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Digital nudges in fashion e-commerce: A preliminary investigation of their impact on sustainable consumption choices

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ABSTRACT

Problem The fashion industry significantly contributes to environmental damage through its rapid production cycles and disposable culture. This results in extensive resource consumption and substantial waste generation, posing severe sustainability challenges.

Purpose This study aims to investigate the potential of digital nudging strategies to influence consumer behavior toward more sustainable fashion choices. By examining the effectiveness of social proof and default nudges, this study seeks to determine if these strategies may help to promote environmentally responsible consumption in the online fashion industry.

Research

Design An experimental methodology was employed, using a simulated online shopping environment. Participants were randomly assigned to three possible conditions: default nudge, social proof, or no nudge. Their choices of organic cotton T-shirt versus regular cotton T-shirt were analyzed to assess the potential impact of the nudges, also controlling for other variables. In doing so, the study attempted to measure the effectiveness of these strategies in promoting sustainable consumer behavior. It also explored the potential moderating effects of attitudes towards green products, word of mouth, environmental concerns, and community value.

Findings The analysis revealed no significant superior effect of a nudge type in selecting an organic cotton T-shirt. However, participants' attitudes towards green products and their intention to spread positive word-of-mouth about green products seem to significantly impact their likelihood of choosing an organic T-shirt. Additionally, the interaction between nudge condition and evaluation costs significantly influences word-of-mouth intention. These results highlight the context-dependent nature of nudging strategies and emphasize the importance of intrinsic motivations and personal values in driving sustainable consumer behavior.

Keywords: fashion, sustainability, digital nudging, social proof, default nudges, consumer behavior, environmental impact, online retail, behavioral economics

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CHAPTER 1

INTRODUCTION

1.1 Digital Nudges in the Fashion Industry: An Introduction to the Topic

Ever-evolving consumer demands for the latest trends have long driven the fashion industry. This endless pursuit of new styles and rapid production cycles has fostered a disposable culture, notably in the fast fashion segment, which aims to deliver trendy and affordable clothing at unprecedented speeds. However, this convenience and affordability come at a significant environmental cost. The industry's extensive resource consumption, combined with its substantial waste generation, poses serious sustainability challenges. The fashion industry is at a critical crossroads as global consciousness shifts towards environmental preservation.

Fast fashion is characterized by multinational retail chains, and it operates with rapid mass production, low prices, and high sales volumes. Its business model depends on a continuous turnover of new styles by replicating styles from high-end fashion shows and quickly offering them at an affordable price, typically using lower-quality materials (Sajn, 2019). However, this approach is associated with considerable environmental destruction. The fast fashion industry is responsible for an estimated 8-10% of global greenhouse gas emissions and significant industrial wastewater pollution, perpetuating a cycle of extensive resource consumption and waste (United Nations Climate Change, 2018). The industry consumes approximately 79 trillion liters of water annually and produces 92 million tons of waste (Niinimäki et al., 2020). Cotton production, a critical raw material, is particularly resource-intensive, requiring about 10,000 liters of water per kilogram (The World Counts, n.d.) Furthermore, the fashion industry significantly contributes to oceanic microplastic pollution and annually discards 85% of textiles (McFall-Johnsen, 2019). These alarming statistics underscore the urgent need for sustainable fashion production and consumption practices.

A noticeable shift in consumer behavior and industry practices towards sustainability has occurred in response to growing environmental concerns. This shift is not merely a passing trend but represents a fundamental transformation in how fashion is consumed and valued. Modern consumers are increasingly considering the longevity of garments, the ethics of their production, and their environmental impact alongside aesthetic appeal. Sustainability in fashion now demands a holistic approach, integrating ecological stewardship with social responsibility and economic viability.

This research addresses a critical aspect of this transformation: influencing consumer behavior through digital nudging strategies. Nudges, subtle changes in how choices are presented to consumers, leverage the principles of behavioral economics to guide decision-making (Sunstein, 2014). This study

examines whether digital nudges, precisely social proof, and default nudges, can effectively steer consumers toward making more sustainable fashion choices. The context of online fashion retail, with its rapid digitalization of consumer interactions, presents a unique opportunity to influence purchasing decisions at scale.

Social proof nudges leverage the human tendency to conform to the behavior of others, suggesting that if a significant number of people are making sustainable choices, new consumers might follow suit (Abdul Talib & Mat Saat, 2017). On the other hand, default nudges pre-select the sustainable option as the default choice, making it easier for consumers to opt for environmentally friendly products unless they actively choose otherwise (Michaelsen & Sunstein, 2023). Both strategies have shown promise in various domains but require thorough testing in the context of online fashion retail to determine their effectiveness in promoting sustainable consumer behavior. This research investigates the potential of digital nudging strategies to encourage sustainable consumer behavior in fashion, aiming to foster a more environmentally responsible consumption model.

Current literature has extensively documented the effectiveness of digital nudging strategies in domains such as health, finance, and general environmental behaviors (Reynolds et al., 2019; Benartzi et al., 2017; Weinmann et al., 2016). Studies by Roozen et al. (2021) have highlighted the potential of verbal and visual nudges to promote eco-friendly fashion choices. Gossen et al. (2022) emphasized the role of sustainability labels in influencing consumer decisions. However, there is a gap in understanding whether these strategies can effectively influence sustainable consumer behavior in the fashion industry. In a preliminary attempt to address this gap, this research investigates whether digital nudges, precisely social proof and default nudges, can effectively steer consumers towards making more sustainable fashion choices in an online retail environment, and whether one nudge is more effective than the other.

1.2 Objective of the Thesis

The primary objective of this research is to identify the most effective digital nudging strategy for encouraging sustainable consumer behavior in the online fashion industry. This involves an experimental approach to evaluate how different nudges impact consumer choices toward environmentally friendly products. The central research question this study aims to answer is:

What are the most effective digital nudging strategies for fostering environmentally responsible consumption patterns within the online fashion industry?

A quantitative and experimental methodology will be employed to investigate the research question, involving the manipulation of digital nudge elements within a simulated online shopping environment through a Qualtrics survey. Participants will be randomly exposed to one nudge condition, default nudge, social proof, or no nudge while their choices and purchasing behaviors are tracked and analyzed. The study

will measure the impact of these nudges on consumer choices and evaluate their effectiveness in promoting sustainable behavior. The results are expected to offer valuable insights for academics and practitioners, highlighting the potential of digital nudges to drive behavioral change towards sustainability in the fashion industry.

