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Chapter one

Introduction

Our entire ecology, including people, biodiversity, and ecosystems, is increasingly at risk from climate change (Redaelli, 2024:16). The natural global climate has altered and impacted a number of climate parameters within the last century. Governments have pledged since 1992 to curb global warming, yet greenhouse gas emissions are still increasing.

The fashion industry is the second largest emitter of greenhouse gases after the energy sector. It is also a leading contributor to issues such as overconsumption, pollution, biodiversity loss, and human rights violations, leading to negative impacts on the environment and society. Previous research confirms that many fashion consumers perceive environmental sustainability of fashion as important and believe that they are concerned about climate changes, more specifically about the fashion industry's contribution to climate change and want to engage. Additionally, many consumers express that they are willing to purchase organically or ethically produced fashion products, or fashion products generated by green fashion brands, even for higher prices. However, in practice, those attitudes are rarely translated into actively engaging in pro-environmental behavior in the fashion context (Mirbabaie et al., 2022). Research highlights several digital nudges that are relevant to online marketing and product representation and explorative analyses for the backfiring nudges combination reveal some crucial and neglected insights regarding the effectiveness of nudging strategies in academic literature.

Identification reflects both self-categorization and contentment, affecting a vast spectrum of opinions, attitudes, and behaviors both in commercial and pro-environmental context. Green reconciliation is involved with effective marketing nudges (Kjellelland & Kjellelland, 2018).

1.1. Background and context

Fast fashion is characterized as poorly produced, quickly designed clothing that is cheap and poorly made, leading to a cycle of waste on an unprecedented scale (Kjellelland & Kjellelland, 2018).

Each year, over 100 billion garments are purchased, and by 2030, the global middle class will reach 5 billion people, with an insatiable desire for trendy and discounted fashion. This equates to 7.5 tones of textiles and 5 billion pairs of shoes needing to be disposed of every year. Concerningly, across the US, Canada, and the EU, only 1% of clothing is recycled in an environmentally friendly manner. If left unchanged, the fashion industry will use 1/4 of the global carbon budget by 2040 and be held responsible for a staggering 35% of global water consumption. Consumers want to live sustainably, and more are believing buying sustainably-produced fashion is important, while being willing to pay higher prices for ecologically produced fashion (Mirbabaie et al., 2022). To research how consumers in this market can be influenced to purchase sustainable fashion instead of fast fashion, there is a need to start researching how people can be nudged online to purchase sustainably produced fashion and whether this results in any significant behavior modification. Individuals are on digitized platforms such as social media and e-commerce sites, assisting companies with their advertising through algorithms processing their online presence. The infrastructure of these platforms enables the possibility of nudging individuals without steering explicitly towards conscious action. It is also worth exploring further factors that lead to a sustainable purchase decision other than nudging mechanisms, including the importance of identifying with the fashion aspects and personality traits influencing environmental disregard.

1.2. Research problem

As the fashion industry is one of the biggest polluters, the need for sustainable fashion is increasing (Kjellelland & Kjellelland, 2018). This leads to an increasing interest in why consumers choose sustainable products and the development of nudging techniques in

trying to address that. Nudging involves making small adjustments or changing the ‘choice architecture’, designed to highlight certain choices over others. Many nudging strategies have been researched, but they are more often applied to contexts like food consumption, environmental-friendly purchase decisions, and investing choices than the fashion context. This paper explores the effects of nudging on sustainable clothing consumption, focusing on nudging via the online environment. The trend of fast fashion or cheap, poor-quality clothing that is often almost disposable has developed (Mirbabaie et al., 2022). A shift is starting to happen, especially among consumers aged 16-25, as a rising number of brands market their sustainable products, but choices must change as sustainability becomes more of a trend.

Nudging is one way to try to alter behavior in a more desired direction. By restructuring people’s decisions, nudging can be a helpful tool in the choice-making process because it does not limit people’s options or freedom of choice, nor does it impose any cost on them to engage with the behavior.

However, nudging techniques developed thus far are not easily applicable to the fashion context, hence why nudging in that context needs further research which this paper aims to address. Thus far, nudging has mostly been researched within low involvement products such as food products. The direct effect of nudging strategies is either nonexistent or very weak for clothing consumption, which is considered a high involvement product. This suggests that the direct application of nudging strategies that have been successful in other contexts may not have the same effect in the fashion context. Influencing behavior is the goal of nudging, and in nudge marketing, persuasion via an advertisement or prompt results in a desired purchase decision. A few nudging techniques have been thought to have the ability to favorably affect clothes buying behavior based on prior research.

Several companies have, over the years, developed systematic approaches for designing and evaluating nudges. A foundational step in this process is clearly defining the desired outcome, which need not involve large-scale initiatives—small, incremental steps can lead to meaningful progress. It is essential to identify any existing obstacles or counterproductive nudges that could impede a firm’s success. Equally important is

acknowledging the perspectives of employees, whose insights can significantly enhance nudge development. Once barriers are addressed, the process moves into a creative phase: brainstorming diverse nudge types, including defaults, notifications, input methods, cultural norms, framing techniques, and more. The aim is to select the most effective nudges tailored to specific situations. After implementation, these nudges are carefully assessed and refined based on their performance. Ultimately, success should be measured against the original goals, allowing for adjustments as needed (Lev Virine and Michael Trumper, 2019).

To date, several nudging strategies have demonstrated effectiveness in practice. Some notable examples include:

- **Graphic warnings:** Utilizing large fonts, bold characters, and vivid colors—especially green—to capture attention towards sustainability. The color green is strategically used by brands to foster trust and signal environmental commitment. While consumers generally respond positively to green marketing, their actual fashion purchases often do not reflect sustainable choices, suggesting a psychological ambivalence. Studies using balance theory and brain imaging (fMRI) have shown that environmental priming can enhance preferences for green-branded fashion items by activating specific brain regions associated with relational reasoning (Beneke et al., 2015; Garber et al., 2000).
- **Loss-framed messaging (framing effect and prospect theory):** because customers are typically more motivated to prevent losses, marketing communications that center on possible losses are typically more successful than those that center on gains. For example, by appealing to consumers' desire for tangible solutions, H&M's messaging that highlights dangers or unfavorable outcomes might promote more environmentally friendly decisions.
- **Perception nudges (informational nudge):** These focus on how the framing of information influences consumer behavior. For example, H&M's sustainability report states, “57% of all materials sourced by H&M group are either recycled or sourced in a more sustainable way,” which is more reassuring than framing it as

“43% of the material used to produce our clothes is coming from some polluted or unrecyclable source” (H&M, 2020).

- Motivational nudges (social norms nudge): Leveraging social proof by highlighting others’ behavior can increase the likelihood of adoption. The brand ‘Jade’ showed the message “522 people viewed this product in the last 24 hours” alongside a trending shoe, resulting in increased sales as consumers perceived the item as a safe choice (Jade, 2019).
- Ability and simplicity nudges (default option and penalty framing): Demonstrating ease of action encourages adoption. For example, Zara introduced in-store recycling bins globally in 2016, incentivizing customers to bring unwanted garments in exchange for shopping vouchers, simplifying sustainable behavior (Zara, 2016).
- Anchoring nudges: Initial reference points have an impact on consumers' decisions. A \$1,000 t-shirt in a luxury store can anchor clients' perception of value by making a \$100 t-shirt appear cheap in comparison (Furnham and Boo, 2011).
- Reminders: Creative reminders such as emails or push notifications can nudge customers toward completing purchases. Patagonia, for instance, appeals to customers’ activism by reminding them that part of their purchase supports a cause, thus tapping into emotional and ethical motivations.

These examples highlight how carefully crafted nudges can be integrated into marketing strategies to promote sustainable fashion consumption effectively.

1.3. Research objectives

This research seeks to examine how to incorporate nudge theory through information, in order to further adaptation to sustainable fashion.

This study employs an exploratory research approach focused on a relatively small and diverse sample to gain initial insights into consumer perceptions and behaviors related to sustainable fashion and nudging strategies. Given the limited prior research specifically addressing digital nudging in the context of sustainable fashion consumption, this exploratory sample allows for a deeper understanding of attitudes, motivations, and potential barriers. The findings aim to inform future, larger-scale studies and experimental designs by identifying key themes and patterns within the target population. The aim is to investigate if and how the provision of information in the form of a nudge affects the consumers' perceived self-efficacy and likeliness to buy sustainable fashion products.

The goal will be pursued by first studying the available academic literature regarding Nudge theory and sustainable fashion.

Within this survey, self-efficacy, attitude and behavior towards sustainable fashion and the nudge are observed using direct questions.

Objective and subjective norm and perceived behavioral control of sustainable fashion shopping behavior are measured through a scale or indirect questions being measured on a Likert scale (1-5).

1.4. Research question

Research in the fashion context examining the effect of nudging on sustainable purchase decisions is scarce and gaps remain. The first gap concerns a lack of research regarding the ability of nudging strategies to affect sustainable clothing consumption. Nudging is able to alter consumers' behavior regarding a wide array of goods, but research regarding the consumption of sustainable fashion is scarce. Results regarding digital nudges predicted to be effective in different areas have been inconclusive regarding the application in the fashion context. There is great potential for future research in this field, especially since the climate crisis has made it an increasingly hot topic. If nudging strategies can incentivize consumers to make more sustainable choices, many online stores could implement them to benefit the environment (Kjellevand & Kjellevand, 2018).

A second gap concerns the understanding of why some strategies are effective while others fail. Motivation and opportunity have been shown to cause heterogeneity accordingly in numerous research areas, including online shopping. An understanding of how to apply nudging effectively is crucial to help online sustainable fashion retailers target design choices. The fashion is the second greatest polluter in the world and appears to be on the rise. To ensure the application of nudging strategies toward the sustainable options, it is suggested that additional design considerations are incorporated in future research (Mirbabaie et al., 2022).

My research question will therefore be: “How can the application of Nudge theory promote sustainability in sectors such as fashion, counteracting greenwashing and positively influencing brand perception, both in the luxury and fast fashion context?”

1.5. Significance of the study

Sustainable fashion represents a remarkable phenomenon linked to contemporary sociopolitical transformations.

The effects of climate crises and animal rights movements encourage older fashion consumption paradigms from paradigms linked to capitalism, economy, and consumerism to sustainability and nurturing biodiversity.

The knowledge about the devastating effects of fast fashion on the oceans, air pollution, wildlife extinction, and the health of garment workers creates the emergence of renewed fashion discourses, whereby sustainable fashion is elevated as a viable alternative to fast fashion (Redaelli, 2024:41). As a result, changes in ideology and discourse towards sustainable fashion are also accompanied by changes within fashion artefacts and materials, techniques, and manufacturing systems (Kjellevand & Kjellevand, 2018). The speculative paradox around sustainable fashion—whether it truly exists or is an oxymoron—reflects a broader challenge in understanding complex crises today. Crises are now seen as multifaceted events unfolding within "hyper-queer times," shaped by many overlapping and interacting perspectives. They represent “something more not yet visible but nevertheless felt that escapes in momentary flickers under the restraints of

power and the paradigms of the known, conventional, and dogma.” This suggests that crises like sustainability issues in fashion involve subtle, emerging forces that resist traditional, fixed ways of thinking.

In our fast-paced, digitalized, and interconnected world, global ideological, socioeconomic, and political transformations create ongoing tension between old, linear ways of explaining complex systems and newer views that see these systems as unpredictable, non-linear, and shaped by many actors. This tension mirrors the polarized debate about sustainable fashion—where some see clear, actionable solutions, while others highlight contradictions and complexities that challenge conventional approaches (Mirbabaie et al., 2022).

