product in a value chain with an urgent need and a huge potential for the transition to sustainable and circular consumption, production and business models in the 2020 Circular Economy Action Plan and the 2021 update of the EU Industrial Strategy (Centobelli et al., 2022).



Figure 1.2: Key points of the EU Textiles Strategy (Source: Centobelli et al., 2022)

A shift from a linear to a circular economy is essential to ensure sustainable business practices.

A linear economy is an economic model based on the process of "take-make-dispose," where raw materials are extracted, transformed into products, used, and then discarded as waste. This model relies on a continuous flow of resources and leads to significant environmental degradation due to the assumption of limitless resource availability and minimal consideration for waste and pollution.

This definition contrasts with the Circular Economy (CE), which aims to create a closed-loop system, minimizing waste and resource use by promoting reuse, recycling, and sustainability (Koszewska, 2018). It is an economic system which aim at eliminating waste and the continual use of resources. Circular systems employ reuse, sharing, repair, refurbishment, remanufacturing, and recycling to create a closed-loop system, minimizing the use of resource inputs and the creation of waste, pollution, and carbon emissions (EEA, 2022).

2.2.1. Textile Waste: Recycle, Reduce, and Reuse

The CE framework is shaped by the 3R (repair, recycle, reuse) principles that should be applied throughout the whole cycle of production, consumption, and return of resources.

The Three Rs are made on textile waste which can be generally divided as per its source into three main types (Koszewska, 2018):

1. **Post-industrial waste** – a side-effect of clothing manufacture.

2. **Pre-consumer waste** – inferior quality garments at the manufacturing site or a retailer's distribution centre, unsold merchandise at the retail store.

3. **Post-consumer waste** – generated by consumers themselves worn out, damaged or unwanted clothing

The 3R can be describe as it follows:

Repair and re-engineering Koszewska (2018) says: “are integral parts of the circular economy, aiming to extend the life of products and reduce waste. These practices involve restoring and modifying garments to make them usable again". In fashion, repair can include mending tears, replacing buttons or zippers, and patching worn areas. Repair services for garments can be provided through various channels (Pandit et al., 2020), such as professional tailoring, in-store repair stations, and even DIY (Do-It-Yourself) kits for consumers. Some communities can organize repair workshops, offering guidance; while online there are tutorials and forums to help consumers repair their garments.

Recycling is a key component of the circular economy, transforming waste materials into new products. In textiles, recycling can involve breaking down fibres and reprocessing them into new fabrics, reducing the need for virgin materials and minimizing environmental impact (Koszewska, 2018). recycling can take two primary forms: downcycling and upcycling. Downcycling is a recycling process in which it is obtained a product of lesser quality and reduced functionality. In the context of textiles, downcycling often results in the transformation of used garments into lower-value products such as insulation materials, industrial rags, or stuffing for upholstery. Upcycling, on the other hand, creatively transforms waste into high-value items. In the textile industry, upcycling can involve creatively reusing old garments or textile to produce new, desirable items with added artistic or functional value (EEA, 2022).

Common recycling practices include mechanical recycling, where textiles are shredded and spun into new yarn, and chemical recycling, where fibres are broken down and re-polymerized into new materials. Programs like textile take-back schemes and closed-loop recycling systems help keep materials in circulation for as long as possible (Pandit et al., 2020).

Reuse in the textile industry focuses on extending the lifespan of products by using them again in their original form or repurposing them for new uses without significant alteration. It extends the life cycle of garments and reduces the need for new production. This can be achieved through second-hand sales, clothing swaps, donations, and other initiatives that

prevent textiles from becoming waste (Koszewska, 2018). Example of reuse practices in fashion are according Pandit et al. (2020) second-hand clothing sales, clothing swaps, donation programs and online resale platforms: platforms such as Vinted, eBay and ThredUp that facilitate the resale of used clothing, making it easy for consumers to buy and sell second-hand garments.

Concluding, among the best methods to integrate a circular economy, particularly concerning the three Rs (Reduce, Reuse, Recycle), reuse or repairing for reuse stands out as the most effective. There are different reasons why reuse is preferable and must be done, when it is possible, always before the recycling (Pandey et al., 2020):

- Reusing will consume less resources than recycling
- Recycle clothes back into textile fibres is not easy, it is time consuming and there is not technology ready to process a high amount of garments
- Reuse has business opportunity and it has a growing market
- Reuse extend the life of the clothes as long as possible (Pandey et al., 2020)

This study focuses on one of its practises: the online resell platforms.

2.2.2. Additional Sustainable solutions

Other possible sustainable solutions that are not mainly focused on the three Rs, therefore not concerning waste, are enlisted Below.

Sustainable textile fibres implementation

There are two main families of textiles (Pandey et al., 2020) that are shown in the Figure 3:

- Synthetic textiles: made of fibres which are made by humans through chemical synthesis, such as nylon, acrylic and polyester. They are widespread, especially in the fast fashion industry, because they are cheap, robust and versatile, enabling the mass manufacture of affordable clothes. On the other hand, they are not biodegradable and their production removed from their position expert tailors, replacing them with unskilled workers. Most of these textiles, like elastane, are blends, and it turns out that recycling clothes back into fibres for new clothes is devilishly difficult, because to obtain recycled fibres out of them, they should be unblended first and this requires the use of several chemical solvents (Pandey et al., 2020).

- Natural textiles: made of natural fibres (animal or vegetal) and biodegradable, which is not harmful for the environment. They usually require the use of old practices to be made, like hand spinning, weaving, crocheting, and knitting techniques. Those processes can be implemented to generate employment, save energy and have no adverse effect on nature, but they are time consuming, that is why their implementation in the fashion field is limited (Pandey et al., 2020).

Advance Technologies

Technological innovations are driving sustainability in fashion. Key advancements include sustainable fibres that improve clothing durability and reduce waste, and 3-D printing, which is gaining traction. Upcoming trends likely to influence fashion include wearable technology and augmented reality. Others less known are (Pandit et al., 2020):

- Foam technology, which refers to the method of applying foams containing active substances into textile materials. This innovative approach significantly reduces water and chemical consumption while enhancing the efficiency and sustainability of various textile processing stages, such as dyeing, printing, and finishing.
- Eco-labelling, that is a voluntary method of environmental performance certification and labelling that identifies overall environmental preference of a product or service within a specific product/service category based on life cycle considerations.
- Plasma technology, that involves the use of plasma (a partially ionized gas) to modify the surface properties of textile materials. It is an eco-friendly process that can enhance various functional properties of textiles without the need for water or chemicals

Sustainable Fashion fibres

Sustainable fibres are materials used in textile production that have a reduced environmental impact compared to conventional fibres. These fibres are produced using methods that reduce resource consumption, pollution, and promote ecological balance (Pandit et al., 2020). Some relevant cases are:

- Coffee Ground Fibres: is generally discarded by coffee drinkers after its purpose is fulfilled, but it is a vital raw material in the manufacturing of multi-functional coffee ground

fibres. A Taiwan-based textile company, Singtex®, has patented a process to transform the discarded coffee ground into S. Café® yarn (Singtex, n.d.). This yarn has excellent anti-odour, UV protective, and fast-drying properties and can be used in apparel, active wear, and home furnishing.

- Orange Fiber: sustainable and innovative material for fashion made from citrus juice byproducts, in collaboration with leading industry players and via an innovative and patented technique (Orange Fiber, n.d.). It was innovated by Adriana Santonocito in collaboration with University Politecnico di Milano. These high-quality fabrics were first used by Salvatore Ferragamo, a famous Italian fashion label in their spring-summer 2017 collection (Pandit et al., 2020).
- Piñatex: is a natural leather alternative made from discarded pineapple leaves. It is a pliable, lightweight, breathable, and water-resistant durable material and is suitable to be used in fashion, home furnishing and upholstery, automotive, and aeronautic industries (Ananas Anam).
- Cartina: is the first material in the industry produced from recycled paper to be used as an alternative for leather in fashion products. One of its kinds is Cartina® fabric that shows the same features as of animal skin and is sustainable, sturdy, durable, and waterproof (Pandit et al., 2020).

2.3.Fashion Sustainable Consumer Behaviour

The most recent studies will be discussed to explore theories of sustainable consumption and consumer behaviour and provide a solid foundation for this research. This section includes the results of previous studies that permit generating the hypotheses to test and most of the variables contained in the questionnaire, providing valuable information.

2.3.1. Drivers and Barriers of Sustainable Fashion Consumption

As previously mentioned, even if the fashion industry is trying to answer the question of sustainability, a reluctant uptake of these products with many consumers and a seeming conflict with existing ‘fast fashion’ desires in this area (McNeill & Moore, 2015). However, studies like the one conducted by Jacobs et al. (2018) state that consumer attitudes towards sustainable

products and services, specifically in clothing, have grown more and more favourable in the past years and, since the role played by consumer attitudes and motivations in the fashion sector is especially relevant to meet the challenge of sustainability (Palomo-Domínguez et al., 2023), there is potential for positive developments and improvements.

Thanks to studies that analysed this area, some drivers for sustainable attitudes in fashion were discovered:

The previous authors investigated Generation Z's Motivations towards Sustainable Fashion and found that environmental awareness in fashion wear sustainable attributes have the potential to mobilize Generation Z (GenZ) consumers influencing their behaviour. This is also proved by Gam's (2011) study performed in America where 329 usable questionnaires were collected from young female consumers aged 18-25 years. Survey results reveal that environmental concern and eco-friendly behaviour factors significantly influence consumers' purchase intention regarding environmentally friendly clothes. Most of the research conducted till now shows an improvement in the younger and more digitalised population since they are concerned about climate change and social-ethical issues. This result is also confirmed by Musova et al. (2021), who investigated consumer attitudes towards new circular models where other Digital Age generations were tested. Therefore, it is clear that when a consumer is more concerned about polluting issues, there is more probability to be inclined to sustainable practices in fashion.

But, it must be said, that in the same scientific studies, sustainable values of the consumers do not always translate into sustainable consumption behaviours. Some study regarding this attitude-behavioural gap were conducted using theoretical framework. The study of Jacobs et al. (2018) is based on Homer and Kahle's (1988) Value-Attitude-Behaviour Hierarchy (VABH). This framework assumes an indirect effect of values on behaviour through attitudes. Thanks to this study, they were able to identify values, such as self-transcendence (e.g., biospheric and altruistic values) and self-enhancement (e.g., egoistic and hedonic values), that influence consumer attitudes and ultimately impact sustainable clothing purchase behaviour. Stating that self-transcendence values are affecting positively, while hedonic values are affecting in a negative way the impact sustainable clothing purchase behaviour. Therefore, discovering self-enhancement values are barriers to sustainable fashion adoption.

Other barriers were found by the same authors on the price, since it was discovered that consumers feel reluctant to purchase green apparel products because they are precepted to cost

more but provide fewer choices (Gam, 2011). In fact, Economic factors are still decisive in influencing consumer behaviours. For example, Generation Z is educated to desire healthy, green products, but they are trying to identify them at good prices (Palomo-Domínguez et al., 2023).

2.4.Fashion Platforms as Sustainable Solutions

During the Digitalization Era, new types of online platforms for clothing sales have emerged, going beyond the traditional e-commerce fashion sites. Some of these platforms focus on reuse, offering sustainable alternatives by promoting the circular economy and reducing waste:

Rental platforms

Fashion Rental Platforms (FRPs) allow consumers to rent garments for a specified period. Users can choose from a wide selection of clothing, select the items they wish to rent, and have them delivered to their doorstep. After the end of the rental period, the items are returned to the platform, where they are cleaned and made available for the following user (Armstrong & Park, 2020). They are part of the broader platform economy, providing consumers access to clothing on a rental basis, promoting a shift away from ownership towards access-based consumption. By renting clothes for a specific amount of time, are reducing the need for purchasing new garments. Therefore, this contributes to enforcing sustainability by reducing overconsumption and waste (Brydges et al., 2021).

Adding further information, Brydges et al. (2021) discovered that these platforms primarily attract younger consumers, particularly women, who are interested in sustainable and cost-effective fashion options. Some examples of these are Rent the Runway and HURR.

Box-subscription platforms

Box-subscription platforms in the fashion industry operate on a model where users pay a recurring fee, typically monthly, to receive a curated selection of clothing and/or accessories. These items can either be kept for a specified period (in the case of rental models) or purchased at a discount (Lee, Sadachar, & Manchiraju, 2019).