This research contributes to the fields of behavioral economics and consumer behavior, particularly within the context of environmental sustainability. By empirically examining the effects of default and social proof nudges on sustainable fashion choices, the study provides nuanced insights into the context-dependent nature of digital nudging strategies. It challenges the assumption of nudging's effectiveness, highlighting the importance of intrinsic motivations and personal values in driving sustainable consumption. Additionally, the study underscores the need for tailored and simplified messaging to enhance the impact of nudges, offering practical guidance for future research and managerial practices aimed at promoting environmentally responsible consumer behavior in the online fashion industry.

1.3 Structure of the Thesis

The next Chapter (Chapter 2) presents the relevant literature on persuasion theory, nudge theory, digital nudging, sustainable consumer behavior, and the fashion industry, highlighting seminal works and research gaps. In addition, it presents the hypotheses and conceptual framework of the study. Then, in Chapter 3, the research methodology is presented, covering objectives, survey design, data collection, and analysis methods. Chapter 4 presents the results of various analyses on the impact of different nudge conditions on T-shirt choices and willingness to pay. Finally, in Chapter 5, the findings are discussed, and their implications are examined. The Chapter also addresses the study's limitations and offers recommendations for future research.

CHAPTER 2
THEORETICAL BACKGROUND

2.1 Introduction

The following Chapter will delve into an extensive examination of the literature pertinent to nudging toward sustainability, highlighting seminal works, and identifying gaps within the existing body of research.

2.2 Persuasion Theory

"*Persuasion involves one or more persons who are engaged in creating, reinforcing, modifying, or extinguishing beliefs, attitudes, intentions, motivations, and behaviors within the constraints of a given communication context*" (Gass & Seiter, 2018, p. 88).

Nobel Prize recipient Kahneman (2011) explains that daily decisions such as choosing between stairs or an elevator are influenced by what he describes as System 1, which is the fast, intuitive, and automatic mode of thinking. This system operates effortlessly and quickly, with little or no sense of voluntary control, and it helps us make quick judgments and decisions based on our experiences and instincts (Kahneman, 2011). On the other hand, critical life choices and intricate computations are managed by System 2, which is the slow, deliberative, and analytical mode of thinking. This system requires conscious effort and attention, which involves processing more complex and abstract information, including critical reasoning and long-term planning (Kahneman, 2011). System 1 actively safeguards System 2 by transforming familiar tasks into automatic routines, thus averting cognitive overload. Our behaviors result from decisions made through reflective and automatic thinking processes (Kahneman, 2011).

People frequently have different ideas about what they wish to achieve and what they end up doing. In other words, there is a gap between their intentions and actions (Gollwitzer, 2012). This phenomenon, prevalent across numerous fields, defined as the intention-action gap, illustrates that mere awareness does not invariably lead to action. Soman (2015) suggests that addressing this issue effectively requires a shift from merely enhancing awareness to actively enabling individuals to translate their intentions into actions, emphasizing the importance of practical facilitation over informational provision in overcoming this barrier.

One leading theory of attitude change is the Elaboration Likelihood Model (ELM) developed by Petty and Cacioppo (1986). It is built on a framework that evaluates how likely it is for consumers to think deeply about a message. The authors distinguish between two main pathways of persuasion: central and peripheral. The central path involves careful evaluation of the arguments concerning the topic. At the same time, the peripheral path relies on emotional responses or quick judgments based on external cues in the persuasive situation (Petty & Cacioppo, 1986). If the context of persuasion encourages thorough analysis, the central path is activated. In contrast, persuasion follows the peripheral path if the context discourages deep analysis. Changes in attitude that occur through the central path tend to be more enduring, resistant to counterarguments, and better predictors of future behavior than those that come about through the peripheral path (Petty & Cacioppo, 1986).

Another prominent author in the field of persuasion theory, Cialdini (2014), identified a variety of heuristics. Reciprocity is the principle that compels individuals to return favors, creating a sense of obligation (Cialdini, 2014). Adherence to consistency refers to the tendency of people to align their actions and beliefs, ensuring that their behavior is consistent with previous statements or actions (Cialdini, 2014). The influence of social proof is the phenomenon where individuals look to the behavior and choices of others to guide their own decisions, especially in uncertain situations (Cialdini, 2014). The power of authority highlights the inclination of individuals to follow suggestions, commands, or information presented by legitimate experts (Cialdini, 2014). The appeal of likability indicates that people are more likely to be

persuaded by someone they find appealing or likable due to factors such as similarity or physical attractiveness (Cialdini, 2014). Lastly, the impact of scarcity is the perception that something is more valuable when it is rare or in limited supply, leading to increased desire (Cialdini, 2014). Utilizing these heuristics enables individuals to shape the attitudes, convictions, and actions of others, frequently bypassing their conscious recognition.

Kotler and Lee's (2008) emphasis on incentivizing positive behavior rather than merely discouraging negative behavior aligns with the understanding that persuasion is most effective when it fosters positive associations and motivations. This approach is particularly relevant in social marketing, where the objective is to change individual behaviors and promote broader social welfare. Thus, integrating principles from persuasion theory and heuristics into social marketing strategies underscores the importance of a nuanced understanding of human psychology in effecting social change. Through this lens, social marketing represents the practical application of theoretical insights from persuasion psychology, aiming to translate the understanding of human decision-making processes into campaigns that encourage beneficial social behaviors.

2.3 Nudge Theory

Thaler and Sunstein (2009) first introduced the concept of *nudging*. A nudge constitutes any element within the choice architecture that predictably influences people's behavior without restricting their options or substantially modifying their economic incentives (Thaler & Sunstein, 2009). Nudging leverages the understanding that subtle cues often influence human choices and that they are not purely rational. An element must be easy and cheap to avoid in order to be considered a nudge, ensuring it subtly guides decisions without imposing forceful changes (Thaler & Sunstein, 2009). This approach acknowledges the complexity of human behavior, aiming to gently steer people towards beneficial choices by using innate cognitive biases and tendencies. Nudging stands out from other policies that impose strict rules or financial motivations to shape behavior, as it subtly influences decisions while maintaining individual autonomy (Sunstein, 2014). Nudges can be seen as "soft paternalism", guiding individuals towards certain choices while ensuring they retain complete freedom to choose otherwise, like a GPS suggests routes, always allowing for alternative options (Sunstein, 2014). They operate within existing "choice architectures", like weather influencing decisions, and new nudges replace old ones without introducing new influences (Sunstein, 2014).