Translation, in this regard, is understood as a process of changing between semiotic modes and social systems, bringing something mediated into a new context, where it may be interpreted differently. The research in sustainable fashion focuses on the enactment of fashions in discourses, accepting its fundamentally social nature, and on changing systems of meaning constructed or mediated through fashion texts. The contemporary trend of observing the glamour-fed visible fashions from above and blaming the system for its deterministic structure and effects is effectively countered by the upcycling generated in the popular culture and seen as art. The misconceived functionality of fashion as solely the material process based on which changes in the styles of clothing are observed is potentially challenging researchers to go beyond the individual level of psycho-social and anthropological concepts. Then, a fashion transition is perhaps more appropriately conceptualized as a social transformation taking place internally to the system with heterogeneous rulers, interpreters, consumers, producers, subjects, objects, and translating actants, where the resistance towards the fashion fast-like scale armies of human agents controlling the individual-pleasure-seeking mania of buying, perusing, and gazing are equally dispersed and performed.

Chapter two

Literature review

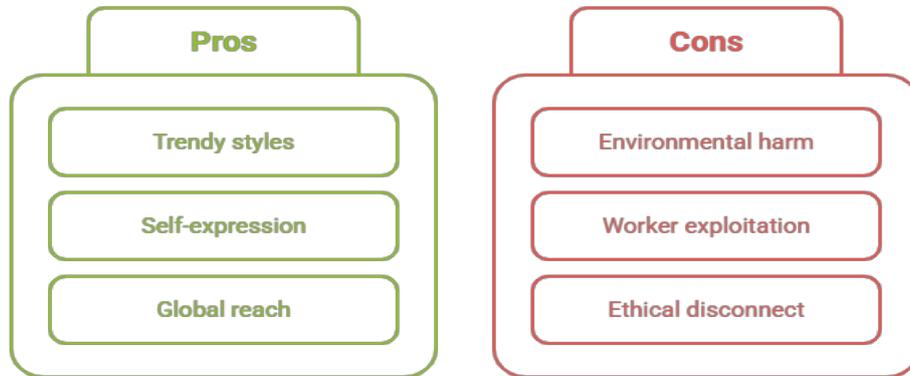
This review looks into behaviors that aren't always considered ethical, what drives people to act this way, how nudges can influence our choices and the importance of information as a nudge. It specifically focuses on how nudges relate to people's willingness to buy sustainable fashion.

The goal is to identify which nudges and strategies work best in the fashion world, so that fashion stores and marketers can use them to encourage more sustainable choices.

Fast fashion is defined as inexpensive clothing produced rapidly by mass-market retailers in response to the latest trends (Kjellevand & Kjellevand, 2018).

Fast fashion has really sped things up in the clothing world. It's easier than ever to design, produce, and distribute clothes globally, thanks in large part to globalization. For years, fast fashion brands weren't focused on making high-quality clothes. Rather of being fixed, clothing was designed to be worn a few times before being thrown away. Fast fashion is frequently viewed as both thrilling and dangerous, especially by young women. It gives individuals the opportunity to express themselves through their gender identity and fashion choices. But at the same time, many researchers, journalists, activists, and watchdog groups are raising concerns about how the industry harms the environment and takes advantage of workers. Still, it's tough for consumers to find a way to enjoy trendy, affordable clothes without contributing to environmental damage or exploitation. Even though many people know about sustainability issues, their buying habits often don't match their concerns—what some call being *ethically unfashionable*. In fact, the fashion industry is the second biggest contributor to climate change after the food industry (Mirbabaie et al., 2022).

Fast fashion



The disconnect between caring about the environment and actually acting comes down to a gap in how people receive and accept information about protecting the environment. Usually, whether someone behaves eco-friendly depends on a mix of internal thoughts and feelings, along with external influences like their surroundings. To tackle issues like the depletion of shared resources in complex communities, individuals' intentions to act in environmentally responsible ways often center around their personal choices—things like how they consume resources and their attitudes toward sustainability.

2.1 Nudge theory: theoretical framework

Nudge theory is rooted in behavioral economics, focusing on how *choice architecture* can influence people's decisions through small changes in how choices are presented (Hobbs, 2017). This idea suggests that nudges, like setting default options, can help guide people's choices without taking away their freedom to decide.

The main goal here is to look at how nudges can promote more sustainable shopping habits, especially in the fashion retail industry. First, I'll review existing research to see what's already known about nudges and sustainability. After that, I plan to gather insights

through surveys and focus groups with people involved in fashion retail. Next, I'll design a specific nudge and test it through a controlled experiment.

While today's global fashion industry does bring economic benefits and sparks innovation, it also has big downsides. Producing fast fashion uses a huge amount of natural resources and creates a lot of waste, from chemicals to discarded textiles ending up in landfills (Mirbabaie et al., 2022).

Reducing the creation of quick fashion while promoting more conscientious shopping is a difficult task. Consumer behavior specialists might concentrate on altering consumers' perceptions of quick fashion, perhaps by highlighting its drawbacks. Customers may reconsider, for instance, if they are made aware of how their purchasing practices affect climate change. Alternatively, making the process of buying fast fashion more effortful might discourage impulsive purchases and encourage opting for slower, more sustainable styles. On the manufacturing side, laws and regulations, like environmental taxes or specific production guidelines, can help limit fast fashion production. Many scholars now focus on finding ways to motivate consumers to make more sustainable choices.

2.1.1 Principles of behavioral economics

In traditional finance and economics, the common idea is that people (or decision-makers) act logically and in their own best interest. They're supposed to be skilled at weighing probabilities and making the best possible choice based on all available information, which leads to optimal decisions, but critics say that in real life, intuition can sometimes override careful reasoning, especially when the stakes are high. That's where behavioral economics comes in—it looks at how psychological, social, and cultural factors influence economic decisions, explaining things that traditional models don't. The main idea is that decision-making is often affected by cognitive biases and emotional influences, meaning people rely on mental shortcuts, or heuristics, rather than complex calculations. Sometimes, these rules of thumb actually lead to better choices when we don't have all the data or mental resources to analyze everything. For instance, when buying a new car,

most people don't compare every model on the market; instead, they focus on a few key factors to make their decision.

2.1.2 Choice architecture

Choice architecture is about how options are presented and how that influences the choices people make. When designed with people's needs in mind, good choice architecture can help individuals make better decisions about their health, finances, and happiness. It can also guide groups toward decisions that promote fairness and cooperation, leading to more equal access to resources and better teamwork. Behavioral economists have studied and tested simple nudges - small tweaks that encourage better decisions - that can improve outcomes for individuals and society. These nudges often target how we reason and make choices, and they do so in straightforward, affordable ways that can be used across different areas (J. Johnson et al., 2015).

Business and government groups are increasingly collecting lots of data on what their employees and customers decide and using this information to analyze past choices and improve how options are presented (Mirbabaie et al., 2022). These algorithms often target behaviors pro-socially, such as saving more or recycling more. While the statistical tools used by traditional choice analysts, including econometric models of choice and machine learning methods for predicting choices, can be useful for stage one (and sometimes stage two), they ignore a number of important cognitive, motivational, and contextual influences on choices. A combination of these two perspectives promises more effective and comprehensive designs for large-scale choice architecture in any domain. In the limit, it suggests that data-driven and behaviorally informed choice architecture could be applied to help address some of the largest societal challenges we face today.

2.1.3 Green nudging applications

Nudging theory is best explained by refers to the process of *choice architecture* by restructuring the environment where decisions are made thereby affecting people's behavior.

The nature and design of the choice affect how a person will react. Nudging empowers people to make their own choices through improved information, better decision architecture and smarter choices through default settings while retaining freedom of choice.

Types of nudges:

- 1) ***Default options***: pre-selected options encourage consumers to align with the default settings and opt for the recommended course of action given by choice architects;
- 2) ***Simplification***: simplifying decisions by providing clear, concise, accurate and actionable information enhances decision making;
- 3) ***Size and tightening of choices***: businesses can enlarge choices to improve decision-making, but can also restrict choices to avoid paralysis;
- 4) ***Feedback***: providing feedback on outcomes of decisions can help for knowledge risk decisions.

Because people often adopt heuristics in decision-making, they fail to select optimal options. To help consumers avoid situations where this occurs, choice architects can design the choice architecture better. Choice designers can influence individual behaviors for the good as well as the bad.

By implementing nudges, products, services, brands and behaviors can be promoted or negated. Nudges are low-cost interventions or changes to default settings in policy or practice aiming to improve outcomes in terms of public service delivery or improve people's health, wealth or happiness. In environmental sustainability nudging is relatively

new but rapidly growing as a way to encourage pro-environmental decisions and behavior. Sustainability nudges target change in consumer behavior by improving decision making for sustainability; reducing demand for "unsustainable" goods and services and enhancing demand for "sustainable" alternatives. Social marketing is a field in need for new approaches for achieving sustainable consumption in developed countries, particularly a nudge approach.

2.2 Sustainability in fashion industry

Although limited information is available regarding fashion e-commerce platforms, it is expected that a greater number of similar applications will emerge in the future. This reflects the rapid growth of e-commerce in general and the trend towards e-commerce as a primary channel for purchasing clothing (Mirbabaie et al., 2022). Windfall gains in operational efficiencies and cost structures arising from the transformational shift to online have presented tremendous opportunities, with the stock price index for a large sample of US e-commerce platforms outperforming most traditional non-e-commerce competitors over the last year. On the other hand, the fashion industry is generally considered the second most polluting industry in the world. With massive textile waste and CO₂ emissions, the carbon footprint from clothing production is three times greater than that of combined airline and shipping industries. In recent years, climate change impacts caused by fast fashion have received considerable attention.

At the same time, the fashion industry has been highly criticized for failing to provide sufficient guidelines on sustainability to end-consumers and for prioritizing profit over sustainability (Ozdamar-Ertekin, 2019). In response, many consumers state that environmentally sustainable behavior is important and express willingness to purchase eco-friendly fashion products even for a higher price. However, despite this professed pro-environmental attitude, only a small percentage of consumers in reality engage in the sustainable behavior they publicly condone. Consequently, developing a more sustainable fashion value chain and encouraging consumers to engage in sustainable behavior can be considered a *wicked problem*. To address this, nudges are presented as innovative means

of behavior change as they induce the desired decision towards a predefined goal (sustainability) by taking advantage of psychological biases, heuristics and other factors instead of forcing the decision by using methods such as bans and limitations. Digital nudges are used to encourage decision-making without restricting freedom of choice while enhancing information transparency.

2.2.1 Fast fashion *versus* Slow fashion

Fast fashion has become really popular because it makes it easy to keep up with the latest trends without breaking the bank. Shein, for example, is one of the top fast fashion brands today, serving style enthusiasts all around the globe. Known for its affordable clothing, Shein has been around for a little over ten years and has grown quickly into a major company. To understand how fast fashion became such a phenomenon, it helps to look back in history. Before the 1800s, fashion was a slow process. People had to gather raw materials like wool or leather, prepare them, weave fabrics, and then sew their clothes. Then came the Industrial Revolution, which introduced new technologies like the sewing machine. Suddenly, making clothes became faster, easier, and cheaper. During this time, customize shops started popping up to serve the growing middle class. Many of these customize shops relied on teams of workers—sometimes domestic workers—to produce garments. Unfortunately, this era also saw the beginning of exploitation and safety issues. One of the earliest terrible incidents was the Triangle Shirtwaist Factory fire in New York in 1911, which claimed the lives of 146 workers, many of whom were young immigrant girls (fi).

In the 1960s and 1970s, young people created new trends, and clothing became a form of personal expression, but there was still a distinction between haute couture and fashion. In the late 1990s and 2000s, *low-cost* fashion reached its peak. *Online* shopping took off and *fast fashion* retailers such as H&M, Zara and *Topshop* took over; these brands took *looks* and *design* elements from top fashion houses and reproduced them quickly and cheaply.

Many retailers we know today as big *fast fashion* players, such as Zara or H&M, started in small shops in Europe around the 1950s. Technically, H&M is the oldest of the *fast fashion* giants, having opened as *Hennes* in Sweden in 1947, expanding to London in 1976, and quickly reaching the US in 2000.