The more relevant characteristics of these platforms are flexibility and convenience (McKinsey & Company, 2018): user can return the unwanted items from the box that just arrived; this gives flexibility to the user meeting as much as possible his taste. The flexibility is being maintained and increased in the case of the rental model, for which the user, after the end of the rental period, must return the items of the box and decide whether to pay another fee to

get a different box of items. The convenience of the model is given from the low price of the box compared to the price of buying/rent the items singularly.

This alternative to other platforms is sustainable because it reduces overconsumption and extends the life of garments. It helps mitigate the environmental impact of the fashion industry while still satisfying consumers' desire for variety and newness in their wardrobes (Gray et al., 2022). Examples of these are Rent the Runway with a monthly subscription, Nuuly, and Le Tote.

Online reselling platforms

Second-Hand Platforms are digital marketplaces that facilitate the buying and selling of pre-owned clothing, accessories, and footwear. These platforms are designed to connect individual sellers to buyers, allowing users to list items they no longer need or desire and make them available for purchase by others. The platforms typically handle the logistics of payment processing and, in many cases, shipping, enabling users to engage in the resale market (McCoy & Chi, 2022).

These types of platforms mitigate the environmental impact associated with the production of new garments since they reduce the demand for new clothing production, which in turn decreases the environmental footprint associated with manufacturing (Armstrong & Park, 2020). In addition, they are reinforcing the sustainable side in the fashion world by extending the life of clothing items, therefore helping divert textiles from landfills, addressing waste management challenges (Arrigo, 2022). Furthermore, Second-Hand Platforms are influencing consumer behaviour by normalizing the purchase of used clothing. This shift in behaviour is particularly evident among younger consumers who increasingly value sustainability in their purchasing decisions (Armstrong & Park, 2020). Among the younger consumer has seen significant growth among millennials and Gen Z (Arrigo, 2022), who are motivated by both sustainability and affordability (Charnley et al., 2022).

Examples of such platforms include Vinted, Depop, and Poshmark, which cater to a broad audience. For more niche markets, particularly those focused on luxury items, platforms like Vestiaire Collective, ThredUp, and Grailed are more prominent.

However, Vinted has become a major player in the second-hand fashion market (McCoy & Chi, 2022), since it is offering a user-friendly platform which is trusted by millions of users. In fact, it is a Peer-to-Peer (P2P) platform where individual users can select their pre-owned

clothing, shoes, and accessories for sale. Users upload photos and descriptions of their items, set a price, and then wait for a buyer to purchase. Once an item is sold, Vinted facilitates the transaction, including payment processing and shipping. Sellers are responsible for shipping the items to buyers using a prepaid shipping label provided by Vinted. This model enables consumers to sell a wide range of products directly to each other, offering an easy and efficient way to participate in the second-hand fashion market (McCoy & Chi, 2022).

2.4.1. Impact of Second-Hand Platforms on Consumer Behaviour

Online reselling platforms are engaging consumers. The pre-owned market is experiencing significant growth, expanding at a rate far surpassing the overall apparel industry and is projected to reach a market value of \$50 billion by 2023 (ING, 2020). In the ING report is also visible that about 20% of consumers regularly buy pre-owned clothes, and some brands and retailers have introduced take-back services and pre-loved collections (European Environment Agency, 2022).

The reason behind this high level of consumer engagement can be attributed to the distinctive features offered by these platforms. For example, characteristics such as affordability, easy to use, environmentally friendly aspect and exclusivity of items emerged spontaneously in the focus group of the Palomo-Domínguez et al. (2023) and receives a neutral response in the pilot questionnaire, with sufficient consensus. These characteristics are additionally mentioned by McCoy & Chi (2022).

Overall online platforms have played a crucial role in driving the growth of used goods and resale in other consumer goods markets. In particular, Vinted's business model and its success are allowing it to foster sustainable fashion consumption behaviour (Palomo-Domínguez et al., 2023).

2.5.Literature Review Outcomes

The literature highlights the significant environmental damage caused by the fashion industry, particularly its high levels of carbon emissions, water use, and textile waste. The fast fashion model has been identified as a major contributor to these issues, emphasising producing cheap, short-lived garments (Karthik & Gopalakrishnan, 2014; Peters et al., 2021). The transition to a circular economy, with its focus on reducing, reusing, and recycling materials, is a necessary step in preventing these environmental impacts (Koszewska, 2018).

Second-hand fashion platforms like Vinted and Depop are highlighted as key tools in promoting sustainability. These platforms facilitate the resale of clothing, extending the life cycle of garments and reducing the demand for new products, which in turn lowers the overall environmental footprint of the fashion industry (Arrigo, 2022). Furthermore, these platforms have been particularly successful in reshaping consumer behaviour by normalizing the purchase of second-hand clothing, especially among younger, more digitally savvy consumers (Armstrong & Park, 2020).

In summary, the literature highlights the important role that second-hand platforms play in advancing sustainable fashion. However, to increase the adoption of sustainable practices more broadly, economic barriers such as perceived cost and convenience must be addressed (Jacobs et al., 2018).

3. Methodology

The current study requires quantitative data; therefore, a quantitative research method was used by applying a questionnaire. This type of method is usually associated with obtaining objective facts that allow the best and most reliable scientific evidence to be obtained (Saunders et al., 2009).

To interpret the output of the questionnaire. Some clusters analyses are going to be performed. According to Sarstedt and Mooi (2019), cluster analysis allows researchers to identify natural groupings in data, which can help in segmentation, targeting, and positioning strategies. In fact, due to these analyses the sample would be framed in distinct categories, allowing to identify their behaviours towards sustainability and the linkage that they may have with the SHPs.

The aim of this thesis is to understand the predictors of second-hand clothes purchasing behaviour in the **Italian e-commerce population**. Thus, Italy is the research setting and the action plan is to collect the data and test the research hypotheses (section 1.2).

3.1. Survey

The questionnaire was developed on Google Forms and elaborated in Italian to suit the language of the study population. The English version of it can be found in annex 1.

The survey was administered on the 17th of May, by social media (Instagram and Facebook) and via WhatsApp. Before the sharing, it had a pre-test section where 4 users provided valuable information to improve its performance. In the particular case of Facebook it was sent to targeted communities, like “Vinted Italia Community”, “Vinted Italia - Official” , “Vinted Italia” and “Il Vestito Verde - Moda Sostenibile e Consumo Consapevole”. The purpose of this was to target people more in the second-hand and sustainable environments in Italy.

The survey is titled “Comportamento Sostenibile del Consumatore nella Moda” (meaning: “Sustainable Consumer Behaviour in Fashion”) and it is composed by these 14th Sections:

Introductory section, “Demographic Information”, “Sustainability Awareness in Fashion”, “No Second-Hand Fashion”, “Buyer & Seller”, “Buyer”, “Seller”, “In-Store”, “Online”, “Online & In-Store”, “In-Store Preference”, “Online Preference”, “Customer Behaviour”, and Closing section.

It is necessary to specify that a respondent cannot answer all the sections since most of them were designed with branching, creating specific paths based on previous responses. Some examples are the “In-Store Preference” and “Online Preference” which are reachable only for those who answered to the “Online & In-Store” section.

However, all the participants (208), where able to answer to the “Demographic Information” and the “Sustainability Awareness in Fashion” sections.

3.2. Sample Composition

The sample, which is composed of 208 users, is resembling the Italian e-commerce Users. Since in 2024, according to Statista (May 2024), the number of Italian e-commerce users is around 19.49 million, and it is expected to grow, aiming to reach 25.81 million users in 2029 the accuracy of the answer is given with a confident level of 90% and a margin of error of 5.73%. These 208 respondents are solely Italian and among them there are 129 women and 79 men, with age ranges that go from 15-25 to 60+. This specific choice in the variables was selected since most of the study regarding sustainable customer behaviour in fashion are seen as more responding to the sustainability issues especially young consumers. For example, Gam (2011) identified younger consumers as key drivers of adopting circular models, including second-hand practices, due to their awareness of sustainability. Or Another example is contained in the Musova et al. (2021) research, where they state: "The growing attention of younger generations (Y and Z) towards circular economy (CE) was found". In totality the sample obtained is quite young: 46% are belonging to the age range 15-25, 24% in the 26-35 range, 10% of 36–45-year-old, 10% aged 36-45, 12% in the 46-59 range, and 7% aged 60 and above.

3.3. Data Processing

A dataset to perform the analyses is needed, therefore a conversion from the answers in variables was executed according to these rules:

- For binary answers (e.g. “yes”/”no”) in binary numbers (0,1)
- For frequency and preference answers (e.g. “often”, “sometimes”, etc.) in 5-point scale according to the Likert scale, which is one of the most fundamental and frequently used assessment strategies in social science research to measure attitudes (Joshi et al., 2015).

Thanks to these rules, datasets were created and divided by the paths the sections of the survey had created. After this translation, every observation of the data set was standardized to reduce the error that the scale difference among the observations may cause during the execution of the following analysis.

Since the outcome of a cluster analysis depends heavily on the variables chosen for clustering. If inappropriate variables are used, the analysis may produce misleading results (Hair et al., 2010), therefore other rules were followed regarding variables:

- Removal of variables with variance equal to zero (e.g. variable with no/same answer for all the respondents)
- Removal of redundant variables (e.g. variable that provides no new or additional information to a model because it is highly correlated with one or more other variables already in the model.)

3.4. Data Analysis

Three cluster analyses were performed by using the software RStudio. It was performed an agglomerative hierarchical clustering, which is a bottom-up algorithm where each observation starts in its own cluster, and pairs of clusters are merged as one moves up the hierarchy (Manning et al., n.d.). As a result, it is obtained a hierarchical tree named dendrogram. In this type of analysis, must be chosen distances, which measure the similarity among the observations, and the linkage methods, which define the measure of proximity. In this specific study the Euclidean distance is chosen for all the analyses performed, since it is a right fit for standardized variables. Regarding the linkage methods, it varies among the specific analyses executed to better fit the results. The two used are “ward.D2” and “ward.D” that according to Yu & Turner (n.d.) stands for different implementations of Ward’s minimum variance method. This method aims to find compact, spherical clusters by selecting clusters to merge based on the change in the cluster variances. The clusters are merged if the increase in the combined variance over the sum of the cluster-specific variances is the minimum compared to alternative merging operations.

The first one called “awareness analysis”, is regarding the sections, therefore the variables, who received answers from all the participants of the survey. They are “Demographic

Information” and “Sustainability Awareness in Fashion”. For them were performed a cluster analysis on 208 observations and 34 variables. The linkage method selected is the “ward.d2”.

The second, named “consumer behaviour of online sellers”, and the third one, labelled “consumer behaviour of online buyers”, were performed on online sellers and online buyers who have used SHPs for more than one year; therefore, they were able to answer to the “Customer Behaviour” section. The analysis made on sellers has a total of 42 observations of 72 variables. The one regarding buyers is composed of 31 observations of 73 variables. The linkage method selected for both is the “ward.d”.

Sellers are defined as the sum of the respondents from the “Seller” and “Buyer & Seller” sections. Similarly, buyers are defined as sum of the respondents from the “Buyer” and “Buyer & Seller” sections.

Online buyers and sellers are composed by summing the respondents from the “Online” and “Online & In Store” section, who are respectively buyers and sellers.

Since the customer behaviour variables are taken for the Online buyers and Online sellers, who have used the platforms for more than one year, they are able, due to the expertise in using these platforms, to understand if there where an increase in terms of frequency of buying/selling SHF, and of buying/selling SHF over the not-preowned fashion, compared to the period in which they did not use these platforms.

4. Findings and Discussion

This section is going to provide answers to the three hypotheses and the research question. Additionally, it is going to provide valuable insights to better understand the Italian e-commerce consumers characteristics. The findings were given by analysing the means of the variables for each cluster selected.

Since the analyses are three, the results will be split among them.

4.1. Awareness Analysis

This section aims to provide a general overview of the sample awareness of sustainability issues in fashion and confirm or refute theories proved by the literature. Additionally, it would provide a result of the impact that the awareness of these platforms is creating on the sustainable behaviours allowing to refute or support the first hypothesis: Younger consumers (up to the age of 35) are more likely to participate in Second-Hand (SH) practices, because more aware of Second-Hand Platforms.