A renowned instance of nudge and choice architecture is seen in implementing default options in organ donation systems. Research shows that countries employing an "opt-out" approach, where individuals are automatically considered organ donors unless they explicitly choose not to be, consistently achieve higher donation rates compared to those with an "opt-in" framework where consent must be actively given (Johnson & Goldstein, 2003). The opt-in countries' effective consent rates ranged between 4.25%-27.5%,

while the opt-out countries ranged from 85.9%-99.98% (Johnson & Goldstein, 2003). This is attributed to the "opt-out" system's default setting that assumes consent, thereby simplifying the decision-making process for organ donation and significantly boosting participation rates (Johnson & Goldstein, 2003).

On the other side, particular nudges prove to be ineffective or even counterproductive. In some cases, a seemingly accurate and theoretically sound understanding of human behavior proves incorrect in specific contexts. When these nudges are tested, they often show minimal or no influence (Sunstein, 2017). Five factors are essential in why nudges may be ineffective (Sunstein, 2017). Firstly, if a nudge is based on a plausible but inaccurate understanding of behavior, it might have no impact, highlighting the crucial importance of testing behavioral hypotheses. Factors such as fear, skepticism, inertia, or indifference to social norms can negate the expected effects of nudges, necessitating alternative or more refined approaches (Sunstein, 2017). Secondly, confusing or complex information may not impact effectively, leading to skepticism about the overall effectiveness of disclosure strategies. Proper design is crucial, as disclosure or educational nudges often impact less than theoretically expected (Sunstein, 2017). Thirdly, people may resist nudges if they feel controlled, similar to their reaction to mandates and bans. While default rules generally preserve autonomy and are less likely to provoke reactance, they can still be ineffective if individuals feel resentful. Efforts to invoke social norms might fail if people disregard or want to defy these norms (Sunstein, 2017). Furthermore, nudges often have short-term effects, as reminders and health information can lose their impact over time. Default rules usually have a more lasting effect but can also diminish. Research is ongoing to determine when nudges can create long-term changes. Lastly, some nudges might prompt desired behaviors but lead to compensatory actions that nullify their overall effect. For instance, if a cafeteria encourages healthy eating but students compensate by eating unhealthy snacks later, the nudge won't improve public health. This "rebound effect" can also be seen in fuel-efficient cars, leading to more driving. Similarly, a nudge encouraging exercise might increase food intake (Sunstein, 2017). Choice architecture, including default rules, may be ineffective if people counteract it with compensating behavior. The focus should be on welfare, not just effectiveness. While nudges preserve freedom of choice, which is often beneficial, more robust measures might be needed when people make clear errors or significant third-party effects occur (Sunstein, 2017).

Schubert (2017) examined the role of green nudges, i.e., that aim to promote environmentally sustainable behavior within environmental policies. The research identified three major ethical concerns: (1) the limited behavioral effectiveness of green nudges, which can be highly context-dependent and may not lead to lasting behavior change; (2) the importance of using nudges as complements to traditional incentive-based policies rather than replacements, acknowledging the need for broader institutional changes; and (3) the necessity of ensuring transparency in the implementation of nudges to maintain ethical legitimacy (Schubert, 2017). The author advocates for "token transparency", where the manipulative aspects of nudges

should be detectable to an observant individual, ensuring that nudges are both ethically sound and capable of instigating sustainable behavioral changes (Schubert, 2017).

2.4 Digital Nudging

Digital nudging involves using user-interface design elements to influence individuals' decisions in online environments (Weinmann et al., 2016). This concept, rooted in behavioral economics, leverages the structuring and presentation of choices to shape decision outcomes, demonstrating that the architecture of choices can predictably modify behavior (Weinmann et al., 2016).

A study by Berger et al. (2022) investigated the role of digital nudging in promoting environmentally sustainable behaviors within the context of increasing digitalization. They provided a practical framework for designing digital nudges that can effectively encourage sustainable behavior without compromising individuals' freedom of choice (Berger et al., 2022). Results from their research identified default rules as the most effective digital nudging system for encouraging environmentally sustainable behavior across various contexts. This approach to digital nudging was appropriate and easy to apply in digital environments, given that it was solely studied within digital behavioral environments.

Jesse et al. (2021) conducted two consecutive studies to explore how digital nudges, including highlighting, defaults, social information, and warnings, influence online decision-making. They discovered that a combined approach, integrating both default settings and social information, notably enhanced the probability of users choosing the nudged option. Their research supports the effectiveness of nudges in the digital environment, underscoring the importance of the specific nature of the nudge employed (Jesse et al., 2021).

2.5 Digital Nudge Categories

The need for a unified framework for classifying various digital nudge strategies has been a notable gap in the research field. To address this deficiency, Caraban et al. (2019) undertook an extensive evaluation of 23 nudge strategies, organizing them into distinct categories: (1) facilitate, (2) confront, (3) deceive, (4) social influence, (5) fear, and (6) reinforce. Their work represents a significant stride toward establishing a standardized methodology for studying and applying digital nudges.

Table 1: Digital Nudge Categories

Facilitate nudges	Designed to simplify decision-making by reducing the physical or mental effort required from individuals.	-Default options -Opt-out policies -Positioning -Hiding -Suggesting alternatives

Confront nudges	Designed to interrupt automatic, potentially undesirable behaviors by introducing a moment of reflection.	-Throttling mindless activity -Reminding of the consequences -Creating friction -Providing multiple viewpoints
Deceive nudges	Use deception mechanisms to affect how alternatives are perceived, or how activities are experienced, with the goal of promoting outcomes.	-Adding inferior alternatives -Biasing the memory of past experiences -Placebos -Deceptive visualizations
Social influence nudges	Exploit people's inherent desire to conform to societal expectations and norms.	-Invoking feelings of reciprocity -Leveraging public commitment -Raising the visibility of users' actions -Enabling social comparisons
Fear nudges	Designed to motivate behavior by invoking feelings of fear, loss, and uncertainty.	-Make resources scarce -Reducing the distance
Reinforce nudges	Attempt to bolster specific behaviors by keeping them at the forefront of an individual's mind	-Just-in-time prompts -Ambient feedback -Instigating empathy -Subliminal priming