This was followed by Zara, which opened its first shop in northern Spain in 1975. When Zara landed in New York in the early 1990s, people first heard the term *fast fashion*, coined by the New York Times to describe Zara's mission to use only 15 days to create a garment, going from the design stage to being sold in shops.

Other big names in *fast fashion* today are UNIQLO, GAP, Primark and *Topshop*. While these brands were once seen as extremely cheap, there are now even cheaper and faster alternatives such as Shein, *Missguided*, *Forever 21*, Zaful, Boohoo and *Fashion Nova*.

Consumerism is a social trend where people buy and own more stuff than they really need.

It's often linked to valuing material things and wanting to show social status. On the flip side, mental health is all about how we feel emotionally and psychologically. When it comes to consumerism, how well someone's mental health is can really influence how they respond to all the advertising and the pressure to buy. Staying emotionally balanced and feeling good about yourself can help lessen the negative effects of consumerism on everyday life. In psychology, self-esteem is basically how you judge yourself and your worth. It's a key part of feeling psychologically healthy and affects how you see yourself and handle challenges. When someone has healthy self-esteem, they usually accept themselves and trust in their abilities, but if self-esteem is low, it can lead to feeling insecure and having a tough time dealing with stress.

Research shows that how people feel about themselves is connected to consumer habits: buying things and comparing themselves to others can shape their self-view and impact their self-worth (Migliorelli, 2021).

When it comes to consumer culture, our self-esteem often depends on what we buy and how we compare ourselves to others. This can create a tricky cycle where we keep looking

for validation through material things, but these don't really fulfill our deeper need to accept ourselves.

Consumerism can warp how we see ourselves, making us believe our worth is tied to what we own rather than who we truly are.

Because of this, it's important to think about how consumer habits impact our self-esteem and to find ways to feel good about ourselves that don't rely on possessing stuff (Baptist, 2024).

Social comparison within a consumer culture can have a significant impact on individual self-esteem. People tend to compare their own lives and possessions with those of others, often measuring their value by material criteria. This constant comparison creates an environment in which self-esteem can be damaged, leading to feelings of inadequacy and insecurity (Tritten Kotkova, 2022).

Too much focus on consumerism can really take a toll on how we see ourselves. It can cause feelings of dissatisfaction, insecurity, and a sense that we're not truly fulfilled. Chasing happiness through constantly buying new things can become addictive and often distracts us from more meaningful sources of joy. This cycle can hurt our self-esteem and make us feel worse about ourselves. Today's culture, with all its advertising pushing the idea that owning stuff equals success and happiness, can actually increase feelings of inadequacy and lead to more anxiety and depression. When we see ads everywhere telling us we need the newest gadgets or the latest trends to be happy or successful, it's easy to feel like we're falling behind. The pressure to keep up with these standards can make us stressed and anxious about maintaining a certain image or lifestyle, which isn't good for our mental health. Finding methods to increase our self-esteem that aren't related to financial possessions is crucial in light of all of this. It might be beneficial to think positively, practice self-compassion, and be clear about our priorities. Developing relationships with friends and family and engaging in emotionally fulfilling activities are also crucial. Promoting values that focus on non-material things, like gratitude and meaningful experiences, can help us see that happiness isn't about stuff. Reflecting on why we want to buy things and finding joy in what we already have can really make a

difference. Sharing special moments with loved ones and being thankful for what we have can lessen the impact of consumer culture on how we see ourselves and our mental health overall (Tarabelli, 2022; Lipovetsky, 2022).

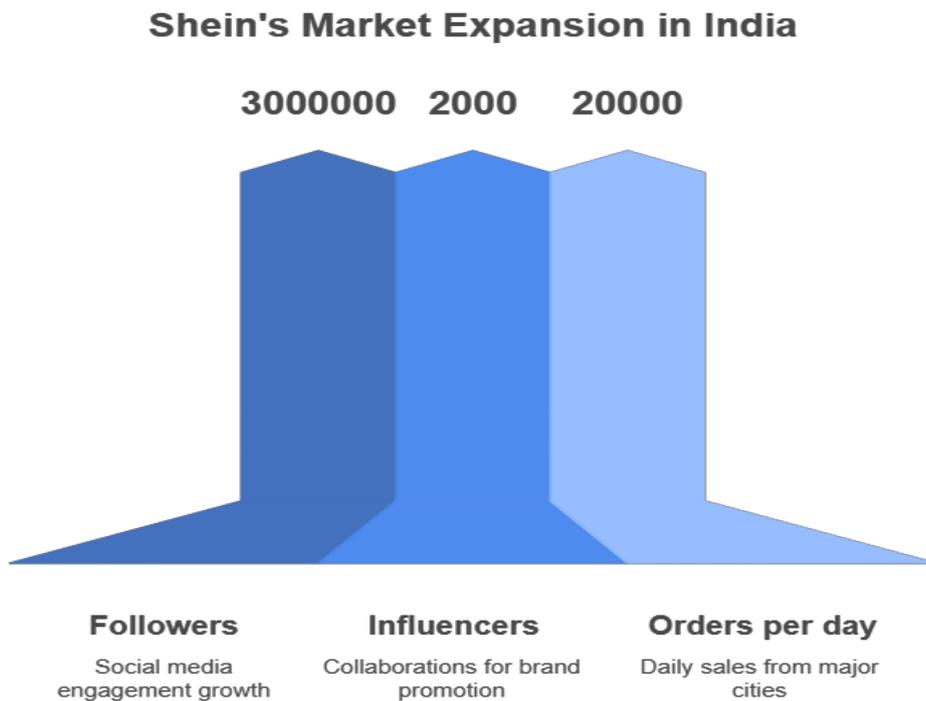
Shein.com does most of its sales in the *fashion* category, targeting over 1 million daily active users, handles over 10,000 orders per day, and ships to 220 different countries, with the US as the largest market.

Shein accounts for an estimated 28% of *fast-fashion* sales in the US, up from 14% last year, and has overtaken fashion giants such as H&M, Zara and *Forever 21*. In June, for the first time, Shein surpassed *Amazon* in the iOS App Store.

Founded as *Sheinside* in 2008 by Chris Xu, a Chinese entrepreneur, the fashion *ecommerce* platform changed its name to *Shein* in 2015. Since then, Shein has evolved into a global *B2C fast fashion* operator dealing in clothing, accessories, bags, shoes and other fashion categories for men, women and children.

Shein started its story in India in 2017, entering quietly after studying local styles and developing *marketing* and sales strategies for the neighboring market. The strategy included creating and localizing efficient logistics, customer service and a dedicated *marketing* team.

An investment of ₹250 crore was made *in marketing*, attracting more than 3 million *followers* on social media and about 2,000 *influencers*, which translated into 20,000 orders per day mainly from metropolises such as Delhi, Mumbai and Bengaluru. Encouraged by the response, Shein. started looking at non-metro cities in India as potential markets. The brand gained further confidence and began to explore the possibility of creating local products in India. Sales figures provided further encouragement, reporting ₹500-4,000 as the most popular price range among Indian customers.



Shein has been working to introduce new trends and attractive offers in India. The company also started collaborating with Indian *designers* to create *fusion* and IndoWestern clothes for the Indian public (Startuptalky, 2021).

Shein's business model is based on the motto that more *is better* and that excess can be made affordable through mysteriously low prices. This is how Shein's journey began: with affordable products that achieved ever better quality and scalability over time. In the early days, Shein ensured that its *designers* studied *fashion design* in depth, and *senior* designers were invited to act as professional guides in building the brand. Today, the situation has changed because Shein can rely on an established *team* of professional *designers*, each with a unique fashion sense. The product *teams* also help keep up with the latest fashion trends around the world and bring these styles to market quickly (Forbes, 2021).

Quality control, which includes checking style, color, size and workmanship, is mandatory before a product is introduced to the market to ensure that all cutting, sewing and ironing operations meet quality requirements. After the quality-related inspection, each product is sent to the warehouse where it is examined again during the packaging

stage. As a procedural practice, workers are required to follow certain guidelines to ensure the flawless appearance of the finished product.

The Shein model also provides for an objective selection of the required fabric. A fabric that fits Shein's pattern must be trendy and in line with the *design*; it must not inflate production costs, nor must it be priced to hit Shein's customers' pockets. This has been the guiding philosophy of the company, which has always dictated its *partnerships*. Shein gains significant market share by reducing design and production time with the help of machine learning. Compared to competing *ultra-fast* sites that release 1,000 patterns per week, Shein adds around 1,000 patterns daily to the tens of thousands already on its sites and this is possible thanks to its vertically integrated supply chain that compresses production times by up to 3 days, adjusting inventory based on user *app* behavior patterns to allow thousands of low-priced items to be added to its platform daily (Forbes, 2021; Startuptalky, 2021).

First, each item in the production process must be rigorously tested for quality before it is made available to customers. Only the prototyped *design* enters the production chain, where advanced equipment and professional labor come into play. Factories are monitored to eliminate any production-related inefficiencies. Production management works to shorten the production cycle and the release of new products, and special attention is paid to details, such as lacing and ironing, to achieve a desirable presentation of the garments. Models are invited to try on garments and the feel, color co-ordination and appearance are judged before final approval. The main objective is to achieve a perfect *look*, even at the cost of multiple alterations, before the product is put up for sale on the *website*.

Offering a vast array of fashion items that enable people to show their individuality, sense of style, and affiliation with particular social groupings, Shein plays a vital role in the realm of social identity. People can create and express their identities to others by expressing their preferences and values through the clothes and accessories they choose. As a result, Shein becomes a place where social dynamics blend with personal expression and consumption, impacting how people see themselves and other people.

Shein's role in identity construction is evident through its ability to offer clothing options that reflect current cultural, aesthetic and social trends. Individuals can use Shein's

products to experiment with different styles, reflect specific social or cultural affiliations and fulfil desired social roles. Furthermore, the platform provides an environment in which people can engage with others, sharing and comparing their fashion choices and thus building social connections that contribute to the definition and strengthening of individual and group identity (Marino and Surace, 2023).

After years of criticism from environmentalists, it seems that the European institutions have finally taken up the issue of *fast fashion*.

The European Parliament, in a significant step towards strengthening the regulatory roadmap set by the European Commission in 2022, adopted a series of initiatives to promote sustainability in the fashion industry and to encourage consumers to make more ethical and responsible choices (Redaelli, 2024:46-49).

One of the key points highlighted by MEPs was the need for a clear definition of *fast fashion*, which refers to a production model that emphasizes low cost, low quality and high production volume. Furthermore, they called for stricter measures to tackle the excessive production and consumption of textiles, which have caused a worrying increase in waste in the sector over the last three decades: approximately 5.8 million tones are discarded each year in EU countries, most of which have been used less than 10 times before being thrown away or burned.

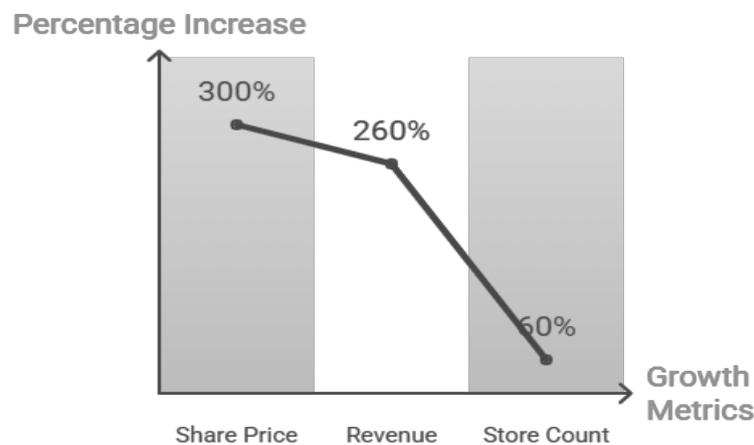
Although the UK and the US are exploring comparable measures, it is Europe that is leading the efforts to promote a more sustainable economy in its 27 member states.