4.1.1. General Considerations

The variables of accountancy of sustainability while buying clothes were removed since they were high correlated with the variables regarding sustainability in the scale variable section. Besides it, since nobody answered “No, it is not polluting”, this specific variable was not included in the analysis.

4.1.2. Segmentation

While performing the analysis, the decision regarding the number of clusters must be taken by seeing the dendrogram. For this specific dendrogram (see the figure 4.1)

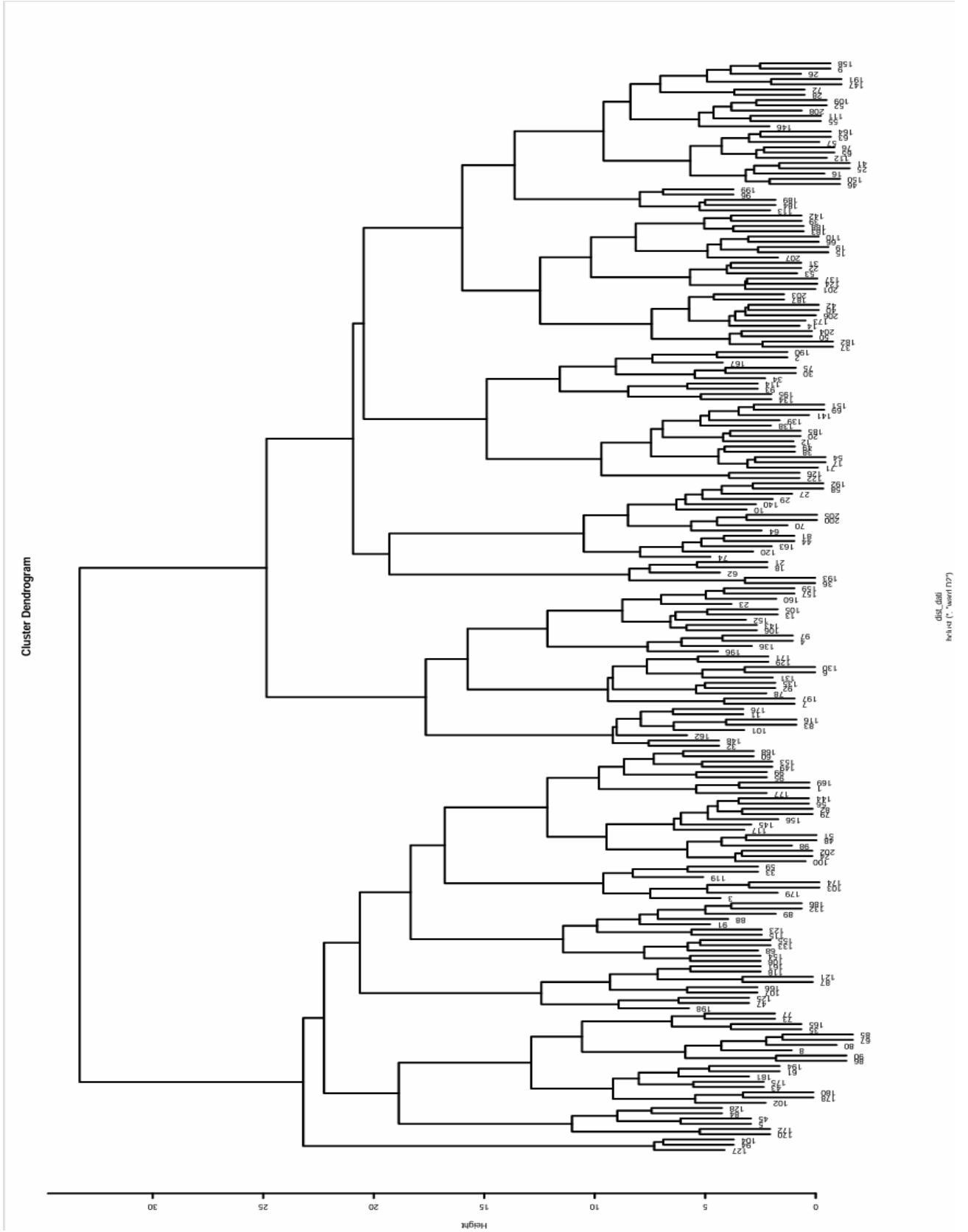


Figure 2.1: Awareness Analysis Dendrogram

Three distinct clusters were chosen at a height of approximately 24. Initially there was indecision between two or four, but these numbers were excluded since: the first case did not show a particular kind of consumer segment, and the second case did not explain something new compared to the three clusters case. These were visible thanks to the analysis of the mean, which characterised the variables of each cluster.

These configurations provide us with the following segmentation:

First cluster – Unaware & Infrequent SH consumers

Composed of 77 observations, it is characterized by a gender mix (54% women and 46% men). More elderly based compared to the other groups, since it has an age composition with higher ranges: in fact, it has the higher percentage of 46-59 and 60 + years old people, respectively 30% and 19%. And also a sufficiently large percentage of 26-35 years old people, amounting at a 29%, but it has lower percentages of the other two remaining age ranges (15-25; 36-45). Mostly constituted by full-time workers (49%), self-employed (20%) and unemployed (14%). It is the group with the highest percentage of retired people, which remains relatively low, accounting for a 3,8%.

Among the group is the one less aware of the actual level of pollution produced by the fashion industry. As a matter of fact, they are the ones with the higher percentage of people answering, “Less polluting than others” (9%) and “I don’t know” (20%). Moreover, they represent the group with the lowest awareness of SHPs, accounting for the 69%; value that is still higher than the average of the group components.

Concerning the factors that drive their decision to buy fashion products, they represent those who care more, but with “moderately” values (around 3, according to the Likert conversion scale), about “dressability”, comfort, and reasonable price. Regarding environmental drivers they represent the group that gives less consideration to them. In fact, they have the highest proportion of respondents rating 'slightly important' (approximately 2 on the Likert scale) in the following categories: “Brand's environmental recognition”, “Environmental impact”, and “Presence of recycled materials”.

Finally, they account for the higher percentage of people that are not involved in any second-hand practice. Among them, the 86% are not practicing any second-hand practice, while the remaining 14% is split: equally among only buyers and buyers & sellers (6,5%) and the smaller part is composed by sellers (1%).

Due to these considerations, they are defined as “Unaware & Infrequent SH consumers”. As a matter of fact, this name is summarising the principal characteristics of these group since they are not so informed regarding the environmental issues of the sector, either of the existence of SHPs and they have lower interest in performing SH practices compared to the other two clusters.

It is important to note that the limited awareness of these platforms, which are predominantly internet-based, can be attributed to the fact that the primary age range of this group falls into categories of digital consumers (Generation X and Baby Boomers) who did not grow up in a technologically advanced environment (Volkom et al., 2014).

The most important aspect to notice is how the low awareness, in terms both of issues and of existence of SHPs, is present at the same time with a low level of involvement in SH practices. This looks to be in line with the first hypothesis.

Besides, it is visible that the variable “reasonable price” even if has a “moderately” value (around 3 on the Likert scale) is the lowest among the groups. This looks also in line with most of the literature reported, which is assuming a relation among price convenience variables and SH practices frequencies of a user.

The literature is also in line regarding the consideration of sustainability in making buying choices. In fact, little consideration of sustainability has low probability to create people that are involved in SH practices.

Second cluster – Aware & SH consumers

This cluster, composed by 100 observations, is the largest. It is slightly more composed by women compare to the first group (66%), but not significantly. The most relevant difference it is that is mainly constituted by younger components, 82% of whom are between 15 and 25 years old and a 14% of them are 26-35 years old respondents. In fact, the highest and most suited occupations selected by them are “student”, accounting for the 80%, and “full-time employee”, with an 11%. They exhibit a mediocre level of awareness concerning pollution issues of the industries compared to the other clusters. For example, their answers for “Yes, it is one of the most polluting sectors” are accounting for a 32%, which is more than the percentage given to this answer in the first group (10%) and less than the percentage given in the third group (51%). Concerning the level of knowledge of the SHPs, reaching a percentage of 98%, they are the more aware between the groups.

The drivers that motivate and characterise these groups in making fashion purchases are:

Firstly, the reasonable price in an almost “very important” way (approximately 4 on the Likert scale), making them very price sensitive people.

Secondly, there are the variables Comfort, high "dressability" and personal expression that are also in a “very aware” level of importance. However, as the first group (even if with slightly higher values), they have few considerations regarding environmental issues.

Lastly, it is evident a significant difference with the first group: the percentage of people not engaging in any SH practice is considerably inferior, representing 41%. The percentage of people involved in SH practices is split among SH Sellers (30%); SH Buyers (16%) and, with the lowest percentage, SH Sellers & Buyers (13%).

For these reasons, they are named “Aware & SH consumers”. The “aware” aspect is regarding the knowledge of the issues caused by this industry, but it is mainly enhancing the very high awareness of the existence of the SHPs. They awarded the “SH consumers” part since they are engaging SH practices (at least a significant portion of them) accounting for the 59%.

Analogously, to the first group, it can be stated that the awareness of these platforms by this group is deriving from their age ranges. In fact, they are belonging to the GenZ and millennials categories of the digital consumers. They are more advantaged compared to generations belonging to the first group, since they grew up or were born already in the internet computer-era (Berkowsky et al., 2018).

It is very important to highlight that they are characterized by a medium level of awareness of polluting issues but very high percentage of people that knows SHPs. In fact, even if sustainability is not a primary concern for this group when shopping, there is a very evident diminution of people not involved in SH practices compare to the first cluster. This is proving that the younger consumers, in this case mostly the 15-25 years old range, are more likely to participate in SH practices, and one drive that is playing an important role is the more awareness of SHPs.

A result that is confirming the alignment with the literature is the one regarding the price sensitivity. It is visible that the variable “reasonable price”, that now has quite high value, is paired with a higher percentage of people involved in SH practices.

However, a result of this cluster, is denying what the literature said about consideration of sustainability in making buying choices. In fact, even if members of this cluster are not so inclined at considering sustainability in buying decisions, there is more probability to get SH practitioners. This suggest that the numbers of SH practitioners are related to the influence that the awareness, therefore the presence of these platforms, has on the cluster. Therefore, this ulterior aspect is proving that knowing about the existence of SHPS is affecting the sustainable behaviours of the consumers.

Third cluster – Aware & Engaged SH consumers

Counting on 31 observations, they represent the smallest cluster. Composed by 67% of women. It is mainly composed by people with the age in the rage of 26-35 (45%) and 36-45 years old (39%), has a 13% of 15-25 years old people and a very low percentage (3%) of 46-50 years old. In line with the age results, in this specific group there are some students (17%) and mostly workers (83%): 62% doing full-time, 4% part-time jobs and 17% are self-employed.

Awareness of this cluster, both in terms of knowledge of the polluting issues of the industry and both in terms of knowledge of SHPs is quite high. Having 52% of people saying that is one of the most polluting sectors they are the most aware of the sustainable problem of these industry. With the 96% of people knowing about the existence of these platforms they are almost even with the percentage of the second cluster of this analysis.

Regarding drivers in purchasing decisions, they are the most price sensitive giving a “very important” weight of 4.3. Other drivers affecting their choices are Comfort (4.5), personal expression (4), high “dressability” (3.8) and high quality (3.6). Finally, in this cluster the environment factors have high values, that are in the middle of “moderately important” and “very important”: environmental impact has a value of 3.5, brand’s environmental recognition has a value of 3.4 and presence of recycled material has a value of 3.2. This is making them the most sustainable fashion consumers among the three clusters.

To conclude, they are the ones with the lowest number of people not involved in SH practices (30%) and the SH consumers are divided by: sellers & buyers (61%), only sellers (6%) and only buyers (3%). Considering these insights, they are named “Aware & Engaged SH consumers”.

Once more, the age, therefore the Membership to a determined range of the digital consumers is a correlated to the awareness level of SHPs.

A final and conclusive confirmation of the first hypothesis is provided by this cluster. It shows the highest level of awareness regarding pollution issues, with a very high percentage of individuals familiar with sustainable habits when they buy fashion and aware of SHPs. These distinguishing characteristics, including the low proportion of individuals not engaged in SH practices, strongly support the hypothesis that individuals around the age of 35 are more likely to participate in sustainable shopping behaviours. A key driver of this engagement appears to be again their awareness of SHPs. Additionally, the increase in SH participation within this group, compared to the second cluster, can likely be attributed to the greater importance they place on sustainability when making purchasing decisions.