Facilitate nudges simplify decision-making by reducing individuals' physical or mental effort (Caraban et al., 2019). They guide users towards actions that align with their best interests and goals by leveraging the status-quo bias, our tendency to stick with current choices due to the effort, uncertainty, or cost involved in seeking alternatives. Faced with new options, decision-makers often stick with the status-quo alternative (Samuelson & Zeckhauser, 1988). Default options are among the most prevalent nudging strategies and operate by setting a particular action as the standard default option, which will automatically be chosen unless the decision-maker intervenes to select an alternative (Michaelsen & Sunstein, 2023). Automatic enrollment in retirement plans can lead to a significant boost in individuals' savings (Sunstein, 2014). Like defaults, opt-out policies assume user consent for specific options, leading to automatic enrollment unless the user actively opts out (Caraban et al., 2019). In e-commerce, consumers frequently choose between standard and eco-friendly shipping options. By setting the green option as the default, sellers can subtly encourage this choice, leveraging the default effect where consumers will likely stick with the pre-selected options unless they opt for standard shipping (Michaelsen & Sunstein, 2023). This approach

fosters sustainable practices and nudges consumers towards environmentally conscious decisions in their purchasing process. By adjusting how options are visually presented, position nudging can also leverage the tendency to prefer the current state or status-quo bias (Caraban et al., 2019). Turland et al. (2015) found that combined color codes and positioning led to an increase in the rate of secure network selection while nudging by positioning by itself was not as effective.

Confront nudges are strategies designed to interrupt automatic, potentially undesirable behaviors by introducing a moment of reflection (Caraban et al., 2019). They exploit the regret aversion bias by making individuals more cautious in decision-making when they sense a risk and encouraging more thoughtful choices (Caraban et al., 2019). Most research on regret aversion has focused on its impact on decision-making, particularly on individuals' choices. A key concept guiding this research is the comparative evaluation of options by decision-makers, contrasting with the individual assessment of each choice as posited by traditional expected utility theory (Reb, 2008). Wang et al. (2014) used a throttling mindless activity nudge by developing a Chrome extension that delays a Facebook post's publication by 10 seconds, prompting users to reconsider what they're about to share (Caraban et al., 2019). Despite the ability to bypass this delay, the research indicated that many users chose to revise or even cancel their posts within this brief time (Wang et al., 2014).

Deceive nudges use deception mechanisms to affect how alternatives are perceived or activities are experienced to promote outcomes (Caraban et al., 2020). The decoy effect occurs when the attractiveness of an option is increased by placing it next to a less appealing choice – the decoy (Schneider et al., 2018). Lee M. et al. (2011) utilized this effect to encourage healthier choices on a snack-ordering website. By placing an image of a big and shiny Fuji apple alongside a smaller and withered apple, they heightened the desirability of the Fuji apple. The presence of the less attractive apple emphasized the attribute of "shininess", making the shiny apple the preferred choice among all available options (Lee M. et al., 2011). In a crowdfunding study by Tietz et al. (2016), the researchers demonstrated the impact of decoy options on reward selection. Initially, most backers opted for a $10 pledge for an e-book over a $20 pledge that included both an e-book and a hardcover. Introducing a decoy option, a $20 pledge for just the hardcover, shifted the majority preference to the $20 pledge for both books, illustrating how a decoy can steer choices from a lower to a higher pledge level (Tietz et al., 2016). The salience bias describes our tendency to pay more attention to items or information that stand out and overlook those that do not. This bias can be exploited through misleading visual presentations to manipulate perceptions and judgments. For example, Adams et al. (2015) utilized the Delboeuf illusion in creating the mindless plate, designed to affect how much food people perceive on their plate. By changing the color of the plate's inner circle with a top-down projection, the food portion seems more significant compared to the remaining space on the plate, influencing individuals' perception of quantity (Adams et al., 2015).

Social influence nudges exploit people's inherent desire to conform to societal expectations and norms (Caraban et al., 2019). Invoking feelings of reciprocity, like increased tips for servers who offer mints with the bill, is a form of social influence (Cialdini, 2014). This concept extends to digital platforms, where users might reciprocate actions like sharing contact details or commenting on posts, fostering community interaction (Gamberini et al., 2007). Social proof, also known as informational social influence, is a psychological concept where individuals perceive the behaviors of others as appropriate actions to emulate (Abdul Talib & Mat Saat, 2017). In scenarios where decision-makers are uncertain about the merits of a particular decision, the conduct of those around them serves as a critical reference point (Abdul Talib & Mat Saat, 2017). Social proof states that we often look to the opinions and behaviors of others to guide our own decisions on what is appropriate or correct (Cialdini, 2014). According to Schneider et al. (2018), social proof may include two kinds of norms: popularity norms, which indicate the level of acceptance or approval within a group, and moral norms, which are concerned with principles of proper conduct and ethical standards. Social proof is employed as a persuasive tool in various digital environments, including e-commerce sites, which may highlight product popularity or positive reviews to influence purchases, and social media platforms, where engagement metrics such as likes and shares serve as indicators of content approval.

Fear nudges are designed to motivate behavior by invoking feelings of fear, loss, and uncertainty (Caraban et al., 2020). These nudges make use of psychological biases to encourage action. One key tactic is creating a sense of scarcity, making an option appear less available in quantity, rarity, or time. This taps into the scarcity bias, where people value things more that they perceive as complex to get (Cialdini, 2009). Jang et al. (2015) found that time-limited (LTS) and quantity-limited (LQS) messages affect brand evaluations differently, impacting purchase intention and word-of-mouth recommendations variably across luxury edition products. LQS messages boost consumer response more effectively than LTS messages by inducing a sense of competition (Jang et al., 2015). Another approach is to reduce psychological distance by making outcomes seem more immediate or tangible (Caraban et al., 2020). This can be effective for actions with benefits or consequences that are typically distant in time or hypothetical, like saving for retirement or purchasing a smoke alarm. For instance, Gunaratne & Nov (2015) utilized the endowment effect, our inclination to place higher value on our possessions, to create a platform that aids individuals in choosing a retirement savings strategy (Kahneman et al., 1991). This system features a set savings target and presents users with a forecast for various retirement plans. It highlights the gap between the set goal and anticipated savings in red, making the goal feel like a personal asset and encouraging users to modify their savings choices to maintain the value of this perceived asset (Gunaratne & Nov, 2015).