MEPs expressed their support for the decision taken by the EU governing bodies to ban the disposal of unsold textiles. They stressed the importance of implementing legally binding and measurable climate targets. Furthermore, they emphasized the need to address environmental concerns regarding biodiversity, animals and the adoption of specific measures to combat microplastic pollution. They emphasized the need to address labor abuses within the sector, and also analyzed ways to help non-EU producing nations meet decarbonization targets.

Due to opposition from pro-business lawmakers, it has proven challenging to pass a legislative agenda that reflects the current desire for stronger controls in the fashion industry. The noble aspirations are at odds with the bureaucratic environment. In March 2023, the long-awaited draft regulations on *greenwashing* were published, but crucial

technical details on the *standards* and methodologies brands should use to make credible sustainability claims were missing. It is unclear how soon and how strictly the new regulations will be implemented for the fashion industry. Negotiations with the 27 EU Member States are needed to finalize the proposed due *diligence* requirements before they become law, which could be met with further challenges or modifications.

Fast fashion describes the rapid design, production, marketing, and sale of clothing fashions that keep pace with the latest trends. Fast fashion brands have fundamentally changed the rules of fashion, making it possible to recreate runway styles in just a couple of weeks. Here “fashion moments” have quickly become “fashion minutes”. Mass production, low costs, and low prices have been the keys to fast fashion success. Fast fashion has dramatically changed design and production practices through strategies that increase speed and flexibility while keeping prices low. It allows clothing to be manufactured for approximately \$1.50 and sold for \$40, a markup of 2,500 percent (Ozdamar-Ertekin, 2019). Fast fashion chains have grown faster than the retail fashion industry and typically earn higher profit margins than traditional fashion retail counterparts.



Growth Metrics of Fast Fashion Chains

Fast fashion chains have achieved incredible growth faster than the retail fashion industry as a whole. Since Inditex went public in 2001, its share price has grown by 300 percent, its revenues by 260 percent, and its number of stores by 60 percent. In 2007 H&M earned profits of \$537 million on \$17 billion sales. During the same year, the three largest fast fashion firms - Inditex, Gap, and H&M - together earned almost \$2.5 billion in profits. As the fastest growing segment of the apparel market, it accounts for an estimated 90 billion euro of the global retail value of women's clothing and has captured 25 percent of total market share. Key drivers of success would be affordability and low cost, greater variety (more styles), speed of availability (faster turnaround), and constant change (clothing styles). Fast fashion retailers have decreased the turnaround time from catwalk to consumer for runway looks from six months to as little as three weeks. In just a couple of weeks, a prototype is developed and sent from the countries of production to the stores, where customers get to wear the latest styles.

2.2.2 Consumer behavior in sustainable fashion

The fashion industry is one of the main contributors to environmental degradation and climate change. Global wealth inequality leads to excessive consumption and the fast fashion phenomenon. Consumers feel concern for environmental issues and engage in sustainable fashion discourse. Consumers mentioned willingness to act for the better and the intention to buy green apparel, but the intended green behavior doesn't match reported purchase behavior. Investigating the decision-making process of consumers helps understand the attitude-behavior gap. Nudging is the change of PBC engagement context in order to encourage pro-environmental behavior. It was found that nudging positive consumer behavior is possible without manipulation or restrictions (Mirbabaie et al., 2022). This study builds upon research on eco-friendly nudging in fashion. It provides a better understanding of how consumers perceive nudges for sustainable fashion purchases and identifies the necessary information to foster sustainable purchases for different consumer groups.

Implications for an environmentally sustainable fashion economy are provided. The fashion industry is one of the most polluting industries with the worst social working conditions and has excessively high consumption ratios. Therefore, countries are striving to be part of an environmentally sustainable circular fashion economy. Fast fashion indicates money offers fashion and consumers are food for fast fashion brands as loyalty is cultivated (Wiederhold, 2017). Consumers feel environmental concern and talk about a sustainable fashion future but reported purchase behavior showed that behavior does not match attitude. E-information from the brands on clothing is perceived as greenwashing and initiatives are acknowledged as good marketing deals. The wool market as well as cotton farms are subjected to horrible treatment under extreme conditions. With consumers calling for transparency, information must be accessible and independent.

2.2.3 Greenwashing phenomenon

The concept of greenwashing emerged as a neologism in the mid-1980s to describe the act or attempts to deceive consumers into believing that a company's products or policies are environmentally friendly. Greenwashing describes a spectrum of activities intended to create the false impression that a given organization or initiatives are environmentally sustainable, ranging on a continuum from deceiving or misleading to obscure, within the broader field of eco-impression management. As the term greenwashing is shorthand for a wide variety of behaviors, it is essential to move beyond its popular or commonsense definition to offer a taxonomy for distinguishing among these varied behaviors, including labels that are commonly claimed about organizations within an industrial sector or more broadly righteous goods.

The most significant emergence of eco-labels in food-related industries raises the possibility and concern the extent to which producers of other types of goods will create righteous categories or labels or renew faith in existing practices that are being disrupted by the potential for the emergence and growth of righteous firms. In addition to examining the forms and means of greenwashing, it is essential to consider conditions that give rise

to it, how it might be on the decline, and an emerging counterpoint to greenwashing that would give concerns about sustainable practices credence (Wiederhold, 2017). It is crucial that theories of crime provide some insight into why firms would engage in the acts of deception and consider potential counterforces in the wake of the rise of a growing number of righteous firms.

Criminal defense involves the potential violation of legal standards, yet within the field, there is also a body of knowledge on effort by organizations to dupe consumers into thinking their products or practices are innocuous. Much of the attention on greenwashing described these acts as being composed of exaggeration, omission, and misleading and found that they are more complicated than implied in the definitions (Mirbabaie et al., 2022). Questions of perceived legitimacy and legitimacy uncertainty arise when a firm diverges from normative industry standards through actions deemed pro-social by stakeholders' pressure or alternative social movements. In conclusion, the significance of these types of schemes in the food and fashion industries and the emerging sophistication of these efforts are examined.

2.3 Brand trust and authenticity

The branding is one of the success factors for businesses because consumers are more likely to make inferences based on the brand name (Redaelli, 2024:203; 214-216). Brand trust in the fashion industry has received less attention compared to other areas like brand equity and brand loyalty, even though trust plays a unique and important role in fashion branding. To address this gap, the discussion is organized into five key points:

1. Review of the common understanding and relationship between trust and brand:
This first step examines how trust is generally perceived in connection with brands, setting the foundation for why trust matters in fashion branding;
2. Listing and comparing the dimensions of brand trust with other communication constructs: Here, the different aspects or components that make up brand trust are identified and compared to similar concepts in brand communication, to clarify what specifically defines trust in this context;

3. Review of existing measurement scales for fashion brand trust: This point looks at previous research tools used to measure trust in fashion brands, evaluating their effectiveness and relevance;
4. Proposal of a fashion brand trust framework tailored to the industry's unique characteristics: Based on the earlier reviews, a new framework is suggested that better fits the specific nature and challenges of fashion brands;
5. Suggestions for future research and potential impacts: finally, recommendations are made for further studies to deepen understanding of fashion brand trust, highlighting how this could influence both broad (macro) and detailed (micro) perspectives in the field (Xu et al., 2021).

The information intimacy trend is potentially threatening for fashion brands as they scramble to keep up with technological changes and growing consumer awareness. However, such trends may ultimately offer opportunities for fashion brands if carefully embraced. Theoretical implications include broadening the understanding of trust in the brand domain, outside of the general brands that wag the majority of the brand trust discussions. It outlines the role of positive and negative consumer brand trust as well as comparative brand trust. To some extent, it is a prototype of fashion brand trust.

2.3.1 Brand perception

Brand perception forms the foundation of brand equity as well as overall brand performance. Meaningful and distinctive associations stored in consumers' memory underpin brand equity, while perceptions regarding brand quality, loyalty, and attitudes toward the brand represent its net outcomes. Perceived brand quality relates to a brand's superiority and credibility relative to competitors within the performance dimension. Consumer views on sustainable brand extensions serve as a moderating influence on the overall perception of brand sustainability (Taylor Hill, 2011). A notable portion of consumers harbor somewhat negative views regarding brand dilution caused by sustainable brand extensions. Others hold either mildly or strongly unfavorable opinions, which aligns with the shape of perceptions about brand sustainability overall. Consumer

skepticism plays a significant role in retail and brand micro-credentials as part of corporate social responsibility efforts. While consumers generally embrace the concept of sustainability, they often remain skeptical. Research suggests many consumers perceive retailers as merely complying with sustainability standards through brand extensions, categorizing brands dichotomously as either good or bad in terms of sustainability perception and credentials.

Consumer perceptions of brand sustainability manifest in two keyways:

- 1) as a focused evaluation of the brand's sustainable reputation;
- 2) as a holistic perception that integrates three principal dimensions:
 - performance benefits;
 - premium pricing;
 - perceived social responsibility.

The perceived sustainable reputation of a brand moderates the relationship between sustainable product extensions and consumer perceptions across these three dimensions.

This research highlights a pressing need for broader and clearer communication on sustainability, alongside enhanced transparency in retail practices.

2.3.2 Consumer trust factors

Customers' intents to buy environmentally friendly products are favorably influenced by consumer trust, which is essential in forming the relationship between consumers and sustainable firms. Within the framework of the *Theory of Reasoned Action*, this section looks at important factors that influence consumer trust¹. These include environmental endorsements, communication transparency, authenticity, and brand integrity, all of which differ throughout brands. Each element is explained in more detail below, with an emphasis on how it affects customers' decisions to buy ethical fashion:

1. Brand integrity: With growing consumer interest in supporting sustainable brands, there is increasing demand for transparency and accountability. Integrity is widely acknowledged to affect consumer trust, which in turn shapes purchasing and recommendation behaviors. To build trust in ethical fashion brands, it is crucial to openly disclose practices and standards that ensure products meet ethical criteria. Conversely, lack of transparency can damage reputations and erode trust. Greenwashing—promoting sustainability claims without genuine action—is a common criticism. Maintaining integrity requires companies to ensure accuracy and substantiation in all communicated information across platforms.

¹ The Theory of Reasoned Action (TRA) is a psychological model developed by Martin Fishbein and Icek Ajzen in the 1970s, which explains how a person's behavioral intentions are the best predictor of their actions. In the context of purchasing, this theory states that buying behavior is determined by the intention to purchase, which in turn depends on two main factors:

- **Attitude toward the behavior:** the positive or negative evaluation an individual has regarding the purchase of a product or service.
- **Subjective norms:** the idea that significant individuals (friends, family, and society) are pressuring or expecting you to make a purchase. A person is therefore more likely to purchase a product if they have a favorable opinion of it and believe that others expect them to. Richard Thaler and Cass Sunstein created the nudge hypothesis, sometimes known as the "gentle push," which is predicated on the notion that people can be persuaded to make better decisions by altering the circumstances surrounding their decision-making rather than by enforcing rules or altering financial incentives.

In the context of TRA applied to purchasing, nudges can act on:

- **Attitudes:** for example, presenting positive information about the product more visibly or engagingly to improve the consumer's evaluation.
- **Subjective norms:** leveraging social elements such as reviews, testimonials, or purchase statistics ("70% of people chose this product") to increase perceived social pressure.

In this way, nudges integrate with TRA by enhancing more conscious and directed purchase intentions.

References: Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*; Addison-Wesley; Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211; Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving Decisions About Health, Wealth, and Happiness*. Yale University Press.

2. **Brand credibility:** Before purchasing ethical apparel, consumers must believe in the authenticity of a brand's sustainable motivations. Ethical fashion brands must therefore engage consumers through multiple credibility cues, such as alignment with industry authorities or expert endorsements. It is important to note that consumers may not rely solely on public information when judging credibility; intrinsic brand characteristics also play a role. Established ethical apparel retailers may have longer sustainability track records, while newer entrants may offer distinct values or practices appealing to sustainability-focused shoppers. These self-contained credibility factors must be acknowledged.
3. **Communication transparency:** Ethical brands should tailor communication transparency based on context. An overly blunt disclosure of ethical limitations may frustrate consumers and backfire, while incomplete transparency or excessive self-promotion may foster suspicion. Although it is often thought "any transparency is better than none," this is not necessarily true when trust is at stake. Brands must carefully balance clarity and completeness while allowing flexibility in messaging.