The literature for this cluster is in line both for the price sensitiveness and both for the consideration of sustainability in making buying choices.

4.1.3. Interpretations of Results

Concluding, a graph (Figure 4.2), it displays and summarising the divergences among the clusters. In it are reported the most significant variables, reporting the similarities and differences that are enhancing every group uniqueness. The steps reported are because of the difference in scale of the variables, that is still visible even after the standardisation.

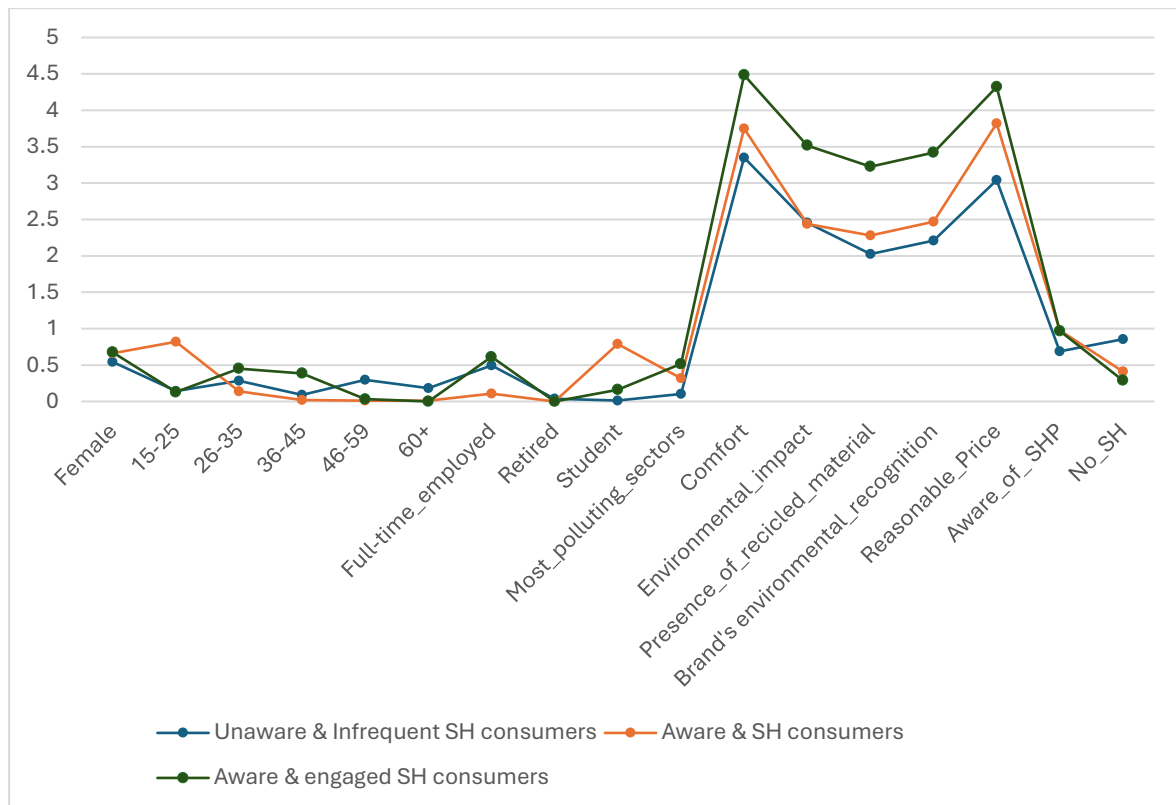


Figure 4.2: Consumers Sustainable Awareness

Other divergences among the segments of customers created that are not visible in the graph but must be considered are regarding the numbers of individuals that are composing each of them. In fact, the group constituting the “Aware & SH consumers” is the biggest, accounting for 100 observations; the one representing “Unaware & Infrequent SH consumers” is second in position with 77 answerers and in last position there are the “Aware & Engaged SH consumers” counting on 33 individuals.

Regarding similarities, one thing that these clusters have in common is the percentage of gender that is constituting each of them. Approximately they are represented by a gender-mix, which is demonstrating that SH involvement in this sector is affecting both genders. It deserves to be noted that with two genders this study is referring to the whole sample, since nobody answer to the gender question by answering “prefer not to specify”. A slightly divergence by this previous statement is that shifting in group 2 and 3 the percentage of women is showing a modest increase that is developing alongside with the level of awareness of polluting issues of this sector.

Overall, this analysis was decisive to frame the type of Italian e-commerce users, confirm the first hypothesis and can be used to set some possible marketing or awareness-raising strategies to engage more users in SH practices.

4.1.4. Awareness Implications for practice

These results demonstrate the more sustainable type of consumers is still low compared to the remaining groups. Therefore, additional progress can be made, and fashion companies and, especially in this case SHPs, could propose some targeted strategies to attract the remaining groups in more sustainable behaviours. This is very important because they represent the biggest part of the population. It deserves to be highlighted that age, awareness and price are playing a big role SH involvement; thus, they can be used as mean to implement these strategies. For example, to motivate the Unaware & Infrequent SH consumers to embrace more sustainable behaviours Government and Fashion brands could partner with television and radio channels, which are more frequent communication channels among this age group, to promote awareness of the environmental cost of fast fashion. Second-Hand Platforms can try to reach them by using more campaigns among their favourite channels (television and radio) and try to retain them by offering discounts or loyalty programs based on the frequency of purchases, since price is a critical driver for them. Regarding the Aware & SH consumers, Fashion Brands and Second-Hand Platforms could use social media campaigns with influencers who align with eco-friendly values and Government could launch competitions or design challenges in schools and universities where students create outfits using second-hand clothing to improve their concerns regarding sustainability. Second-Hand Platforms could also offer exclusive discounts or subscription services that make sustainable fashion cheaper than mainstream brands, since price is a critical driver for them. Besides shaping the sustainable behaviour of the less sustainable groups, the Aware & Engaged SH consumers numbers can be increased creating again tailored strategies. For example, Second-Hand Platforms and Fashion Brands could collaborate with influencers and eco-conscious fashion bloggers who are familiar to this age group. Platforms could also launch referral programs where users can earn rewards by referring new customers.

These are possible ideas of how tailor some strategies on the segments created, but many more can be experimented by each entity to enhance the sustainable customer behaviour of the Italian e-commerce users.

4.2. Consumer Behaviour of Online Sellers & Buyers Analyses

The other two analyses would be performed to address fully the research question. In fact, by performing these additional cluster analyses it is going to be visible if, and how much the use of second-hand platforms is affecting the frequency of buying second-hand clothes and the frequency of second-hand clothes over the new ones of our sample compared on the period in which they did not use these platforms. With these last analyses the research question and the last two hypotheses (**H2**: Long-term users of Second-Hand Platforms have significantly reduced their consumption of new fashion products; and **H3**: Long-term users of Second-Hand Platforms have significantly increased their consumption of second-hand fashion products) would be enlightened in definitive way.

4.2.1. Online Buyers Consumers Behaviour

Since the questionnaire forced the users to answer in a determinate way, the data collected need to be study in two divided analyses and this is the one regarding the Buyers.

The creation of a new variable, called: “Highest Increase in Second-Hand Purchases” (HISP), was made to better interpretate the results of the analysis. It is obtained by summing the values of the variables from “by 30%” to “by 50% +” of both questions, Q.31 and Q.32, contained in the “Customer Behaviour” section of the questionnaire (Attachment 1). By doing so it is assumed that people who are having increase of SH purchases by 30% and more are the one with the greatest increase in SH purchases.

4.2.1.1. General Considerations

Variables where all the respondents did not answer were removed before performing the analysis, such us:

- 60+; Retired; Unemployed. This demonstrate alignment with general analysis since these variables were characterizing the Unaware & Infrequent SH consumers, which are the one that are performing the less SH practices.
- Box rental. Meaning that nobody has experienced box rental type of platforms. They just used rental and bought second-hand among the modality they could use.

- Hewi; Qlhye; Reluxe; Retold; Rites; Sellier. Meaning that most of the buyers, in Italy, do not use these types of platforms for buying SH fashion.

Other alignments with the former analysis are showed since all the interviewees of this analysis are aware of the existence of SHPs. Besides it is a redundant variable given that this section is about people who is using SHPs to buy fashion, consequentially they must know about their existence. For these reasons this variable was removed.

4.2.1.2. Segmentations

In the same manner of the previous analysis, by observing the dendrogram (Figure 4.3), three clusters were chosen at a height of approximately 18.

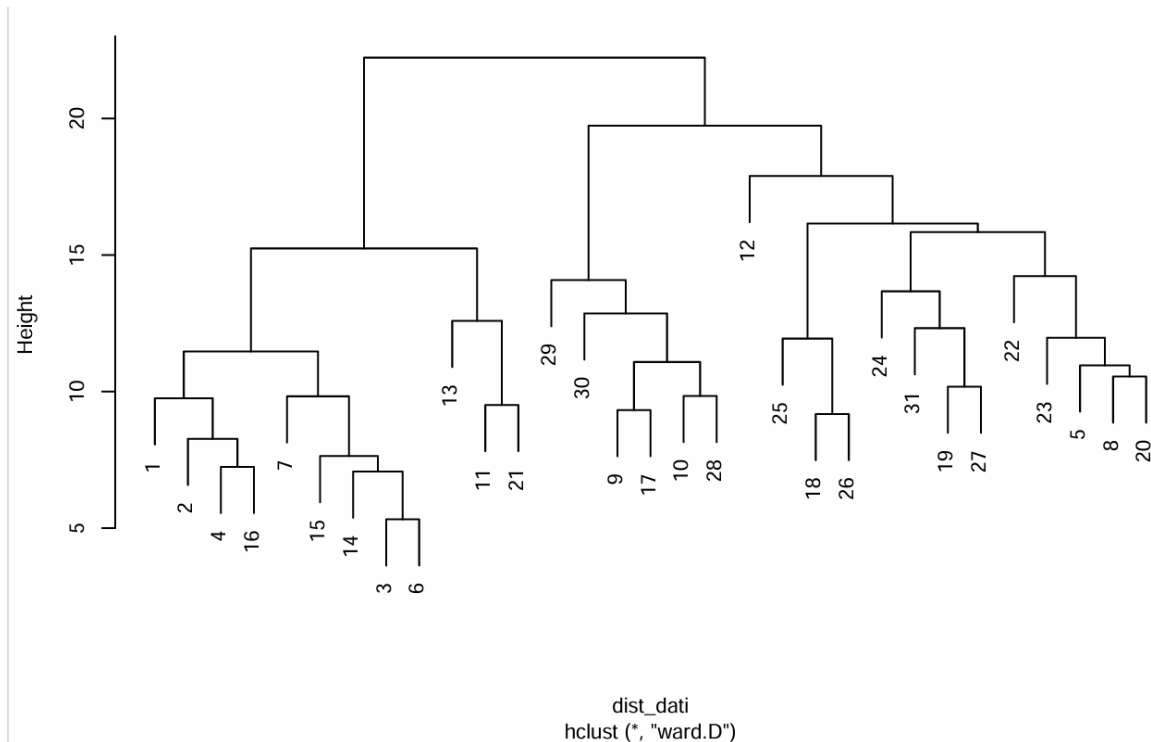


Figure 4.3: Online Buyer dendrogram

These are providing these online buyers segmentation:

First cluster – Infrequent Online Buyers

Composed by 12 observations is very similar to the “Aware & SH consumers” in relation to the fashion awareness variables (variables analysed in the “Awareness Analysis”, besides the fact that they are more composed by women (83%). In fact, they are mostly represented by people

of 15-25 years old (91%) that are students (75%). But in this case, since there is not a cluster which is representing the former “Unaware & Infrequent SH consumers”, they are the ones with less awareness among the other two cluster of this analysis. However, their percentage of awareness is not low in general terms: 42% of the people answered “Yes, it is one of the most polluting sectors”. Their drivers for fashion decisions are: reasonable price (approximately 4 on the Likert scale) personal expression, comfort and high quality (around 3.5). They have a low value, between 2 and 3, for sustainability aspects they take into account when they do buying decisions.