Reinforce nudges attempt to bolster specific behaviors by keeping them at the forefront of an individual's mind (Caraban et al., 2020). These nudges utilize just-in-time prompts that provide timely reminders or feedback to encourage specific behaviors, such as physical movement after periods of inactivity

or more fuel-efficient driving (Hirano et al., 2013; Lee, S.-S. et al., 2011). Subliminal priming subtly influences behavior by exposing individuals to related cues without conscious awareness, leveraging the mere exposure effect to foster a predisposition toward the desired behavior (Caraban et al., 2020). Pratkanis and Aronson (1992) reviewed over 150 mass media articles and 200 scholarly studies on subliminal processes. Their analysis revealed a lack of definitive proof that subliminal messages impact people's attitudes or behaviors. However, substantial literature suggests that subliminal priming can have a significant effect (Murphy & Zajonc, 1993; Krosnick et al., 1992). Strahan et al. (2002) found that subliminal priming can increase the effectiveness of persuasion, but only under specific conditions. For instance, subliminally priming sadness improved the impact of an ad for mood-lifting music for those expecting social interaction, suggesting a motivation to improve their mood. The research implied that for subliminal priming to influence behavior, it must be relevant and applicable to the individual's current motivations (Strahan et al., 2002). Overall, reinforcement nudges aim to subtly influence behavior by integrating reminders, feedback, and emotional cues into everyday contexts, making the desired action more appealing or top-of-mind for individuals (Caraban et al., 2020).

2.6 Sustainable consumer behavior and the fashion industry

As the global consciousness shifts towards the pressing need for environmental preservation, the imperative for sustainability has emerged as a paramount concern across industries. The fashion industry is one of the largest polluters globally, responsible for 10% of all humanity's carbon emissions. It ranks as the second-largest consumer of the world's water supply, contributes significantly to oceanic microplastic pollution, and results in 85% of textiles being discarded annually (McFall-Johnsen, 2019). In fashion consumption, this trend toward sustainability is not just a fleeting style statement but a fundamental shift in consumer behavior. Once known for its rapid cycles and disposable trends, fashion is now being reimagined through the lens of eco-consciousness, where the longevity of a garment and the ethics of its production are as significant as its aesthetic appeal.

A study by Yang et al. (2024) delves into how environmental values, beliefs, and norms shape second-hand fashion behaviors. Their findings revealed that altruistic and biosphere values positively influence ecological worldviews, bolstering personal norms and an awareness of consequences and responsibility (Yang et al., 2024). These norms, in turn, enhance the propensity for second-hand fashion, ultimately affecting actual behavior. Highlighting the pivotal role of social norms, the research underscores their significant impact on sustainable fashion choices, particularly in second-hand clothing, offering insights into sustainable practices within developing economies (Yang et al., 2024).

Maitree et al. (2024) focused on understanding the values that eco-conscious consumers, i.e., highly educated consumers with middle- and upper-class incomes, place on vegan leather bags made from mango waste. The study identified five principal values influencing green consumers' decisions: functional, social,

emotional, conditional, and epistemic. They found that the durability and multifunctionality of vegan leather bags are highly valued, with social influences like media and personal relationships playing a significant role in product choices (Maitree et al., 2024).

Sipilä et al. (2024) investigated the nature of sustainable consumption discussions on social media. Collecting a dataset of tweets (now X-posts) with keywords like #sustainableconsumption, etc., they found that the conversation carries a generally positive tone and centers on specific consumption areas like energy, fashion, plastics, and food. Topics often address environmental and economic sustainability issues, including circular economies and resource utilization. The discourse primarily suggests minor adjustments to existing consumption habits and practices (Sipilä et al., 2024).

Lee et al. (2020) found that a part of the brain, previously linked by neuroscience research to heightened attention and emotional awareness, exhibited changes in brain activation in response to a green logo. The study also revealed that exposure to environmental priming messages before shopping enhanced consumer preference for sustainable fashion products (Lee et al., 2020). Cialdini (2016) proposed that in specific persuasive communication forms, particularly those aimed at promoting health or environmental awareness that require challenging behavioral shifts, it's effective to construct a pre-context that generates suspense. This approach leads to a pivotal moment where the audience is confronted with an unsettling reality, enhancing the impact of the message. In the context of sustainable fashion, this means highlighting the fashion industry's role in environmental damage and the urgent need for change (Lee et al., 2020). Effective marketing for sustainable fashion should focus on the critical reasons for change rather than sustainability itself. By making the public aware of the environmental risks and the importance of action and linking these concerns directly to consumer choices, sustainability campaigns can drive real change and lessen the fashion industry's environmental impact (Lee et al., 2020).

A study by Roozen et al. (2021) explored the impact of verbal and visual nudges on a retail website in steering consumers towards eco-friendly fashion choices. The study found that verbal nudges had a notable effect on selecting sustainable clothing options, with visual nudges also making a difference, although to a lesser degree. These nudges not only influenced the choice of sustainable apparel but also increased the consumers' willingness to pay for such options, indicating the effectiveness of nudging in promoting sustainable fashion. Additionally, the research highlighted that individuals who were more environmentally conscious and less focused on fashion trends were significantly more inclined to opt for sustainable clothing options.

Gossen et al. (2022) emphasized the importance of sustainability labels in promoting eco-friendly fashion choices, especially within online shopping platforms. Their study examined two leading German online retailers, Zalando and Otto, and discovered that while many products were labeled as sustainable, only 14% had labels verified by a third party, indicating credibility (Gossen et al., 2022). The widespread use

of private labels suggests that the sustainability information available is often incomplete, focusing on isolated sustainability issues without a comprehensive comparison (Gossen et al., 2022). This diversity in labeling can confuse consumers and foster doubt about the authenticity of the sustainability claims (Gossen et al., 2022). Moon et al. (2016) found that confusion stemming from the similarity, overload, and ambiguity of eco-labels can evoke negative emotions in consumers. These negative emotions, in turn, act as a mediator, influencing the extent of negative word-of-mouth, distrust, and dissatisfaction among consumers (Moon et al., 2016).

Research by Lades (2014) delves into the dynamics of impulsive consumption, shedding light on the intricate roles played by self-control and self-image motivations in shaping immediate purchasing decisions. The author introduces the concept of the "wanting"-"liking" dissociation to explain impulsive buying behaviors, particularly relevant in the fashion industry, where purchases are often driven by identity-related desires (Lades, 2014). By understanding these underlying mechanisms, the paper proposes ethical strategies for managing impulsive consumption, suggesting that enhancing self-awareness and aligning impulsive purchases with sustainable practices could lead to more ethical consumption patterns in fashion (Lades, 2014). This approach aligns with the broader sustainability goals in fashion, advocating for interventions that curb impulsive buying and guide it towards more sustainable choices, thus contributing valuable insights to the discourse of sustainable fashion consumption (Lades, 2014).