2.3.3 Sustainable brand communication

Despite sustainability initiatives by fast fashion brands, informed consumers often remain skeptical, complicating the dissemination of sustainability-related messages. While branding research explores how brands use social media to engage consumers, the impact of such engagement on spreading sustainability messages remains unclear. This vacuum is filled by looking at the direct communication of fast fashion firms, including their emotional expression and sentiment polarization, and how these affect customer attitudes and the virality of sustainability posts. The study also looks at how this link is moderated by brand and industry participation. Results show that while strongly unfavorable user comments decrease virality, brand posts and comments with a strong positive sentiment improve it. Structural factors such as comment volume significantly boost retweeting.

Engagement mechanisms like word count, hashtag use, and brand handle mentions positively affect retweets, whereas reply counts and user mentions have negative effects. Emotional content analysis reveals excessive negative emotion increases retweeting, but comments expressing inquiry or neutral emotion should be avoided as they reduce virality (Hyun Nam Lee & Zhao, 2018).

As society faces mounting pressure to reduce waste, every sector must contribute. The fashion and beauty industries have long polluted ecosystems and exploited workers. Fast fashion has shortened supply chains drastically, fueling consumerism. While consumers face criticism for overbuying, excess inventory leads retailers to destroy or landfill unsold clothing. Since fashion is the world's second largest polluter, brands must offer better alternatives. Retailers, designers, and brands can apply action-oriented nudges to foster sustainable habits at every stage of decision-making for clothing, cosmetics, and appliances. These nudges should address knowledge gaps before encouraging habit formation post-purchase, with product applications directly informing purchase choices (Mirbabaie et al., 2022).

Despite the lack of conclusive statistical proof, nudging is still a viable strategy for promoting the consumption of sustainable fashion. To prove causality and replicability, more thorough investigation is required. This study looks at the ecological effects of rapid fashion and the behavioral potential of nudging, given that fashion is currently the second greatest environmental polluter (Mirbabaie et al., 2022). The U.S. fast fashion ecommerce market serves as a focused context to explore how information, social proof, and default nudges might support a sustainable fashion startup (Guria and Roopa, 2024). Literature on nudging to guide consumers toward sustainable choices is also reviewed, with findings applied to the focus group. Results, conclusions, and recommendations are presented. Fast fashion is currently defined as inexpensive clothing rapidly produced in response to trends (Kjellelland & Kjellelland, 2018). Globally, it is a multi-billion-dollar industry with severe negative consequences for the planet and its inhabitants, particularly regarding climate change. Key drivers of the fast fashion climate crisis include pollution, consumerism tactics, unsustainable sourcing, and poor disposal. Research shows many consumers express willingness to buy eco-friendly fashion, yet data presented historically has not

supported environmentally conscious purchasing. This review examines how to shift attitudes and encourage pro-environmental behavior in fashion consumption.

2.4 The Seven Sins of Greenwashing

A Canadian environmental marketing agency developed a framework to help consumers recognize deceptive green marketing practices known as the “seven sins of greenwashing” (TerraChoice, 2009; Dahl, 2010):

1. **No proof:** Companies make environmental claims without providing evidence, such as supporting documentation or credible third-party certification.
2. **Hidden trade-off:** Products are marketed as green based on limited attributes while ignoring harmful aspects elsewhere in production.
3. **False labels:** Brands claim eco-certifications that are fake or misleading.
4. **Lesser of two evils:** Labels like “organic” or “eco” divert attention from broader harmful impacts within a product category—for example, organic cigarettes marketed as better despite inherent risks.
5. **False claims:** Environmental assertions that are outright untrue or exaggerated.
6. **Irrelevance:** Claims that are truthful but unimportant, such as boasting no use of banned substances already prohibited by law.
7. **Ambiguity:** Vague or unclear language that misleads consumers into believing a product is environmentally friendly without sufficient information. Brands engaging in ambiguous or confusing advertising risk losing consumer trust and damaging long-term profitability (Spaulding, 2009).

2.5 How to Mitigate Greenwashing

Two promising approaches to reduce greenwashing include the Budge approach and the EU Taxonomy.

2.5.1 The Budge approach

While nudges have gained popularity for influencing behavior, their effectiveness can vary, as people adapt or resist previously successful nudges in new contexts. The Budge approach offers an alternative by using behavioral science to guide policymakers in regulating harmful corporate practices rather than focusing solely on consumer behavior. This method emphasizes transparent regulation aimed at curbing profit-driven deceptive behaviors by companies. The process begins with understanding the cognitive mechanisms behind unwanted behaviors, focusing on the target audience's psychology.

Budge policies seek to prevent companies from exploiting behavioral economic insights to mislead customers, instead requiring firms to adopt measures that genuinely support consumer welfare.

2.5.2 The EU Taxonomy

The EU Taxonomy Regulation empowers the European Commission to set standards and enforcement measures defining what constitutes environmentally sustainable economic activities (Taxonomy Regulation 2020/285). It promotes the growth of green investments in the EU by establishing technical screening standards for every environmental goal. The Taxonomy assists businesses, investors, and regulators in identifying sustainable practices by offering precise definitions. According to Directive 2013/34/EU, this framework gives investors confidence, shields them from greenwashing, incentivizes businesses to enhance their environmental practices, and lessens market fragmentation.

As a result, an increasing number of companies must report on their sustainable operations and actual environmental performance through non-financial disclosures, while investment funds must disclose how their portfolios align with the Taxonomy under the Sustainable Finance Disclosure Regulation (SFDR).

Chapter three

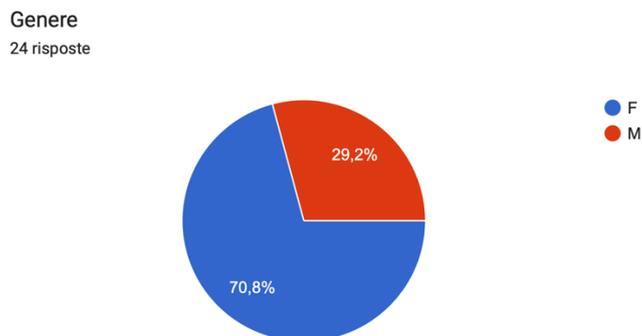
Statistical Analysis and Results

3.1 Target audience and purchasing behavior

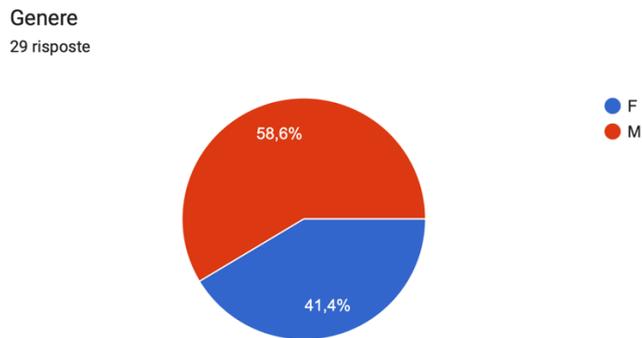
After collecting the survey data, a more in-depth analysis was conducted using the statistical software “RStudio.” This analysis allows for the investigation of the key points of this thesis. The analysis was performed using various methods that compare the data from the control group and the experimental group to test the effectiveness of applying nudging in the sustainable fashion sector.

The first important observation is that there is a predominance of women in the control group, accounting for 70.8%, whereas the experimental group is predominantly male, with a percentage of 58.6%. Additionally, the age range of the experimental group spans from 21 to 65 years, with a higher concentration between 23 and 27 years. In contrast, the control group has an age range of 23 to 72 years, with a greater number of respondents aged 24, 59, and between 65 and 66 years.

Control Group



Experimental Group



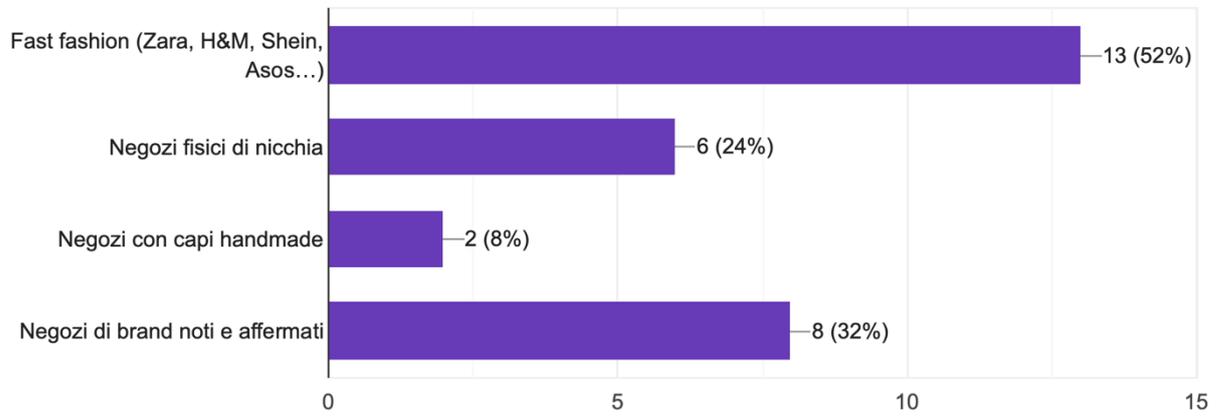
(Graphs based on Google Forms surveys)

Regarding the question, “Have you ever purchased fast fashion clothing?”, both groups predominantly answered affirmatively, showing similar percentages. Specifically, 80% of the control group and 83.3% of the experimental group reported having purchased fast fashion items.

Further investigation into the purchasing habits of the sample reveals that, in both groups, the most common method of purchase is through fast fashion stores, followed by established and well-known brands, then niche physical stores, and lastly, stores offering handmade clothing. The following charts are extracted from the survey data: Regarding the question, "Have you ever purchased fast fashion clothing?", both groups predominantly answered yes, recording similar percentages. Eighty percent of the control group and 83.3% of the experimental group reported having purchased fast fashion clothing.