Drivers that are describing this cluster SH buying attitude are mainly: accessible price (83%) and improve the environment (53%). This could seem discordant to the low interest in sustainable fashion when they make buying choice, but it is crucial to note that in this case is specifically investigated what drives them in buying SH, when they do (since they are buyers).

They are solely composed of sellers and buyers, all of them (100%) come from the “Buyer & Seller” section of the questionnaire. This looks to be not in line with the previous analysis result, where the group they are resemblant were mainly composed by buyers. However, this can be explained, since in this case they are representing the online users that are practicing SH practices (91% of them are solely using platforms and 9% use SHPSs and shops), while in the first analysis were reported results that were talking about not only the online SH consumers but were also including the ones that buy in shops. This is providing an interesting discover, saying that young online buyers of SH are always selling something, not just buying, which is in line with the student features.

They are Vinted enthusiast, because the platform they use to buy is mainly the latter mentioned. As a matter of fact, 100% of this group use it, collecting not very significant percentage of 8,3% in Vestiare Collective and others. Their frequency of buying online is every six month (value equal to 2 in the Likert scale) and their preferred modality of getting the products is directly buy second-hand, 66% of them answered it.

They are not using these platforms for a very long time; in fact, they are mainly composed of people who use them from two years, 66% of them does.

Half of them think that their purchased of SH fashion, since they used the platform have increased by 10%, 16% of them by 20% and 8.2% for each variation: By 0%; By 30%; by 40% and by 50%. No one answered more than 50%. And most of them think that their purchases of SH product over new product are increased by 10% (59%) and by 20% (33%), few think by

30% (8%). In total, the values of the summarizing variables of increase are respectively: 25% for the HISP (SH) and 8% for the HISP (SH/NEW).

Second cluster – Frequent Online Buyers

Originated from 13 observations and creating the biggest group. It is composed by 61% of women, mostly with people coming from the 26-35 (38%) and 15-25 (30%) years old ranges that are mainly workers (76%) and in part students (23%). Similarly to the “Aware & Engaged SH consumers” group, they have the highest environmental awareness regarding the fashion industry among the other two groups of this analysis, (the 53% of the people thinks that is one of the most polluting).

This group’s components care “very often” to comfort, reasonable price and to personal expression when they make buying decisions. They are the ones who think more to sustainability when they are making buying decisions, with a value of 3.6, almost “very often”, compared to the other two groups.

The drivers in the SH buying decisions of this group are mainly regarding price (53%), uniqueness (46%) and also about environmental concerns (30%).

They come from mostly from the “Buyer & Seller” section of the questionnaire, the 84% of them does. Still continuing to be in line with the “Aware & Engaged SH consumers” features, also because the solely online users in this case are very few, accounting for the 23%. The rest of them is using both shops and platforms

Their most used platforms are in this order: Vinted (76%), eBay (46%), Vestiare Collective (38%) and Facebook Marketplace (30%). They also use all the others (besides Etsy) with a very low percentage of 7,7% each. They buy most frequently among the other two groups, reaching a frequency of once every three months (value around 3 in the Likert scale). They are usually getting their clothes by using direct SH (97% of them), but they are also the only ones that have experienced some rental modality of getting the products (7,6%).

They are composed by people who experienced the platforms from differentiate periods: 23% two years, 38.5 % three years and other 38.5% five years or more. Anyway, if three years are set as a long enough range of utilization, they are using the platforms from a big enough amount of time.

They are the ones accounting for a higher increase of SH fashion purchased, and over new products, since they used these platforms. The variable of “by 50% +” has percentages respectively corresponding to 30% for just SH product and 23% for SH over new products. By Reaching a total percentage of 75% of each the variables HISP (SH) and HISP (SH/NEW).

Third cluster – Moderate Online Buyers

Derived from 7 observations, forming the smallest of the three, it appears to originate from the “Aware & Engaged SH consumers” group, although it seems to represent a smaller subcategory of that group. However, this is happening only for the demographic variables and regarding awareness of the polluting issues created by fashion industry. In fact, they are 50% women and men, and they are only containing 15-25 (16%) and 26-35 (82%) years old people and, for the same percentage, students and full-time workers. Regarding awareness they are a slightly less aware about the issue of fashion industry, 50% of them thinks that fashion is one of the most pollution industry. Nevertheless, they are quite different from that group regarding sustainability concerns when they are shopping. As a matter of fact, they are the ones in this analysis who care the less about sustainability when is making shopping decisions (values around 2 on the Likert scale).

The drivers who move their SH buying decisions are uniqueness, accounting for an 83% of influence in their choices as SH buyers and, in smaller percentage, accessible price accounting for a 33%. Lowest percentage of environmental concerns ad a driver, 16%.

They can be assumed as “pure” buyers, in fact they are mainly coming from the “Buyer” section of the questionnaire, only the 33% of them come from the “Buyers & Seller” section. And among these pure buyers the attitude visible from the numbers is that 50% of them buys solely online, the remaining buys between shops and SHPs.

They are mostly using Vinted (50%) and with a percentage of 16% each the following: Depop, Etsy, Facebook Marketplace, Farfetch Pre-Owned and Vestiare Collective. They buy every six months, therefore not so often. And their modality of buying is only by using second-hand.

They have a medium rate of usage of the platforms among the groups. As a matter of fact, they are composed by 33% of people who use them by five years or more than five and 16% of them used them form two or three years.

This group has values of 33% on the increase of SH purchases by 0% and by 30%, a 16% on the increase by 20% and by 50%. Regarding the increase of SH purchases over the ones of new products still a 32% on the variable “by 0%” and a 17% for the increases by 10%,20%,30% and 50%. Totally they have percentage of 50% for the HISP (SH) and of a 33% for the HISP (SH/NEW).

4.2.1.3. Interpretations of Results

Reporting the most significant variables that are showing the similarities and divergencies among the clusters this graph (Figure 4.4) is obtained.

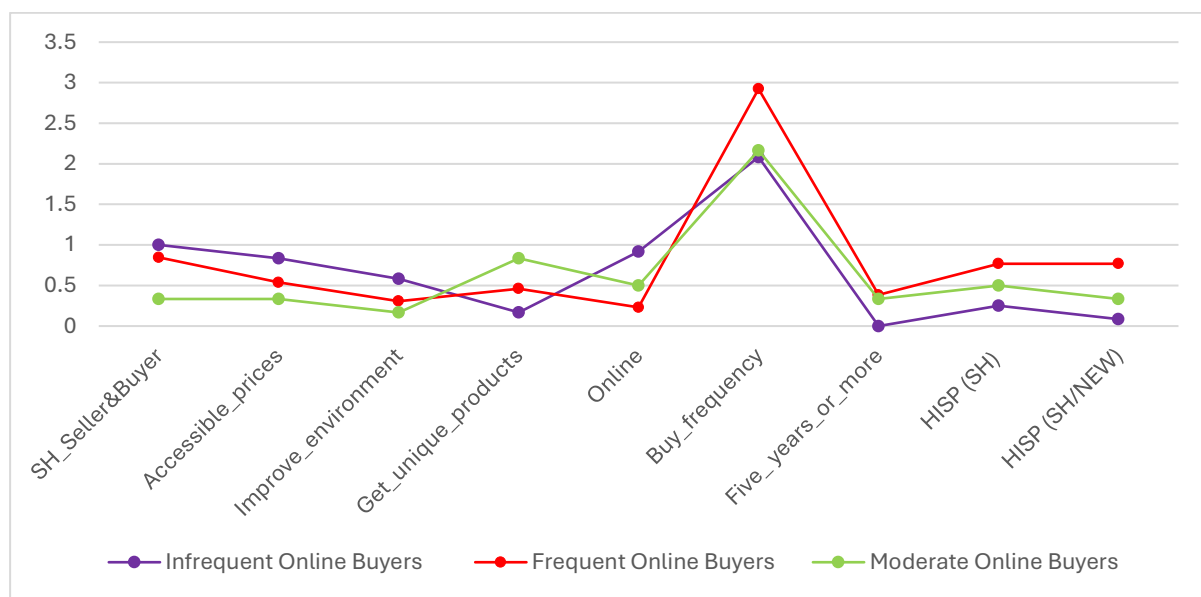


Figure 4.4: Consumer Behaviour Online Buyers

Due to it, is evident that the accessible price is a variable that matters to all the clusters. Therefore, the relationship between price and SH practices is still present.

Other aspect that can be deducted from this graph is that among this segmentation, the ones that use the most solely online platforms to buy fashion are the Infrequent Online Buyers. In second place there are the Moderate Online Buyers and last position the Frequent Online Buyers. This shows that the ones who use the less the online platforms are also the ones that utilized the most only the online platform as an exchange mean of SH. However, this pattern can be explained by the age, therefore, the generation of digital consumers they are belonging to. In fact, another variation that these groups have is regarding age: The most frequent buyers are the youngest, but as we move toward more frequent online buyers, the average age increases. This can be showed by this graph below (Figure 4.5):

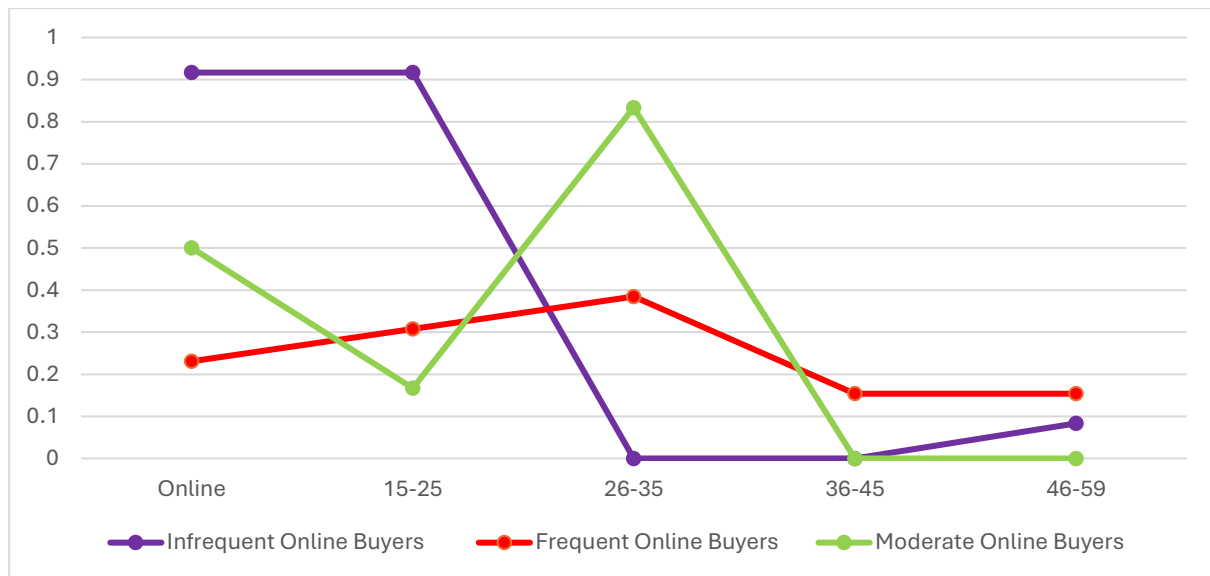


Figure 4.5: Age - Online Choice

Other aspect that cannot be seen in these graphs is a comparison among the dimensions of the clusters. By previous affirmations is deductible that the biggest group is the one composed by Frequent Online Buyers, followed by Infrequent Online Buyers and in last position there are the Moderate Online buyers.

Continuing listing the aspects not showed by the graphs, something that the clusters have in common is the high percentage of use of Vinted. In fact, confirming what McCoy & Chi, (2022) affirmed, it results the most used platform among the observations, accounting on 25 answers just for this analysis. In second place there is Vestiare Collective (7 answers), third place is Facebook Marketplace (5 answers), fourth place is shared among Farfetch Pre-Owned, Depop and others (2 answers) and in last position there are Lampoo and Wallapop.

Finally, this information deriving from this second cluster analysis can be used to test the remaining two hypotheses and answer in a definitive way, regarding the online buyers, to the research question:

By analysing the time each cluster spent using SHPs, as well as the increase in SH products purchased and the shift towards buying more SH products over new ones since they started using them. It is easily visible that both the remaining hypotheses are confirmed for the online buyers. In fact, who used the most the platforms, that are the Frequent Online Buyers have the highest increase of SH purchases. This phenomenon diminishes with the usage of the platform, in fact the “Moderate Online Buyers” have lower increase of the group previously enounced and the “Infrequent Online Buyers” have the lowest percentage of increase in SH purchases.