Table 2: Relevant studies related to nudging consumers towards sustainable fashion choices

Reference variable(s)	**Research method**	**Independent variable(s)**	**Dependent variable(s)**	**Main empirical findings**
Yang et al. (2024)	Cross-sectional survey	Environmental values and beliefs	Intentions towards second-hand fashion behaviors	Altruistic values and ecological worldviews drive personal norms favoring second-hand fashion, emphasizing the role of social norms in sustainable fashion practices.
Maitree et al. (2024)	Qualitative	Consumption values	Purchase intentions	Green customers value mango waste-based vegan leather bags for their functionality, social, emotional, conditional, and epistemic aspects, with factors like durability, design, and the influence of social media, family, and peers significantly affecting their sustainable product choices.
Sipilä et al. (2024)	Exploratory computational analysis	Keywords and hashtags	Topics and sentiment of the discussion	Discussions on sustainable consumption on social media show a slightly positive sentiment and focus on contexts like energy, fashion, and food, with debates often suggesting minor adjustments to current consumption patterns.

Lee et al. (2020)	Experimental	Message type and green logo presence	Neural activation patterns and consumer preferences	Environmental priming can enhance consumer preference for fashion products with green logos, with fMRI showing significant brain activations in areas associated with relational reasoning, suggesting the effectiveness of nudging techniques in promoting sustainable fashion marketing.
Roozen et al. (2021)	Experimental	Type of nudge	Fashion choice, willingness to pay and purchase intention	Nudging, particularly through verbal cues, significantly influences consumers' preferences towards sustainable fashion choices and their willingness to pay more for sustainable apparel, especially among those already inclined towards ecological consciousness and less focused on fashion trends.
Gossen et al. (2022)	Descriptive	Type of sustainability labels	Presence and distribution of sustainability tags across the fashion products offered by the two retailers	Many fashion products on leading German online retailers are tagged as sustainable, but only a few have credible third-party verified sustainability labels, highlighting challenges in assessing product sustainability and the risk of greenwashing, with recommendations for clearer, standardized labeling to support informed consumer choices.
Moon et al. (2016)	Quasi-experimental	Consumer confusion constructs	Negative WOM, distrust and dissatisfaction	Confusion stemming from similarity, overload, and ambiguity of eco-labels can evoke negative emotions in consumers.
Lades (2014)	Theoretical analysis	Self-control and self-image motives	Impulsive and ethical consumption	Self-control and self-image motivations influence impulsive purchases in fashion, with the "wanting"-"liking" dissociation explaining identity-driven buying behaviors. Strategies enhancing self-awareness and promoting sustainable choices could foster ethical consumption patterns.

2.7 Contribution

Most research on digital nudging concentrates on strategies designed to promote socially beneficial behaviors. However, research on the efficacy of specific digital nudges in guiding online consumers towards sustainable fashion choices remains limited. Further investigation is required to understand which digital nudging strategies most effectively promote sustainable consumption. Compared to existing literature, this

study is trying to test the efficacy of two specific digital nudge strategies, namely default nudge and social proof, to determine how and if they guide consumers toward more sustainable fashion options.

2.8 Hypothesis Development

Based on the theoretical underpinnings discussed in the theoretical background, the following hypotheses are proposed:

Default nudges simplify decision-making by setting the sustainable option as the standard choice, thus potentially increasing the adoption of such options due to ease of selection (Michaelsen & Sunstein, 2023). H1: *Participants exposed to default nudges will demonstrate a higher likelihood of choosing the sustainable organic cotton T-shirt over the regular cotton T-shirt than the control group participants with no nudge.*

Social proof nudges leverage the influence of peer behaviors and norms, suggesting that consumers are more likely to make sustainable choices if they believe they are also made by others (Cialdini, 2014). H2: *Participants exposed to social proof nudges will demonstrate a higher likelihood of choosing the sustainable organic cotton T-shirt over the regular cotton T-shirt than the control group participants with no nudge.*

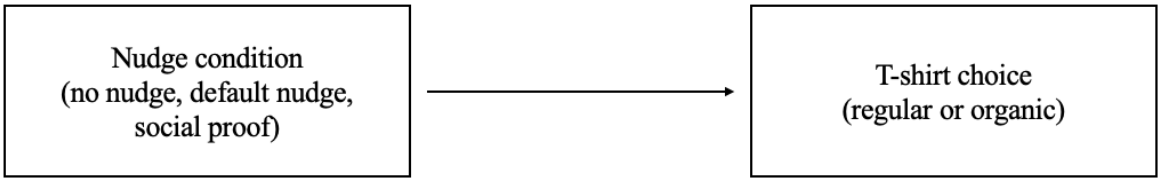
Berger et al. (2022) found default rules as the most effective digital nudging strategy for encouraging environmentally sustainable behavior across various contexts, when also investigating social norms. H3: *Participants exposed to default nudges will demonstrate a higher likelihood of choosing the sustainable organic cotton T-shirt over the regular cotton T-shirt than the participants exposed to social proof nudges.*

2.9 Conceptual Framework

In this conceptual model, we explore the effectiveness of an independent variable, the nudge condition (default nudge, social proof nudge, and no nudge), in influencing the dependent variable, T-shirt choice (regular or organic cotton). The aim is to determine which type of nudge is more effective at positively impacting consumer choices towards the sustainable organic cotton T-shirt.

The study will also examine potential moderating effects, including evaluation cost, attitudes towards and buying green products, positive word-of-mouth intention for green products, environmental concern, and community value. These potential moderating factors will help us understand if different consumer perspectives and values might strengthen or weaken the effectiveness of the nudges in promoting sustainable fashion choices.

Figure 1: Conceptual Framework



CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The following Chapter provides a comprehensive overview of the research methodology employed in this study. It describes the research objectives and the data collection process, including the design and development of the survey instrument. Additionally, it discusses the sampling of participants, the preparation of data for the subsequent analysis, and the application of descriptive statistics and indexing methods.

3.2 Objective and Data Collection

Data collection is a critical aspect of any research project, as highlighted by Saunders et al. (2015). The purpose of this study is to explore the effectiveness of various digital nudging strategies in encouraging sustainable consumer behavior within the online fashion industry. Specifically, it aims to contribute to the existing body of knowledge on nudges by identifying what digital nudge is the most effective in steering online fashion consumers toward sustainable choices. To this purpose, the research will delve into two distinct types of digital nudges, namely social proof nudges (i.e., looking to the opinions and behaviors of others to guide our own decisions on what is appropriate or correct - Cialdini, 2014) and default nudges (i.e., automatically selecting a preferred option unless individuals actively choose an alternative - Michaelsen & Sunstein, 2023).