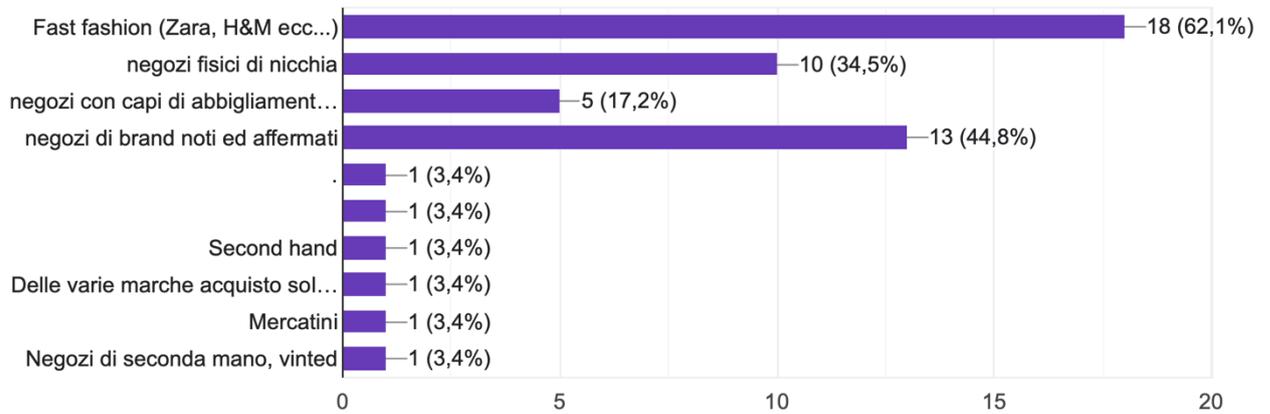
Further investigation into the purchasing habits of the sample reveals that in both groups, the primary method of purchase is through fast fashion stores, followed by established and well-known brands, then niche physical stores, and finally stores offering handmade clothing. The following charts are derived from the survey data:

Control group



(Graph based on Google Forms surveys)

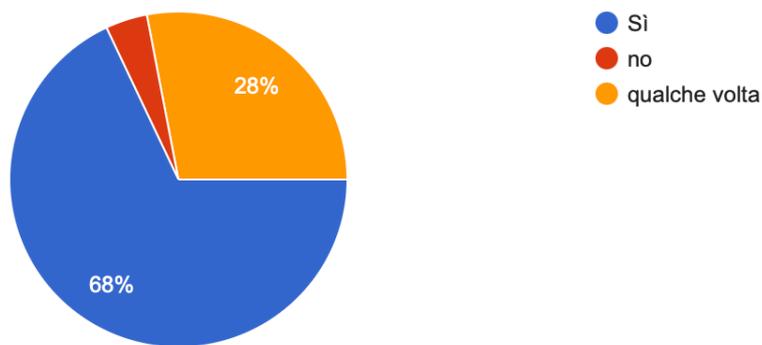
Experimental Group



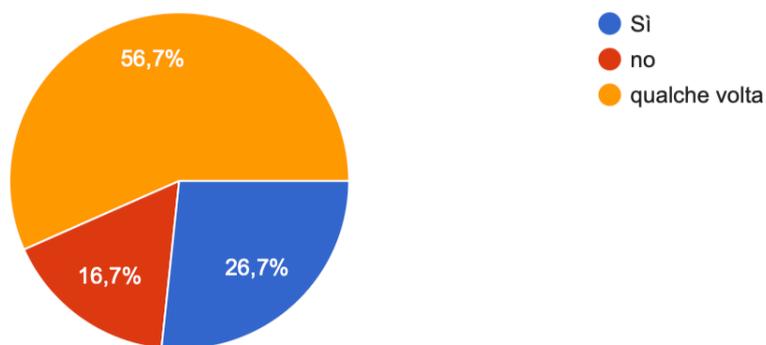
(Graph based on Google Forms surveys)

Focusing on the data, there is a noteworthy phenomenon to consider: the majority of respondents in the control group habitually examine the composition of garments before making a purchase, whereas in the experimental group, this behavior is more sporadic.

Control Group



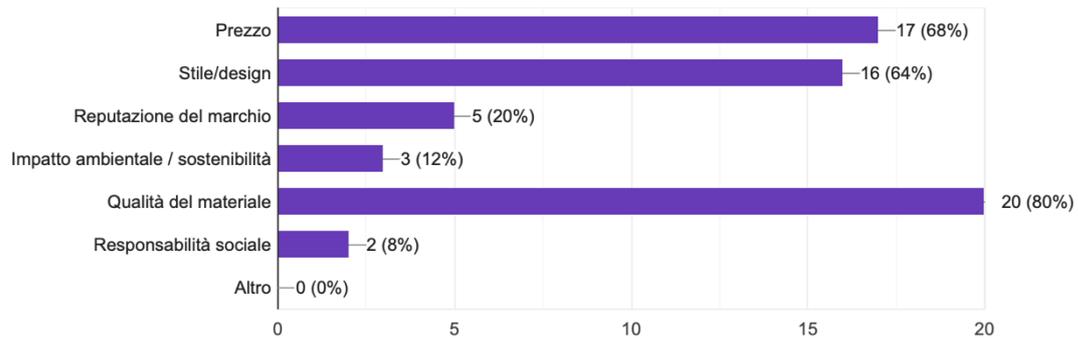
Experimental Group



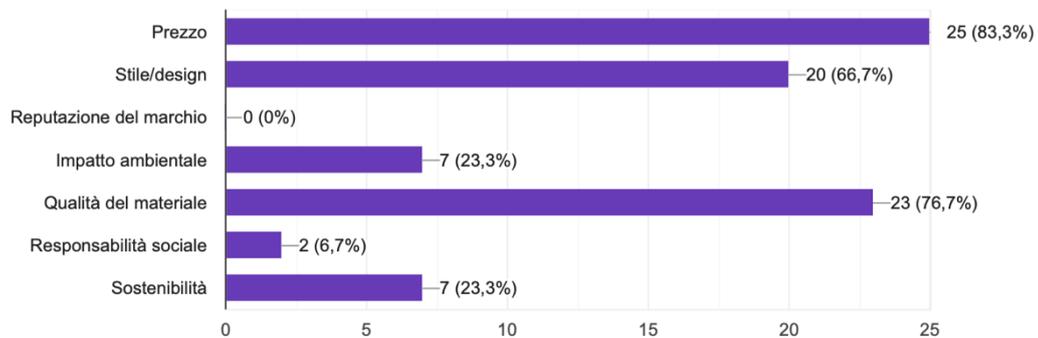
(Graphs based on Google Forms surveys)

Furthermore, as a final relevant data point for contextualization, there are the factors that most influence the choice to purchase a clothing product.

Control Group



Experimental Group

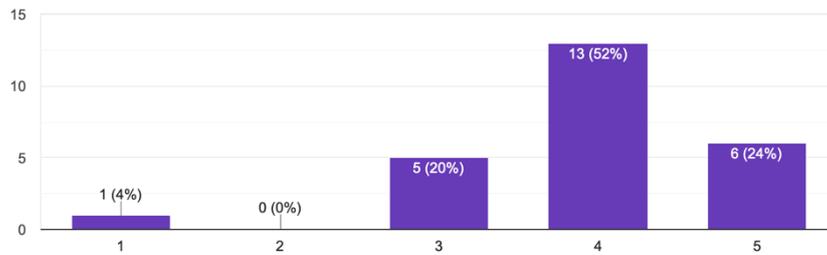


(Graphs based on Google Forms surveys)

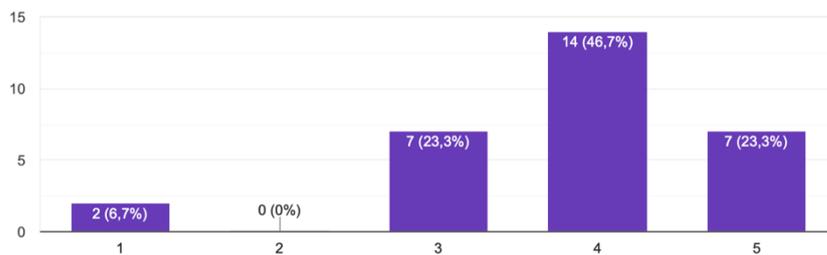
From these graphs, it can be inferred that material quality, price, and design are fundamental factors in the selection of clothing items, whereas sustainability currently remains a secondary consideration. This finding partially conflicts with the respondents'

earlier statements in the survey; indeed, the following graphs show that sustainability was previously indicated as a priority in garment selection.

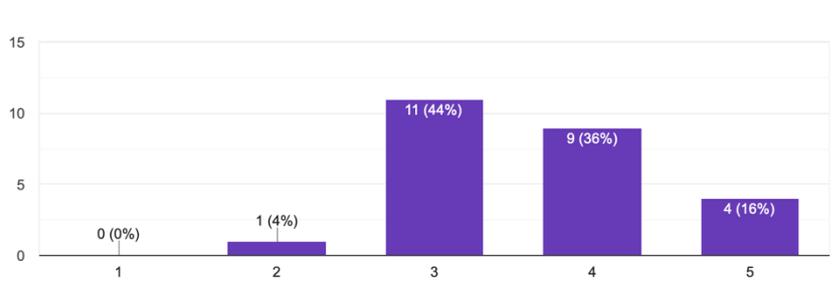
Control group: "How important is sustainability to you in the field of fashion?"



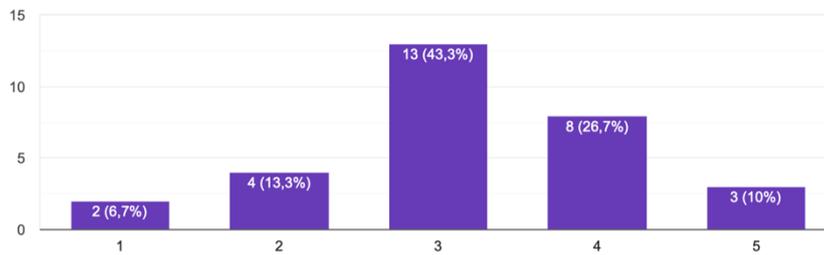
Experimental group: "How important is sustainability to you in the field of fashion?"



Control group: "How important is choosing sustainable clothing to you"?



Experimental group: “How important is choosing sustainable clothing to you”?



(Graphs based on Google Forms surveys)

In conclusion, prior to conducting the statistical analysis of the data, it can be summarized that there is no balance in terms of the target population. Age, gender, and sustainable purchasing habits all differ between respondents in the two groups; therefore, it can be said that the sample does not belong to the same population, which may affect the subsequent research results.

3.2 Data analysis

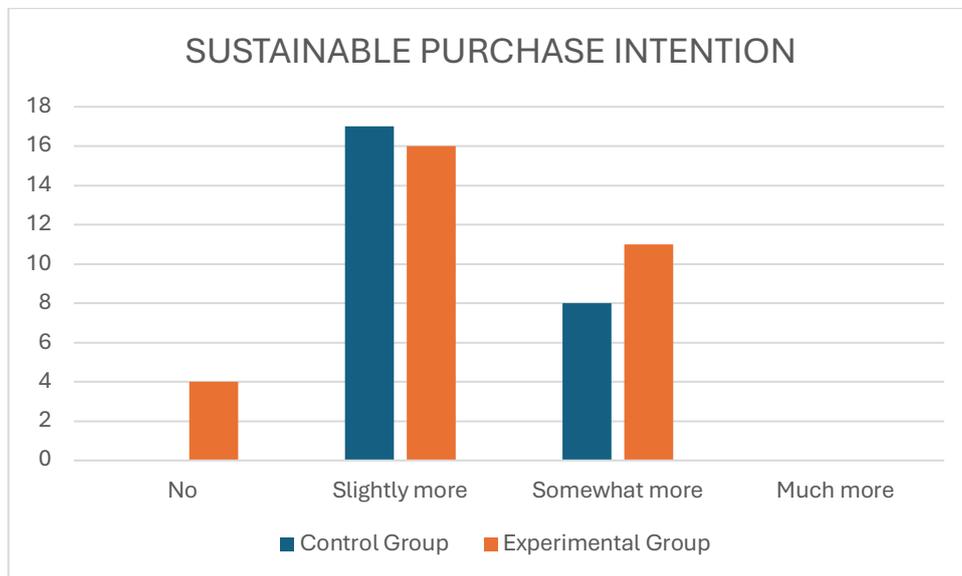
Three different phenomena related to Nudge Theory in the context of fashion are the subject of the data analysis:

- The first one is the willingness to pay for a sustainable clothing.
- The second looks at potential factors associated with the greenwashing phenomenon.
- The third phenomenon concerns how consumers view a brand that uses sustainable and transparent communication in terms of credibility.

3.2.1 Willingness to pay for sustainable clothing

The first aspect investigated is the willingness to pay for a garment of sustainable origin compared to the conventional garments offered by brands.

The initial question posed to both groups was therefore: "Would you be willing to pay more for a sustainable garment?"



(Graph based on Google Forms surveys)

The chi-square test is a statistical test used to globally detect the dependence or independence of the variables under consideration. It is based on the chi-square statistic. To determine the independence of the variables, we can use the p-value decision rule, which states that if the p-value is greater than a critical threshold set at 5%, the null hypothesis is accepted, meaning that the variables are statistically independent.

$$\chi^2 = \sum_{i=1}^k \frac{(o_i - e_i)^2}{e_i}$$

This formula represents the calculation of the Chi-square index. In the numerator, we have o_i , which represents the observed values, and e_i , the expected values—i.e., the values we expect if the null hypothesis is true and therefore the p-value is greater than 0.05. The numerator consists of the squared deviations. The denominator serves to normalize the Chi-square index.