By, also confirming the hypotheses H2 and H3, the research question was answered, showing that online buyers are significantly influenced in the frequency of purchasing SH products by the number of years they have been using the platform. Therefore, their behaviour results influenced in a sustainable positive way by the SHPs.

4.2.1.4. Buyers Implications for Practice

This Online Buyers' analysis is useful because can be used to have improvements. In fact, by watching the number of observations composing each cluster and the confirmations of the hypotheses, a good suggestion would be to transform the number of the Moderate Online buyers and of the Infrequent Online buyers into Frequent online buyers, while trying to increase it as well the number of Frequent Online buyers. This analysis is providing key information about the segments, for example their drivers for SH purchases or their age or occupational status, that can be used to develop some marketing strategies and launch some awareness-initiatives by the government.

4.2.2. Online Seller Consumers Behaviour

In this ulterior and last analysis, the missing part to study the consumer behaviour will be investigated. In fact, the Seller Online profile will be analysed.

4.2.2.1. General Considerations

Variables where all the respondents did not answer were not used in the analysis, such us:

- Retired; Unemployed. This is continuing to demonstrate alignment with general analysis since these variables were characterizing the Unaware & Infrequent SH consumers, which are the ones that are performing the less SH practices.
- Etsy; Hewi; Lampoo; Qlhype; Reluxe; Retold; Rites; Sellier. Meaning that buyers in Italy do not use these types of platforms for buying SH fashion.

Again, the awareness of SHPs is removed since it is a redundant variable given that this section is about people who is using SHPs to sell fashion, consequentially they must know about their existence.

4.2.2.2 Segmentations

By Performing the same selecting process as before, regarding the dendrogram (Figure 4.6) study, and by adding the fact that considering three clusters the third group generated was very small, only two clusters were selected, at a height of approximately 20.

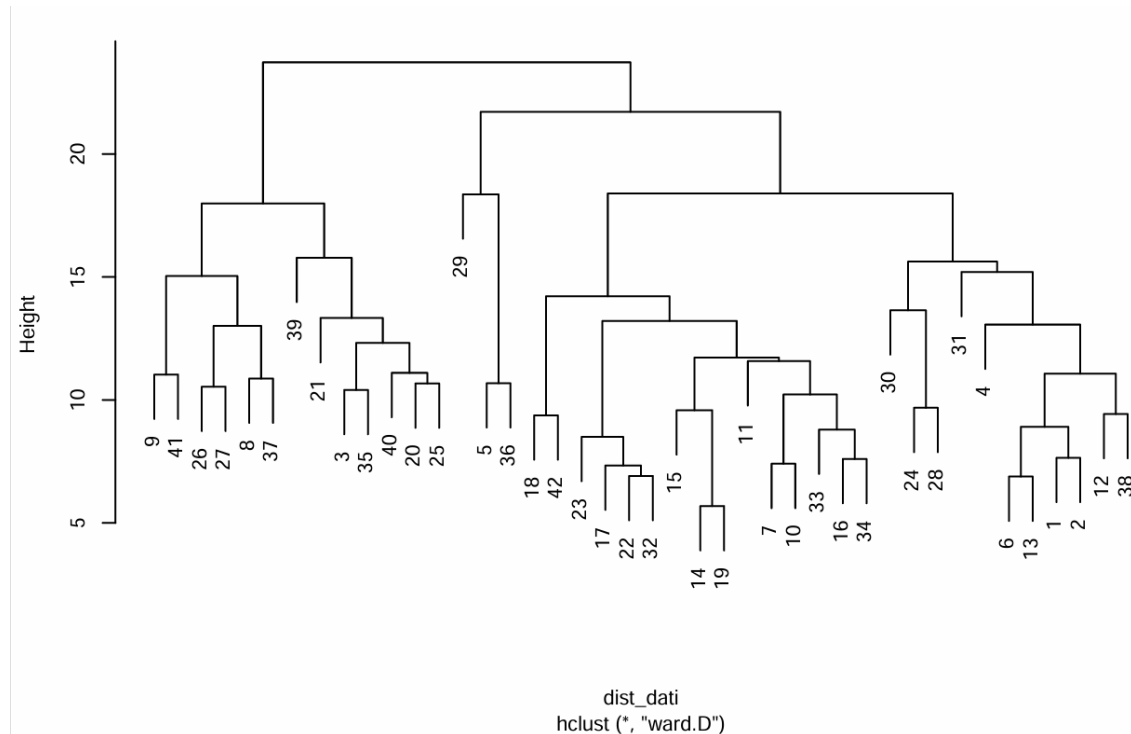


Figure 4.6: Online Seller Dendrogram

These can provide these online sellers segmentation:

First cluster – Infrequent Online Sellers

Composed by 29 observations it is also highly comparable to the “Aware & SH consumers” cluster in relation to the fashion awareness variables. In fact, they are mostly young consumers: 80% form the 15-25 years old range and 13% from the 26-35 one. Most of them are students (65%) and the other are workers. The only slightly difference is, like before the fact that they are more composed by women (79%). Less aware by pollution issues of the sector compared with the other cluster, 31% of them think is one of the most polluting. The other relevant new factor is that in this case they care more than the other group about environmental impact when they consider to by fashion, but regarding the other environmental variables they result less concerned.

This cluster is driven in buying SH fashion by getting extra money (72%), getting some wardrobe space (72%) and because they want to improve the environment (35%). They have the higher value of environmental driver among the two groups.

Regarding their belonging sections they are the ones among the group who came mainly from the “Seller” section, even if they are mainly deriving from the “Buyer & Seller” section (58%), with a percentage equal to 42%. This result looks in line with the conclusions made about the “Aware & SH consumers”. From the data is also visible that they mostly belong to the “Online” sections, having only the 10% of people coming from the “Online & In Store” section. These numbers are suggesting an interesting discover saying that younger consumers use, also for selling, mainly the solely online platforms and that among them, compared to the second and older group, there are more people that are just selling. This discover results to be in line also with the compositions of the “Infrequent Online Buyers” made in the former analysis, where the youngest consumers when buying online where not just buying but also selling online.

They are using mostly Vinted (93%) and some of them also eBay (13%), Vestiare Collective and Farfetch Pre-Owned (10% each). In very small percentage they use the other platforms. Their frequency of buying online is between every six or three months (value of 2,6) and their preferred modality of getting the products is directly buy second-hand, 62% of them answered it. Among them there is a small percentage that have experienced rental and box-subscriptions to get fashion products.

They are not using these platforms for a long time; in fact, they are mainly composed of people who use them from two years (62%).

Among the two groups they are the one who thinks that they that their purchases of SH fashion, since they used the platform have increased the less. Having values of 20% in by 10% of 24% in by 20%, around the 10% for increases higher than 30% and very low, around the 6% for increase of 50% and more. Analogous thing for the purchases of SH over the new products with higher percentages in by 10% and 20%, respectively 31% and 34% and lower percentages in higher increases. For example, by 50% or more has a percentage of 6%. In total, they reach values of 48% for the HISP(SH) and 27% of the HISP (SH/NEW).

Second cluster – Frequent Online Sellers

Originated from 13 observations and creating the smallest group, is very similar to the “Aware & Engaged SH consumers” group regarding most of the fashion awareness variables. But, since in this segmentation there are just two groups, the oldest consumers that were belonging to the “Unaware & Infrequent SH consumers” of the general analysis and are performing SH practise online are affecting the variables of this group. In fact, there are now 15% of 60 + years old people and variables regarding price sensitivity and environmental issues are reduced compared the values of the “Aware & Engaged SH consumers”. They have values now respectively of 3.3 and 2.84. Other values that are characterizing them are: 62% are mal, by the age of 26- 35 for the 53% and 36-45 for 23%. They are mostly full-time workers (61%). Their Awareness of polluting issues is higher than the other group (38%).

The drivers in the SH buying decisions of this group are mainly regarding getting wardrobe space (84%), get extra money (30%) and about allowing low-income people to have access to a large variety of products at relative low prices (23%). They have a low percentage regarding improve the environment (15%), lower than the first group.

They mainly derive form the “Buyer & Seller” section of the questionnaire, the 62% of them does. continuing to be in line with the “Aware & Engaged SH consumers” features. Most of them are using just online platforms to sell (62%), but between the two group they are the one composed by more people using both platforms and physical stores.

Their most used platforms are, in this order: Vinted (79%), eBay (61%), Vestiare Collective (38%), Facebook Marketplace (23%) and Wallapop (15%). They also use all the others (besides Lampoo) with a very low percentage of 7,7% each. They buy most frequently among the two groups, reaching a frequency between once every three or six months, but with a value of 2.69. They are solely getting their clothes by using direct SH.

They are the ones among the two groups who experienced the platforms the most. Reaching values of 46% for the variable five years or more.

They are the ones accounting for the higher increase of SH fashion purchased, and over new products, since they used these platforms. The variable of “by 50% +” has percentages respectively corresponding to 15% for just SH product and the same for SH over new products. Counting values of 54% for the HISP(SH) and HISP (SH/NEW) variables each.

4.2.2.3. Interpretations of Results

Reporting the most significant variables among the clusters this graph (Figure 4.7) is obtained.

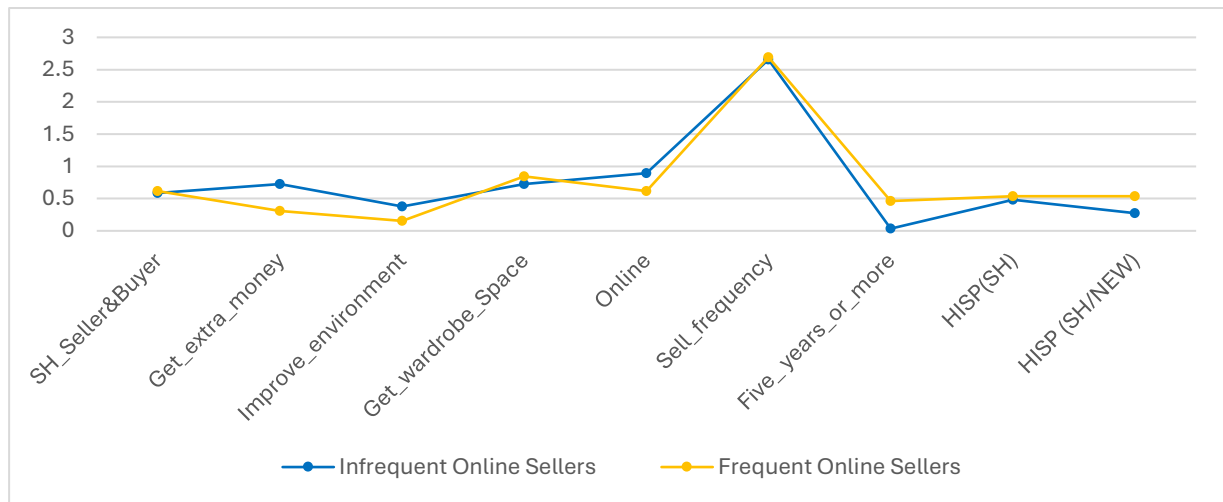


Figure 4.7: Consumer Behaviour Online Sellers

Due to it, it is evident that the get some wardrobe space is a variable that matters to all the clusters. Therefore, the relationship between getting some wardrobe space and SH practices is showed.

Other aspect that can be deducted from this graph is that among this segmentation, the ones that use the most solely online platforms to sell fashion are the Infrequent Online Sellers and the second and last are the Frequent Online Sellers. This is showing again, but for the sellers, that the one who use the less the online platforms are also the ones that utilized the most only the online platform as an exchange mean of SH. And this can be explained again by the age at which they are related, therefore their categorization as digital consumers (visible in the Figure 4.8).