Given the quantitative nature of the primary data, the data collection process has been conducted through an online questionnaire. This tool encourages participants to deliver complete, honest, and accurate responses to minimize the risk of response biases, as noted by Malhotra (2007). Indeed, the questionnaire format allows for the integration of standard questions with experimental elements, a combination that has been proven effective for gathering data in a field where the researcher already possesses some prior knowledge (Malhotra, 2007). The design of the questionnaire and the integrated experiment were meticulously crafted with the research question and associated hypotheses in mind. The aim was to develop a clear and comprehensible questionnaire that effectively measured the impact of digital nudges on making sustainable choices in online fashion shopping (Malhotra et al., 2012).

3.3 Survey Design

The survey was designed to assess the effectiveness of various nudging strategies in influencing consumer behavior towards environmentally sustainable choices (Appendix A & B). The survey was conducted in a sort of simulated online shopping environment using Qualtrics (https://www.qualtrics.com), a robust online platform known for its comprehensive and user-friendly questionnaire design capabilities. Specifically, a graphical environment featuring a fictive online store was created to eliminate biases introduced by brand loyalty or pre-existing product associations. By providing a neutral backdrop, the survey aimed to ensure that the data collected reflected the effectiveness of the nudging strategies under investigation.

The survey was structured into three main parts, each designed to capture a different aspect of participant behavior and attitudes. The first part of the survey randomly assigned respondents to one of three groups, each subjected to different nudging conditions. In the control group, participants were presented with a straightforward choice between an organic cotton T-shirt and a regular cotton T-shirt, without any nudging. Instead, the social proof nudge group received a message before making their choice, stating that “87% of consumers prefer our organic cotton T-shirts for its environmental benefits”, leveraging the influence of majority preference. Finally, the third group, the default effect nudge group, encountered the organic cotton T-shirt pre-selected in their shopping cart, with the option to either confirm this choice or switch to the regular cotton T-shirt, utilizing the tendency of individuals to stick with pre-set options (the images used as graphical stimuli are displayed in Appendix A).

In the second part of the survey, the questionnaire delved deeper into understanding the attitudes and psychological profiles of the respondents, employing pre-validated scales from existing literature to ensure reliability and accuracy in measurement. These questions were administered using 7-point Likert scales. The questions included evaluation costs and decision-making efforts, purchase intentions, environmental concerns and pro-environmental consumer behavior, attitudes towards green products and buying them, positive word-of-mouth for green products, and community endorsement. This structured approach to measuring attitudinal responses was designed to enrich the understanding of consumer behavior in response to nudging and ensure that the findings were grounded in robust, empirically validated frameworks. This rigorous methodology was instrumental in dissecting the nuances of how subtle nudges can influence environmental decision-making in an online shopping context.

The final part of the survey collected relevant demographic data from the respondents. This information was crucial for classifying respondents and understanding how different demographic groups respond to the nudging strategies implemented. The demographic questions included age, gender, nationality, education level, and annual income. This structured approach facilitated a comprehensive analysis of the

nudging effects on consumer behavior and contributed valuable insights to the field of behavioral economics in the context of environmental sustainability.

3.3.1 Scales and Measurement

Measures drawn from existing research were used to design statements for measuring the investigated variables in the second part of the survey. All the multi-item scales were measured with 7-point Likert structures ranging from 1 – negative (e.g., strongly disagree) to 7 – positive (e.g., strongly agree). To measure the respondents' evaluation costs and decision-making efforts to assess cognitive load and choice complexity, the scale developed by Heitmann et al. (2007) was utilized (e.g., "I could not afford the time to fully evaluate relevant purchase options"). The likelihood of future purchases for both T-shirt options based on the nudging intervention was measured adapting the purchase intention scale by Ko et al. (2005) (e.g., "What is your purchase intention for T-shirt with regular cotton?"). The scale from Schuhwerk & Lefkoff-Hagius (1995) was employed to delve deeper into environmental concerns (e.g., "I am concerned about the environment"). Respondents' attitudes towards green products and buying green products, reflecting their pro-environmental consumer behavior, were explored using Miniard et al.'s (1991) scale (e.g., "I like green products"). The participants' intention to spread positive word of mouth for green products was captured using the scale from Arnett et al. (2003) (e.g., "I "talk up" green products to people I know."). Finally, the value participants place on community endorsement was assessed with the scale from Burroughs & Rindfleisch (2002) (e.g., "I feel an obligation to donate money to local charities").

Table 3: List of all the construct and items used in the Study

Construct	**Items**	**Source**
Evaluation Costs / Choice Effort	-How much time/effort did it take to evaluate and compare the alternatives in order to feel comfortable making a choice? -I could not afford the time to fully evaluate relevant purchase options. -It was tough to compare the different products being offered. -It was difficult for me to make this choice.-I concentrated a lot while making this choice	Heitmann et al. (2007)
Purchase Intention	-What is your purchase intention for T-shirt with regular cotton? -What is your purchase intention for T-shirt with organic cotton?	Adapted from Ko et al. (2005)
Attitudes toward green products and buying green products	-I like green products -I feel positive toward green products -Green products are favorable -I like buying green products	Miniard et al. (1991)

	-I feel positive toward buying green products -Buying green products are favorable	
Concern about the environment	-I am concerned about the environment -The condition of the environment affects the quality of my life -I am willing to make sacrifices to protect the environment -My actions impact the environment	Schuhwerk & Lefkoff-Hagius (1995)
Word of mouth (Positive)	-I "talk up" green products to people I know. -I bring up green products in a positive way in conversations I have with friends and acquaintances. -In social situations, I often speak favorably about green products.	Arnett et al. (2003)
Community Value	-I feel an obligation to donate money to local charities -I feel that it is important to serve as a volunteer in my community it is important to me to form close ties with others in my community -I am very concerned about the welfare of my community -I believe it is important to attend town hall or city council meeting and voice one's concerns about issues affecting the community -I would readily give money to help out a neighbor who fell on hard times -I believe that it is important to give of one's time to community activities -I frequently donate foodstuffs to local food drives	Burroughs & Rindfleisch (2002)

3.4 Participants Sampling

The target population for this study comprised individuals aged between 18 and 90 of all genders residing in various European countries. This broad demographic was selected to explore various perspectives on the subject matter, aiming to capture diverse views that could reflect general trends across the European continent. The main demographics of the sample are displayed in Table 4, below.