Furthermore, it is important to note that if the observed frequencies (o_i) exactly match the expected frequencies (e_i), then the Chi-square value will be zero. If they differ, a larger value will be obtained, indicating a greater discrepancy between the observed (o_i) and expected (e_i) frequencies.

The results of the same question posed to both groups are examined: "Would you be willing to pay more for a sustainable garment?"

JOINT RELATIVE FREQUENCIES of PURCHASE INTENTION				
	No	Slightly more	Somewhat more	Much more
Control	0.00	0.31	0.15	0.00
Experimental	0.05	0.29	0.20	0.00

(Table extracted from R data)

Analyzing these data using the Chi-square method yields the following output:

CHI-SQUARE TEST	
X-squared	4.1787
p-value	0.2428

(Table extracted from R data)

Therefore, it can be concluded that there is no statistical evidence to suggest that the nudge significantly influenced consumers' sustainable choices.

The consumers' willingness to pay for sustainable products is now being investigated in two steps:

1. First, the analysis will determine which nudges are most effective among those selected.
2. Second, the most effective nudge will be compared to the control group. This approach will establish whether the use of that nudge has a real and significant impact on consumer decision-making.

Performing the first step, we seek significant differences between the application of various nudging techniques. The data comparison is conducted using the Chi-square method.

To apply this statistical method, responses to four questions from the experimental group, where different types of nudges are applied, are used:

• **Nudge A: SOCIAL NORMS NUDGE**

"The majority of users (92%) chose the sustainable alternative. Would this information influence your choice?"

• **Nudge B: FRAMING EFFECT AND PROSPECT THEORY (loss aversion)**

"By choosing the non-sustainable version, you would contribute to a 65% negative environmental impact. Would you be more inclined to purchase sustainable garments?"

• **Nudge C: DEFAULT OPTION AND PENALTY FRAMING**

"The sustainable version of the selected garment is preselected. To obtain the regular version, an additional charge is required as a donation to offset the pollution produced. Knowing about this surcharge, which version would you be more likely to purchase?"

• **Nudge D: INFORMATION NUDGE**

"After learning how ecolabels work, would you be willing to pay more for this sustainable garment?"

The questionnaire results have been analyzed.

An ETL (Extraction-Transformation-Load) process was necessary for the selected questions. The responses include both dichotomous outcomes and Likert scales.

To compare variables measured on different scales, a transformation was applied based on the following decision rule:

1. Scores < 3 = No
2. Scores > 3 = Yes
3. Scores = 3 excluded (neutral response in Likert scales)

Below is the frequency distribution table for the respective questions examined:

	NO	YES
A	21	9
B	2	28
C	6	24
D	4	26

(Table extracted from R data)

From this table, it can be inferred that Nudge A recorded a higher frequency of "No" responses compared to the other types of nudges.

The nudges, ranked by frequency, are ordered as follows: B, D, C, A.

The following values were then recoded into Boolean values, with No = 0 and Yes = 1, allowing for comparison between the two variables using appropriate statistical tests.

Upon performing the test, the output obtained is as follows:

CHI-SQUARE TEST	
X-squared	37.576
p-value	3.476e-08

(Table extracted from R data)

Applying the statistical Chi-square method, we obtain a p-value of 3.476e-08, which is less than 0.05; therefore, statistical dependence between the variables is confirmed. This validates the ordered sequence from the most effective to the least effective nudge: B, D, C, A.

The test for estimating the difference between proportions works similarly. It performs pairwise statistical independence checks, meaning the effect of Nudge A is compared individually with B, C, and D. Likewise, the other effects are compared pairwise with one another.

Thus, while the first step controlled for global independence, the next step verifies independence in pairs.

PAIR-WISE P-VALUE				
	A	B	C	D
A	-	1.1e-05	0.00112	0.00014
B	1.1e-05	-	0.76369	1.00000
C	0.00112	0.76369	-	1.00000
D	0.00014	1.00000	1.00000	-

(Table extracted from R data)

This table compares the various p-values, allowing us to state that nudges B, C, and D do not show a statistically significant difference among themselves in the proportion of "Yes" responses. However, it confirms a significant difference compared to nudging technique A, which is notably different in proportion from the other techniques and is therefore the least effective.

Now, the second step follows: having established that nudge B is the most effective in terms of difference between proportions, followed by nudges D and C respectively, the strongest nudge will be compared with the control group data derived from the following question:

"Would you be willing to pay more for a sustainable garment? "This table compares the various p-values, showing that nudges B, C, and D do not differ significantly in the proportion of "Yes" responses among themselves. However, it confirms that there is a significant difference compared to nudge A, which differs markedly in proportion from the other techniques and is therefore the least effective.

Now, moving to the second step: having established that nudge B is the most effective in terms of difference between proportions, followed by nudges D and C, the strongest nudge will be compared with the control group data from the question: "Would you be willing to pay more for a sustainable garment?"

JOINT FREQUENCIES of PURCHASE INTENTION				
	No	Slightly more	Somewhat more	Much more
Control	0.00	0.31	0.15	0.00
Experimental	0.05	0.29	0.20	0.00

(Table extracted from R data)

The test for estimating the difference between proportions is now performed, with values recoded into Booleans according to the following rule:

[No; Maybe a little] = No = 0

[Yes, a little more; Yes] = Yes = 1

Applying the proportions method now produces the following output: The test for estimating the difference between proportions is now conducted, with values recoded into Booleans according to the following rule:

1. [No; Maybe a little] = No = 0
2. [Yes, a little more; Yes] = Yes = 1

Applying the proportions method now yields the following output:

Control	Experimental (Nudge B)
0.320	0.93

p-value	7.526e-06
---------	-----------

(Table extracted from R data)

This means that the data provide sufficient evidence to reject the hypothesis of independence between the variables under consideration, indicating that the effects of the nudge are effective on the observed sample as they depend on these variables.

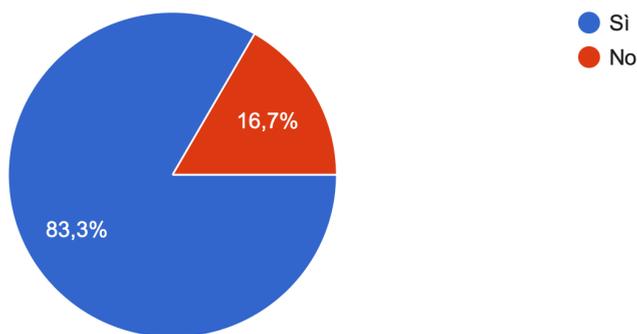
In summary, it has been demonstrated that consumers are more inclined to purchase when exposed to nudging techniques such as the DEFAULT OPTION (Nudge C), INFORMATION NUDGE (Nudge D), and FRAMING EFFECT AND LOSS AVERSION (Nudge B) compared to the SOCIAL NUDGE (Nudge A).

3.2.2 Consumers' perception of the sustainability: the phenomenon related to greenwashing

Secondly, the phenomenon of greenwashing is investigated, specifically whether consumers' perception of the sustainability level claimed by a brand varies depending on exposure to the nudging techniques included in the experimental group survey. Greenwashing cannot be treated as a statistical variable because it refers to an established phenomenon where the declared level of sustainability does not correspond to reality. Since this thesis is a research study based on survey data focusing on consumer perception, it investigates how much consumers might be influenced in their perception of sustainability levels by nudging techniques and whether they are more or less likely to fall victim to greenwashing.

From the control group, we observe the following graph representing the response to the question:

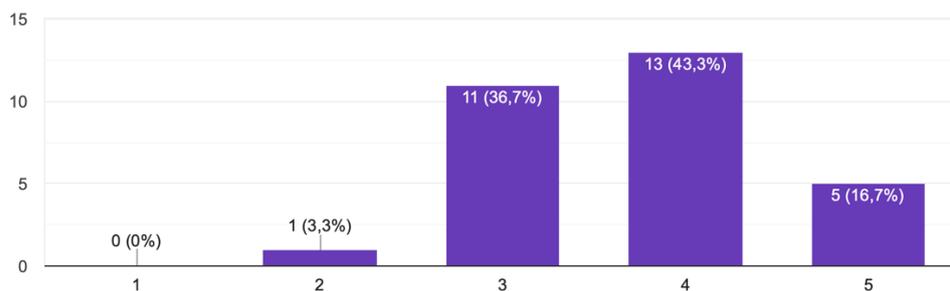
"Do you believe the sustainability claimed by the brand of the t-shirt with an ecolabel is more credible compared to brands that do not make any claims?"



(Graph based on Google Forms surveys)

This graph, in fact, supports the effectiveness of nudging techniques applied in the context of perceived sustainability credibility. Specifically, 83.3% of respondents in the experimental group stated that the use of a nudge—in this case, an ecolabel—can effectively enhance and make a brand’s sustainability claim more truthful.

The following question posed to the experimental group is: "How credible do you consider it?"

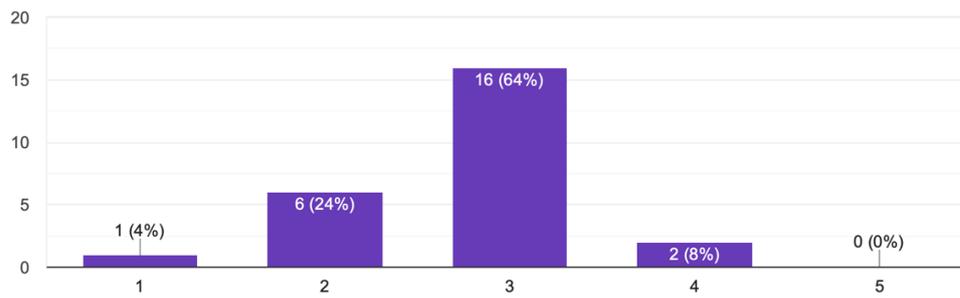


(Graph based on Google Forms surveys)

This response measures the perceived truthfulness of the claim after exposure to the nudge.

By comparing this response with data from the control group, an acceptable comparison is obtained regarding the actual influence of nudging techniques on consumer perception of the truthfulness of a brand’s sustainability claims. This data can serve as a valuable tool to hypothesize the effectiveness of Nudge Theory in the context of greenwashing.

The control group question used for comparison is: "Generally, how truthful do you consider the sustainability claims made by brands?"



(Graph based on Google Forms surveys)

As mentioned earlier, the two variables are the responses to the following questions (responses on a Likert scale from 1 to 5):

- Control group question: "Generally, how truthful do you consider the sustainability claims made by brands?"
- Experimental group question: "How credible do you consider it?"

Below is the table of joint relative frequencies:

JOINT FREQUENCIES of GREENWASHING					
	1	2	3	4	5
Control	0.02	0.11	0.29	0.04	0.00
Experimental	0.00	0.02	0.020	0.24	0.09

(Table extracted from R data)

To perform this analysis, the Chi-square method is used once again, producing the following output:

CHI-SQUARE TEST	
X-squared	18.26
p-value	0.001098

(Table extracted from R data)

The two distributions are dependent since the p-value is less than 0.05; the distributions of the two groups differ, and the data are dependent and influenced by nudging. This means that the sample exposed to nudging is more inclined to believe in the brand's declared sustainability and thus has a higher likelihood of falling victim to greenwashing if the brand improperly uses nudging techniques to influence and increase consumer trust in the declared level of sustainability.

3.2.3 Brand credibility and transparent sustainable communication

Finally, the credibility of a brand that uses transparent sustainable communication is investigated.

Nudges are applied in the experimental group to compare the results with those of the control group and understand how consumer perception of the brand changes.