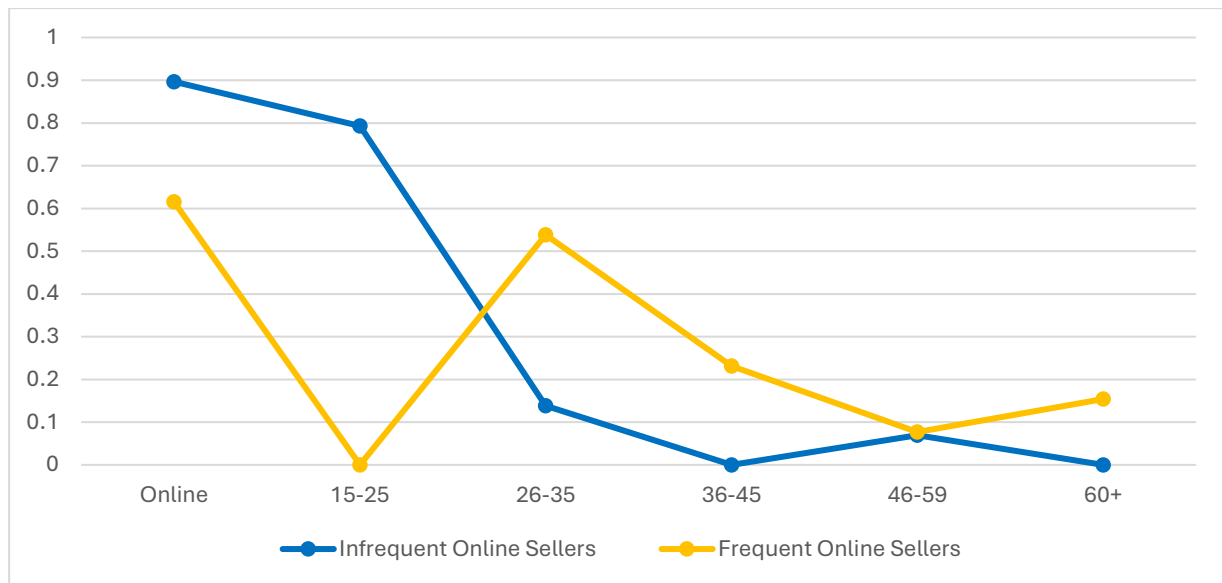


Figure 4.8: Age - Online Choice

Another aspect that cannot be seen in these graphs is a comparison among the dimensions of the clusters. Based on previous affirmations, the biggest group is composed of Infrequent Online Sellers, and the smallest is the group of Frequent Online Sellers.

Continuing listing the aspects not showed by the graphs, again the clusters have in common is the high percentage of use of Vinted. In fact, the latter is confirmed as the most used platform among the observations, accounting on 37 answers just for this analysis. At second place there is eBay (12 answers), third place Facebook Marketplace (6 answers), fourth place Wallapop (4 answers), fifth Farfetch Pre-Owned (3 answers), and in last position Depop and others (2 answers).

Finally, this information deriving from the third cluster analysis can be used to test the remaining two hypotheses and answer in a definitive way, regarding the online sellers, to the research question:

Analogously to the previous analysis, by analysing the time each cluster spent using SHPs, as well as the increase in SH products purchased and the shift towards buying more SH products over new ones since they started using them. It is easily visible that both the remaining hypotheses are confirmed also for the online sellers. In fact, who used the most the platforms, that are the Frequent Online Sellers have the highest increase of SH purchases. This phenomenon diminishes with the usage of the platform. In fact, the Infrequent Online Sellers have a lower percentage of increase in SH purchases.

Therefore, the research question also found its answers also for the online sellers, since the hypotheses confirmed are showing that they are significantly influenced in the frequency of purchasing SH products by the number of years they have been using the platform. Therefore, their behaviour results influenced in a sustainable positive way by the SHPs.

4.2.2.4. Sellers Implications for Practice

This analysis can be used to have developments. In fact, by watching the hypotheses just confirmed and knowing that the biggest group is the one composed by Infrequent Online Sellers and the smallest is the one of the Frequent Online Sellers, a good suggestion would be to increase the number of the Frequent Online buyers to boost as much as possible more people involved in SH (e.g. targeted marketing strategy), but , at the same time try to set some strategies to transform the infrequent online seller in frequents. To do so, this analysis is providing key information about the segments, for example their drivers for SH selling or their age or occupational status, that can be used to develop some marketing strategies and launch some awareness-initiatives by the government.

4.3. Final Interpretation of the Results

This paragraph will connect the analyses result to provide a homogeneous and more comprehensive interpretation of the results given in the three previous cluster analyses.

From the first analysis three profile of the Italian e-commerce users are discovered and use them to segmenting the consumers, providing these three groups: “Unaware & Infrequent SH consumers”, “Aware & SH consumers” and “Aware & Engaged SH consumers”. The ones with a more sustainable attitude in terms of SH practices are the ones coming from the last group. Due to them and to the sustainable attitude given from the remaining two groups the first hypothesis is confirmed. As a matter of fact, it is proven that consumers aged 15 to 35 are increasingly likely to engage in SH practices, with the highest participation observed around the age of 35. And a key driver of this engagement across all age groups is their growing awareness of second-hand platforms.

Besides this, other interesting factors to highlight out of the awareness analysis are that: considerations of sustainability, price, awareness of the pollution created by fashion (Gam, 2011) and now, awareness of SHPs are proven to be drivers of SH practices.

Moving forward to the consumer behaviour analyses, most of the patterns discovered in the awareness analysis were confirmed. Also, the fact that the number of observations of the online sellers was more than the buyers' ones confirms an alignment between the analyses, therefore proving the correctness of the analyses performed.

The two analyses are providing valuable and coherent insight for both the sellers and the buyers. Proving also in this case the truthfulness of the other two remaining hypotheses. In fact, for both online sellers and buyers, long-term users of Second-Hand Platforms have significantly reduced their consumption of new fashion products meanwhile significantly increased their consumption of second-hand fashion products. This is proving that SHPs are reducing the environmental footprint of this polluting industry (Arrigo, 2022) by reshaping the consumer behaviour in a more sustainable way, especially among younger, who have more digital knowledge compared to older, non-digital native generations (Armstrong & Park, 2020).

Other interesting considerations regarding clusters and age differences can be made analysing the results coming from buyers and sellers: younger consumers (15-25 years old) use both for selling and buying mainly the solely platforms. Meanwhile the ones in groups containing also 25-35 years old people are using more both platforms and the physical stores instead of solely platforms.

Considering all these factors and insights it is possible to understand that the influence of Second-Hand Platforms on promoting sustainable behaviour can be measured in terms of increase of SH practices, and by seeing if there is this increase and by quantifying it was proven that SHPs are a driver to promote positive sustainable behaviours for Italian e-commerce users in fashion.

5. Conclusion and Recommendations

5.2. Main Findings

This thesis has provided an in-depth investigation of the role Second-Hand Platforms play in fostering sustainable consumer behaviour within the fashion industry, focusing on Italian e-commerce users. The findings reveal that consumer engagement with these platforms significantly influences their shift towards more sustainable fashion consumption practices. Notably, consumers who use Second-Hand Platforms over an extended period demonstrate a marked reduction in their purchase of new fashion items, opting instead for pre-owned alternatives.

One of the key insights from this research is the critical role that awareness of both environmental issues and SHPs plays in shaping consumer behaviour. Younger consumers, particularly those aged 15-25 and 26-35, are more likely to engage in SH fashion practices, mainly due to their digital knowledge and exposure to online platforms such as Vinted and Vestiaire Collective. In contrast, older generations (45 and above) exhibit lower engagement due to a combination of limited digital familiarity and less awareness of the environmental impact of the fashion industry. This corroborates the first hypothesis (**H1**: Younger consumers, up to the age of 35, are more likely to participate in SH practices because they are more aware of Second-Hand Platforms).

The segmentation of consumers into "Frequent Online Buyers/Sellers," "Infrequent Online Buyers/Sellers," and "Moderate Buyers" highlights the diversity in how consumers interact with SHPs. Users who have been active on these platforms for over five years show the highest rates of SH purchases and the highest reduction in new fashion consumption. Since they represent the users who engaged the most with these types of platforms, this confirms the hypotheses **H2**: "Long-term users of Second-Hand Platforms have significantly reduced their consumption of new fashion products" and **H3**: "Long-term users of Second-Hand Platforms have significantly increased their consumption of second-hand fashion products".

5.3. Contributions and Managerial Implications

This thesis contributes to the increasing number of research on sustainable fashion by providing an in-depth analysis of the role that Second-Hand Platforms play in promoting circular economy

practices. While previous studies have focused on consumer attitudes toward sustainable fashion, this research extends the literature by analysing how the long-term use of SHPs directly influences the reduction of new fashion consumption and increases engagement with pre-owned fashion, a doubt addressed by the research question.

Additionally, this study introduces a novel approach by segmenting consumers based on their sustainability awareness and platform usage, offering insights into how digital platforms can effectively drive behavioural changes. The use of quantitative methods to assess the impact of these platforms fills a gap in existing research, providing data-driven insights that can inform both academic discourse and practical applications in the fashion industry.

These findings have important implications for both SHPs and fashion brands. To foster greater engagement in sustainable practices, platforms should consider implementing tailored marketing strategies that cater to the specific needs of different consumer segments. For instance, targeting younger consumers through social media campaigns and offering loyalty programs could increase platform usage. Additionally, television and radio campaigns could raise awareness among older consumers less familiar with digital platforms and sustainability issues.

5.4.Limitations and Future Research Recommendations

While this study has contributed with valuable insights into the role of Second-Hand Platforms in promoting sustainability, several limitations should be acknowledged. The sample size, though reflective of Italian e-commerce users, may not fully capture the diversity of consumer behaviour across different regions. Moreover, the focus on digital platforms limits exploring in-store SH fashion practices. Future research could expand this analysis by investigating the global impact of Second-Hand Platforms and the role of social media in driving sustainable fashion choices.

In conclusion, this thesis has demonstrated that second-hand platforms are crucial in shaping more sustainable consumer behaviours in fashion. However, ongoing efforts are needed to increase awareness and engage across different consumer segments. By leveraging new sustainable technologies, digital platforms and targeted marketing, the fashion industry has the potential to significantly reduce its environmental impact and promote a more circular economy.

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Annex

Attachment 1: Market Research – Online Survey

Sustainable Consumer Behavior in Fashion

<https://docs.google.com/forms/u/0/d/1C8p8RCKWNJbFm7uAkCTEt...>

Sustainable Consumer Behavior in Fashion

Hi! I'm Concetta Disalvo, and I'm conducting research at the University of Palermo and ISCTE (Lisbon).

Please join us in exploring sustainable fashion! The fashion industry's constant pursuit of novelty has unfortunately resulted in environmental degradation. In this study, we aim to understand the effectiveness of second-hand fashion platforms in promoting sustainable behaviors.

By responding to this brief questionnaire, you'll help us investigate how these platforms influence consumer choices by examining their characteristics and impact. Your valuable input will contribute to shaping future policies for a more sustainable fashion industry.

Rest assured, your responses are confidential, and this survey is entirely anonymous. The data collected will be used solely for research purposes at the University of Palermo and ISCTE.

Thank you for taking the time to participate!

* Indicates required question

Sustainability Awareness in Fashion

1. How often do you take into account sustainability issues when buying clothing and fashion accessories? *

Mark only one oval.

- ☐ Often
- ☐ Sometimes
- ☐ Hardly ever
- ☐ Never

2. Do you think the fashion industry is very polluting? *

Mark only one oval.

- ☐ Yes, it is one of the most polluting sectors
- ☐ I think that it pollutes as many other industries do
- ☐ I don't know
- ☐ Less polluting than others
- ☐ No, it is not polluting

3. How important are the following considerations when you are buying clothing and fashion accessories ? *

If you are using a mobile device, we recommend rotating it for a full view of the text.

Mark only one oval per row.

	Not important at all	Slightly important	Moderately important	Very important	Extremely important
Brand recognition	☐	☐	☐	☐	☐
Brand's environmental recognition	☐	☐	☐	☐	☐
Comfort	☐	☐	☐	☐	☐
Environmental impact	☐	☐	☐	☐	☐
High "dressability"	☐	☐	☐	☐	☐
High Quality	☐	☐	☐	☐	☐
Luxury fashion	☐	☐	☐	☐	☐
Personal expression or identity	☐	☐	☐	☐	☐
Presence of recycled material	☐	☐	☐	☐	☐
Reasonable Price	☐	☐	☐	☐	☐
Trendiness	☐	☐	☐	☐	☐
Wide selection	☐	☐	☐	☐	☐

4. Are you aware of the existence of second-hand fashion platforms where you can either sell your items or purchase products from others? *

For example "Vinted" or "Vestiaire Collective"

Mark only one oval.

☐ Yes

☐ No

5. Have you ever bought and/or sold **second-hand** fashion (clothing, accessories, etc.)? *

Online and/or in shops

Mark only one oval.

☐ No *Skip to question 6*

☐ Yes, I only bought it *Skip to question 11*

☐ Yes, I only sold it *Skip to question 13*

☐ Yes, I sold and bought it *Skip to question 7*

"No Second-Hand Fashion" section

6. Why have you never bought second-hand fashion? *

You can select more than one answer.

Tick all that apply.

- ☐ Concerns about cleanliness
- ☐ Cultural matters
- ☐ Difficulty in finding and buying second-hand
- ☐ Concerns about quality of second-hand clothes
- ☐ Limited awareness of second-hand options
- ☐ Perception of second-hand clothes as expensive
- ☐ Preference of new clothes to second-hand ones
- ☐ Struggle in finding matching styles
- ☐ Trust issues with second-hand sources
- ☐ Other: _____

Skip to question 35

"Buyer & Seller" section

7. Why did you choose to **sell** second-hand fashion? *

You can select more than one answer.

Tick all that apply.

- ☐ To allow low-income people to have access to a large variety of products at relatively low prices
- ☐ To contribute to improve the environmental impact
- ☐ To get extra money
- ☐ To make room in the wardrobe
- ☐ Other: _____

8. Why did you choose to **buy** second-hand fashion? *

You can select more than one answer.

Tick all that apply.

- ☐ To buy at more accessible prices
- ☐ To contribute to improve the environmental impact
- ☐ To find unique products
- ☐ To get affordable luxury
- ☐ To get high-quality products
- ☐ To have always have different clothes in my wardrobe
- ☐ Other: _____

9. Which type of modality did you mostly use to **sell** second-hand fashion? *

Mark only one oval.

- ☐ In store *Skip to question 33*
- ☐ Online *Skip to question 25*
- ☐ Both *Skip to question 15*

10. Which type of modality did you mostly use to **buy** second-hand fashion? *

Mark only one oval.

- ☐ In store *Skip to question 33*
- ☐ Online *Skip to question 25*
- ☐ Both *Skip to question 15*

"Buyer" section

11. Why did you choose to **buy** second-hand fashion? *

You can select more than one answer.

Tick all that apply.

- ☐ To buy at more accessible prices
- ☐ To contribute to improve the environmental impact
- ☐ To find unique products
- ☐ To get affordable luxury
- ☐ To get high-quality products
- ☐ To have always have different clothes in my wardrobe
- ☐ Other: _____

12. Which type of modality did you mostly use? *

Mark only one oval.

- ☐ In store *Skip to question 33*
- ☐ Online *Skip to question 25*
- ☐ Both *Skip to question 15*

"Seller" section

13. Why did you choose to **sell** second-hand fashion? *

You can select more than one answer.

Tick all that apply.

- ☐ To allow low income people to have access to a large variety of products at relative low prices
- ☐ To contribute to improve the environmental impact
- ☐ To get extra money
- ☐ To make room in the wardrobe
- ☐ Other: _____

14. Which type of modality did you mostly use? *

Mark only one oval.

- ☐ In store *Skip to question 33*
- ☐ Online *Skip to question 25*
- ☐ Both *Skip to question 15*

"Online & In-Store" section

15. Which platform did you use for buying and/or selling online? *

You can select more than one answer.

Tick all that apply.

- ☐ Depop
- ☐ eBay
- ☐ Etsy
- ☐ Facebook Marketplace
- ☐ Farfetch Pre-Owned
- ☐ Hewi
- ☐ Lampoo
- ☐ Qlhype
- ☐ Reluxe
- ☐ Retold
- ☐ Rites
- ☐ Sellier
- ☐ Vestiare Collective
- ☐ Vinted
- ☐ Wallapop
- ☐ Other: _____

16. How often do you sell/buy something on these types of platforms? *

Attention: Select the "never" box if you have never sold or bought.

If you are using a mobile device, we recommend rotating it for a full view of the text.

Mark only one oval per row.

	Never	Once every six months	Once every three months	Once a month	Weekly
Buy	☐	☐	☐	☐	☐
Sell	☐	☐	☐	☐	☐

17. How do you typically obtain or exchange second-hand clothes? *

You can select more than one answer per row.

Attention: Select **only** the corresponding "Not doing it" box if you didn't sell or buy.

If you are using a mobile device, we recommend rotating it for a full view of the text.

Tick all that apply.

	Box subscription	Others	Rental	Second hand	Not doing it
Buy/obtain	☐	☐	☐	☐	☐
Sell/exchange	☐	☐	☐	☐	☐

18. Do you prefer buying/selling online or in physical stores? *

Mark only one oval.

- ☐ Online *Skip to question 22*
- ☐ Physical stores *Skip to question 19*

"In-Store Preference" section

19. Why do you go to physical second hand stores to **sell** *instead of using platforms*? *

You can select more than one answer.

Attention: If you don't sell in stores **just** select the related box.

Tick all that apply.

- ☐ I think this can help local businesses
- ☐ I find it easier than selling online
- ☐ I prefer face-to-face interactions
- ☐ I don't sell in stores
- ☐ Other: _____

20. Why do you go to physical second hand stores to **buy** *instead of using platforms*? *

You can select more than one answer.

Attention: If you don't buy in stores **just** select the related box.

Tick all that apply.

- ☐ I want to support local shops and contribute to the community
- ☐ Shopping in physical stores reduces packaging waste and environmental impact
- ☐ Trying on clothes ensures a better fit and quality check
- ☐ I prefer getting my purchases immediately, without waiting for shipping
- ☐ I prefer the simplicity of in-store purchases
- ☐ I don't buy in stores
- ☐ Other: _____

21. How long have you been using these selling platforms? *

Mark only one oval.

- ☐ One year or less *Skip to question 35*
- ☐ Two years *Skip to question 31*
- ☐ Three years *Skip to question 31*
- ☐ Four years *Skip to question 31*
- ☐ Five years or more *Skip to question 31*

"Online Preference" section

22. Why do you use platforms *instead of going to physical second hand stores* to **buy** ? *

You can select more than one answer.

Attention: If you don't buy online **just** select the related box.

Tick all that apply.

- ☐ I can buy directly from home
- ☐ I can find what I need faster
- ☐ I find more affordable prices
- ☐ I can choose among more options
- ☐ I don't buy online
- ☐ Other: _____

23. Why do you use platforms *instead of going to physical second-hand stores* to **sell**? *

You can select more than one answer.

Attention: If you don't sell online **just** select the related box.

Tick all that apply.

- ☐ I can reach more buyers
- ☐ I can sell items from the comfort of my home
- ☐ I find it convenient since I am not paying for shipment
- ☐ I find it easier
- ☐ I like the control I have over the selling process when using online platforms
- ☐ Selling online provides a level of privacy that I appreciate
- ☐ I don't sell online
- ☐ Other: _____

24. How long have you been using these selling platforms? *

Mark only one oval.

- ☐ One year or less *Skip to question 35*
- ☐ Two years *Skip to question 31*
- ☐ Three years *Skip to question 31*
- ☐ Four years *Skip to question 31*
- ☐ Five years or more *Skip to question 31*

"Online" section

25. Which platform did you use for online shopping? *

You can select more than one answer.

Tick all that apply.

- ☐ Depop
☐ eBay
☐ Etsy
☐ Facebook Marketplace
☐ Farfetch Pre-Owned
☐ Hewi
☐ Lampoo
☐ Qlhype
☐ Reluxe
☐ Retold
☐ Rites
☐ Sellier
☐ Vestiare Collective
☐ Vinted
☐ Wallapop
☐ Other: _____

26. How often do you sell/buy something on these types of platforms? *

Attention: Select the "never" box if you have never sold or bought.

If you are using a mobile device, we recommend rotating it for a full view of the text.

Mark only one oval per row.

	Never	Once every six months	Once every three months	Once a month	Weekly
Buy	☐	☐	☐	☐	☐
Sell	☐	☐	☐	☐	☐

27. How do you typically obtain or exchange second-hand clothes? *

You can select more than one answer per row.

Attention: Select **only** the corresponding "Not doing it" box if you didn't sell or buy.

If you are using a mobile device, we recommend rotating it for a full view of the text.

Tick all that apply.

	Box subscription	Rental	Second hand	Others	Not doing it
Buy/ obtain	☐	☐	☐	☐	☐
Sell/ exchange	☐	☐	☐	☐	☐

28. Why do you use platforms *instead of going to physical second hand stores* to **buy** ? *

You can select more than one answer.

Attention: If you don't buy online **just** select the related box.

Tick all that apply.

- ☐ I can buy directly from home
- ☐ I can find what I need faster
- ☐ I find more affordable prices
- ☐ I can chose among more options
- ☐ I don't buy online
- ☐ Other: _____

29. Why do you use platforms *instead of going to physical second-hand stores* to sell? *

You can select more than one answer.

Attention: If you don't sell online **just** select the related box.

Tick all that apply.

- ☐ I can reach more buyers
- ☐ I can sell items from the comfort of my home
- ☐ I find it convenient since I am not paying for shipment
- ☐ I find it easier
- ☐ I like the control I have over the selling process when using online platforms
- ☐ Selling online provides a level of privacy that I appreciate
- ☐ I don't sell online
- ☐ Other: _____

30. How long have you been using these selling platforms? *

Mark only one oval.

- ☐ One year or less *Skip to question 35*
- ☐ Two years *Skip to question 31*
- ☐ Three years *Skip to question 31*
- ☐ Four years *Skip to question 31*
- ☐ Five years or more *Skip to question 31*

Customer Behaviour

31. How much do you think your purchases (for buyers)/sales (for sellers) in second-hand fashion have increased since you started using these platforms? *

Mark only one oval.

- ☐ By 0%
- ☐ By 10%
- ☐ By 20%
- ☐ By 30%
- ☐ By 40%
- ☐ By 50%
- ☐ By 50% +

32. How much do you think your purchases (for buyers) or sales (for sellers) in second-hand fashion have increased **compared to your purchases of new products** since you started using these platforms? *

Mark only one oval.

- ☐ By 0%
- ☐ By 10%
- ☐ By 20%
- ☐ By 30%
- ☐ By 40%
- ☐ By 50%
- ☐ By 50% +

Skip to question 35

"In-Store" section

33. Why do you go to physical second hand stores to **sell** *instead of using platforms?* *

You can select more than one answer.

Attention: If you don't sell in stores **just** select the related box.

Tick all that apply.

- ☐ I think this can help local businesses
- ☐ I find it easier than selling online
- ☐ I prefer face-to-face interactions
- ☐ I don't sell in stores
- ☐ Other: _____

34. Why do you go to physical second hand stores to **buy** *instead of using platforms?* *

You can select more than one answer.

Attention: If you don't buy in stores **just** select the related box.

Tick all that apply.

- ☐ I want to support local shops and contribute to the community
- ☐ Shopping in physical stores reduces packaging waste and environmental impact
- ☐ Trying on clothes ensures a better fit and quality check
- ☐ I prefer getting my purchases immediately, without waiting for shipping
- ☐ I prefer the simplicity of in-store purchases
- ☐ I don't buy in stores
- ☐ Other: _____

Demographic Information

35. Gender *

Mark only one oval.

- ☐ Female
- ☐ Male
- ☐ Prefer not to specify

36. Age *

Mark only one oval.

- ☐ 15-25
- ☐ 26-35
- ☐ 36-45
- ☐ 46-59
- ☐ 60+

37. Nationality *

38. What is your current employment status? *

Mark only one oval.

- ☐ Full-time employed
- ☐ Part-time employed
- ☐ Self-employed/Entrepreneur
- ☐ Student
- ☐ Retired
- ☐ Unemployed
- ☐ Other: _____

Thank You for Your Participation!

Thank you so much for taking the time to complete this survey on sustainable fashion!

We are confident that your responses will be instrumental in gaining a better understanding of how second-hand fashion platforms can influence consumer behaviors and, consequently, contribute to promoting a more sustainable fashion industry.

Your dedication to this topic is a significant step towards a greener and more responsible future for the fashion industry.

Thank you again for your support and participation!

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