The following question is investigated for both groups: "How credible do you consider a brand when it communicates its commitment to sustainability?" (Likert scale 1–5)

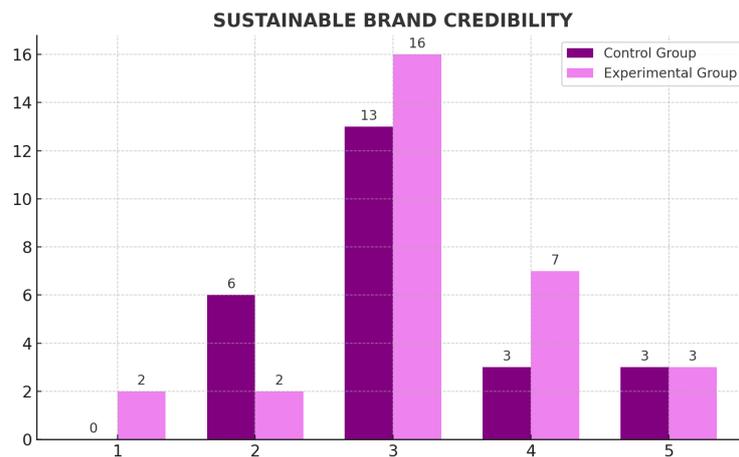
Below is the graph showing the responses from both groups: The two distributions are dependent since the p-value is less than 0.05; the distributions of the two groups differ, and the data are dependent and influenced by nudging. This means that the sample exposed to nudging is more inclined to believe in the brand's declared sustainability and thus has a higher likelihood of falling victim to greenwashing if the brand improperly uses nudging techniques to influence and increase consumer trust in the declared level of sustainability.

Finally, the credibility of a brand that uses transparent sustainable communication is investigated.

Nudges are applied in the experimental group to compare the results with those of the control group and understand how consumer perception of the brand changes.

The following question is investigated for both groups: "How credible do you consider a brand when it communicates its commitment to sustainability?" (Likert scale 1–5)

Below is the graph showing the responses from both groups:



(Graph based on Google Forms surveys)

Table of joint relative frequencies:

JOINT FREQUENCY TABLE					
	1	2	3	4	5
Control group	0	6	13	3	3
Experimental group	2	2	16	7	3

(Table extracted from R data)

The analysis is conducted using the Chi-square test. The following table shows the resulting output:

CHI-SQUARE TEST	
X-squared	5.5013
p-value	0.2396

(Table extracted from R data)

This phenomenon is analyzed using the Chi-square analysis method, which yields a p-value of 0.2396, greater than 0.05. Therefore, the samples are considered independent, and no specific effect caused by nudging can be inferred. However, consumer responses in the experimental group's questionnaire are slightly more inclined toward greater credibility for the brand employing transparent sustainable communication compared to the credibility perceived by consumers in the control group.

Chapter four

Managerial Implication

This research in the fashion industry could help managers to:

- Create ad hoc marketing campaigns, using the optimal nudge for the target audience. In fact, research suggests that effectiveness varies depending on the type of nudge used.
- Increase the credibility of your brand's sustainability statement and align your corporate values with long-term sustainability values. Implicitly, greater credibility suggests a possible reduction in greenwashing. However, if used improperly, these techniques could have the opposite effect, as by influencing the perception of the truthfulness of the level of sustainability communicated, consumers could be misled and fall victim to greenwashing.

Conclusions

To accurately assess and evaluate the effect of nudging in this field, it is necessary to examine an independent and larger sample and compare the results with those obtained here. Additionally, although it was required, the recoding of Likert scale data into dichotomous variables led to information loss. To get results that more accurately represent real-world customer behavior, it would be wise to regularly use Likert scales when designing replies in the future. The results of this study should be viewed as a possible foundation for further research that aims to improve the use of statistical analysis techniques and increase data accuracy. Research on greenwashing should also be expanded to better understand and determine which variables, in addition to those that have been discovered, may have an impact on this phenomenon.

This research offers many opportunities for applications across various sectors, not limited to fashion. To date, few relevant studies analyze nudging techniques applied in tangible and examinable contexts; expanding this research could facilitate the study of new behavioral and consumer choice models.

Moreover, this study focuses on the nudging phenomenon from the consumers' perspective and their perceptions. It would be stimulating to shift the focus toward the corporate context and the upstream application of these neuromarketing techniques.

Appendix

```
# install.packages(c("ggplot2", "dplyr", "readr", "RColorBrewer"))
library(ggplot2)
library(dplyr)
library(readr)

gruppo_sperimentale <- read_csv("Gruppo sperimentale 2.csv")
gruppo_di_controllo <- read_csv("Gruppo di controllo.csv")

# Numero variabili e osservazioni
ncol(gruppo_sperimentale)
ncol(gruppo_di_controllo)
nrow(gruppo_sperimentale)
nrow(gruppo_di_controllo)

ggplot(gruppo_di_controllo, aes(x = "", fill = Genere)) +
  geom_bar(width = 1) +
  coord_polar("y") +
  labs(title = "Distribuzione Genere - Gruppo di Controllo") +
  theme_void() +
  theme(plot.title = element_text(hjust = 0.5, face = "bold"), legend.title = element_blank()) +
  scale_fill_brewer(palette = "Set2")

ggplot(gruppo_sperimentale, aes(x = "", fill = Genere)) +
  geom_bar(width = 1) +
  coord_polar("y") +
  labs(title = "Distribuzione Genere - Gruppo Sperimentale") +
  theme_void() +
  theme(plot.title = element_text(hjust = 0.5, face = "bold"), legend.title = element_blank()) +
  scale_fill_brewer(palette = "Set2")
```

```

# Unione dei dataset
dati_controllo <- gruppo_di_controllo %>%
  mutate(Gruppo = "Controllo") %>%
  select(Gruppo, Pagare = `Saresti disposto/a a pagare di più per un capo sostenibile?`)

dati_sperimentale <- gruppo_sperimentale %>%
  mutate(Gruppo = "Sperimentale") %>%
  select(Gruppo, Pagare = `Saresti disposto/a a pagare di più per un capo sostenibile?`)

dati_uniti <- bind_rows(dati_controllo, dati_sperimentale)

# Grafico
ggplot(dati_uniti, aes(x = Pagare, fill = Pagare)) +
  geom_bar(show.legend = FALSE, width = 0.6) +
  facet_wrap(~Gruppo) +
  labs(title = "Propensione all'acquisto sostenibile", x = "Risposta", y = "Frequenza") +
  theme_minimal(base_size = 13) +
  theme(plot.title = element_text(hjust = 0.5, face = "bold"),
        strip.text = element_text(face = "bold"),
        axis.text.x = element_text(angle = 15, vjust = 1, hjust = 1)) +
  scale_fill_brewer(palette = "Set2")

# Tabella proporzioni
tabella <- table(
  Gruppo = c(rep("Controllo", nrow(gruppo_di_controllo)),
             rep("Sperimentale", nrow(gruppo_sperimentale))),
  Risposta = c(gruppo_di_controllo$`Saresti disposto/a a pagare di più per un capo sostenibile`,
              gruppo_sperimentale$`Saresti disposto/a a pagare di più per un capo sostenibile?`)
)

# Test chi-quadrato
chisq.test(tabella)

```

```

# Varianza delle risposte numeriche

x_num <- as.numeric(as.factor(gruppo_di_controllo$`Saresti disposto/a a pagare di più per un capo
sostenibile?`))

y_num <- as.numeric(as.factor(gruppo_sperimentale$`Saresti disposto/a a pagare di più per un capo
sostenibile?`))

var(x_num)

var(y_num)

cred_sper <- gruppo_sperimentale$` (Da 1=poco a 5=molto) Quanto ritieni credibile un brand
quando comunica impegno per la sostenibilità?`

cred_ctrl <- gruppo_di_controllo$` (Da 1=poco a 5=molto) Quanto ritieni credibile un brand quando
comunica impegno per la sostenibilità?`

df_cred <- data.frame(
  gruppo = c(rep("Sperimentale", length(cred_sper)), rep("Controllo", length(cred_ctrl))),
  risultati = c(cred_sper, cred_ctrl)
)

tabella <- table(df_cred$gruppo, df_cred$risultati)
chisq.test(tabella)

# Ricodifica dei 4 nudge

nud_A <- gruppo_sperimentale$`“La maggior parte degli utenti (92%) ha scelto l’alternativa
sostenibile.”
Questo dato influenzerebbe la tua scelta?`

nud_B <- gruppo_sperimentale$`“Contribuiresti ad un impatto ambientale negativo del 65%
scegliendo la versione non sostenibile.”

nud_C <- ifelse(gruppo_sperimentale$`“La versione sostenibile del capo scelto è preselezionata. Per
ottenere quella normale è richiesto un sovrapprezzo come donazione per compensare
l’inquinamento.”

```

```
Quale versione saresti più propenso ad acquistare sapendo del sovrapprezzo?' == "sostenibile", "sì", "No")
```

```
nud_D <- ifelse(gruppo_sperimentale$`Dopo aver visto come funzionano le ecolabel, saresti disposto a pagare di più per questo capo sostenibile?` %in% c("Sì un pò di più", "Forse un pò"), "sì", "No")
```

```
# Dataset completo
```

```
df_nudge <- data.frame(
  tipo_di_nudge = c(rep("A", length(nud_A)),
                    rep("B", length(nud_B)),
                    rep("C", length(nud_C)),
                    rep("D", length(nud_D))),
  risposta = c(nud_A, nud_B, nud_C, nud_D)
)
```

```
# Tabella e test
```

```
tab_nudge <- table(df_nudge$tipo_di_nudge, df_nudge$risposta)
chisq.test(tab_nudge)
```

```
# Confronti tra proporzioni
```

```
successi <- tab_nudge[, "sì"]
totali <- rowSums(tab_nudge)
prop.test(x = successi, n = totali)
```

```
# Visualizzazione
```

```
ggplot(df_nudge, aes(x = tipo_di_nudge, fill = risposta)) +
  geom_bar(position = "dodge") +
  labs(title = "Conteggio risposte Sì/No per nudge", x = "Tipo di nudge", y = "Conteggio") +
  scale_fill_manual(values = c("No" = "tomato", "sì" = "seagreen"))
```

```

# Ricodifica gruppo controllo
prop_ctrl <- gruppo_di_controllo$`Saresti disposto/a a pagare di più per un capo sostenibile?`
prop_ctrl_ricod <- ifelse(prop_ctrl %in% c("Sì un pò di più"), "Sì",
                          ifelse(prop_ctrl %in% c("Forse un pò"), "No", NA))

successi_ctrl <- sum(prop_ctrl_ricod == "Sì", na.rm = TRUE)
tot_ctrl <- sum(!is.na(prop_ctrl_ricod))

successi_nud_B <- sum(nud_B == "sì", na.rm = TRUE)
tot_nud_B <- sum(!is.na(nud_B))

prop.test(x = c(successi_ctrl, successi_nud_B), n = c(tot_ctrl, tot_nud_B))

green_sper <- gruppo_sperimentale$` (Da 1=poco a 5=molto) Quanto la ritieni credibile?`
green_ctrl <- gruppo_di_controllo$` (Da 1=poco a 5=molto) Generalmente, quanto ritieni veritiera
la dichiarazione di sostenibilità dei brand?`

df_green <- data.frame(
  gruppo = c(rep("Sperimentale", length(green_sper)),
             rep("Controllo", length(green_ctrl))),
  risposta = c(green_sper, green_ctrl)
)

# Tabella di contingenza
tabella_green <- table(df_green$gruppo, df_green$risposta)

# Test Chi-quadrato
chisq.test(tabella_green)

# Frequenze relative arrotondate
round(prop.table(tabella_green, margin = 1), 2)

```

```
# Visualizzazione distribuzione della credibilità per gruppo
ggplot(df_green, aes(x = risposta, fill = gruppo)) +
  geom_bar(position = "dodge") +
  labs(title = "Percezione di credibilità del brand (Greenwashing)",
       x = "Livello di credibilità",
       y = "Conteggio") +
  scale_fill_brewer(palette = "Set2") +
  theme_minimal(base_size = 13) +
  theme(plot.title = element_text(hjust = 0.5, face = "bold"))
```

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