Table 4: Key demographics for the final sample

Demographic	**Valid**	**Missing**
No of participants	152	0
	Mean	**Std. Deviation**
Age	31.09	10.21
	Frequency	**Percent**
Gender		

Male	78	51.3
Female	71	46.7
Non-binary/third gender	3	2
Education level		
Less than high school	2	1.3
High school diploma	50	32.9
College or bachelor's degree	51	33.6
Master's or doctoral degree	49	32.2
Annual income		
Less than 25,000 euros	87	57.2
25,000 – 49,999 euros	56	36.8
50,000 – 100,000 euros	9	5.9

A non-probability convenience sampling strategy was employed for this study, utilizing the Prolific platform to recruit participants who were readily available and willing to participate. The convenience sampling technique is commonly used in quantitative research. It primarily focuses on achieving generalizability, which means that the findings are intended to be representative of the population from which the sample is derived (Etikan et al., 2015). This method was chosen due to its cost-effectiveness and efficiency in reaching many respondents quickly. This study's total sample size was 152 participants, with about 50 individuals assigned to each of the three different experimental conditions. Saunders et al. (2015) indicate that there are no definitive guidelines regarding the number of respondents required in non-probability sampling, making the determination of sample size somewhat vague. Furthermore, they note that the appropriate sample size largely depends on the researcher's objectives and available resources (Saunders et al., 2015). Therefore, a guideline of having at least 50 participants per cell was followed (Simmons et al., 2013). Participants were recruited exclusively through Prolific. This platform facilitates the recruitment process by allowing researchers to specify participant criteria, ensuring that only eligible individuals can enroll in the study (Prolific, 2024).

3.5 Data Preparation

The data set was prepared and cleaned before analyzing it. After collecting the data from Prolific, a final sample of 158 responses was obtained. However, six responses were excluded due to incomplete survey forms. Therefore, the final sample size was reduced from n = 158 to n = 152.

3.5.1 Descriptive Statistics

In exploring the influence of different nudging conditions on T-shirt choice, this study provides an insightful analysis of consumer behavior in sustainable product selection. The descriptive statistics provide a comprehensive overview of the demographic characteristics and conditions of the participants in the study. The sample comprised 152 participants and had an almost equal distribution across the three conditions as shown by the frequency distribution: 33.6% in the no nudge condition, 32.2% in the default nudge condition, and 34.2% in the social proof condition. 73.7% of all participants chose the organic cotton T-shirt. In the control group, the no nudge condition, 74.5% of participants selected the organic cotton T-shirt. This preference slightly diminished in the default nudge condition to 69.4% but increased again in the social proof condition to 76.9%. The gender distribution was relatively balanced, with 51.3% male, 46.7% female, and 2% non-binary or third gender. The mean age was 31 years. The largest nationality groups were Portuguese (21.7%), Polish (19.1%) and Italian (15.1%). However, the survey was distributed in English, and all participants were able to read English correctly. Regarding education, only 1.3% had less than a high school diploma. In contrast, high school diplomas, college or bachelor's degrees, and master's or doctoral degrees were evenly distributed with 32.9%, 33.6%, and 32.2% respectively. Regarding annual income, the majority (57.2%) earned less than 25,000 euros, and 36.8% earned between 25,000 and 49,999 euros.

Table 5:Nudge conditions and gender distribution

	No nudge	**Default nudge**	**Social proof**
Frequency	51	49	52
Percent	33.6	32.2	34.2
Gender			
Male	25	24	29
Female	23	25	23
Non-binary/third gender	3	0	0

3.5.2 Reliability Tests

To determine that the scales utilized in the survey were reliable and measured the same construct, Cronbach's alpha tests were conducted for each scale. Cronbach's alpha provides a measure of a scale's internal consistency, which indicates the extent to which all items in a scale measure the same construct (Tavakol & Dennick, 2011). Cronbach's alpha coefficient (α) ranges from 0 to 1, and 0.7 or higher indicates acceptable internal consistency reliability (Malhotra, 2010). Based on the results presented in Table 6, all constructs demonstrated an acceptable level of reliability. Although the evaluation cost and choice effort

construct's alpha value were slightly below the expected threshold by .005, it is sufficiently close to be deemed acceptable in this study.

Table 6: Reliability Statistics for the investigated measures

Scale	Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
Evaluation Cost / Choice Effort	.695	.693	5
Attitudes towards green products and buying green products	.967	.968	6
Environmental Concern	.884	.886	4
Word of Mouth (positive)	.947	.947	3
Community Value	.898	.899	8

3.5.3 Indexing

Because this study only used pre-validated scales (Heitmann et al., 2007; Ko et al., 2005; Schuhwerk & Lefkoff-Hagius, 1995; Miniard, 1991; Arnett et al., 2003; Burroughs & Rindfleisch, 2002), the analysis was enhanced by consolidating variables that incorporated multiple items into indexed variables. This approach provided a more precise and holistic evaluation of the key concepts being studied. As a result, seven variables emerged from each scenario; (1) Evaluation Costs, (2) Attitudes towards green products and buying green products, (3) Environmental Concern, (4) Word of mouth (positive), (5) Community Value, (6) Willingness to pay for organic cotton T-shirt across all nudge conditions, and (7) Willingness to pay for regular cotton T-shirt across all nudge conditions. To obtain a single measure for each construct in order to simplify the analysis and facilitate comparisons across different conditions, the items that were included in each scale were combined into a single variable (and this for all the experimental conditions). This method streamlined the analysis and enhanced its comprehensiveness by employing consistent variables throughout all conditions.

CHAPTER 4

RESULTS

4.1 Introduction

The following Chapter presents the results of the analyses conducted to examine the impact of different nudge conditions (no nudge, default nudge, and social proof) on participants' choices between organic and regular cotton T-shirts. The analyses, presented below, include crosstabulation with Chi-Square

tests, a logistic regression model, and a series of moderation analyses using the PROCESS macro for SPSS (Hayes, 2022). Finally, the results of an independent samples t-test to compare participants' willingness to pay for an organic cotton T-shirt as a function of the nudge type will be presented.

4.2 Crosstabs

A crosstabulation analysis using the Chi-Square tests was conducted to examine the relationship between nudge condition and T-shirt choice (organic vs. regular cotton). Overall, the results showed that the choice of the organic cotton T-shirt was generally higher than the regular one across all the experimental conditions. More in detail, in the no nudge condition, 38 participants chose the organic T-shirt (74.5%), and 13 participants chose the regular one (25.5%); in the default condition, 34 participants chose the organic T-shirt (69.4%) and 15 participants chose the regular one (30.6%); and, finally, in the social proof condition, 40 participants chose the organic T-shirt (76.9%) and 12 participants chose the regular one (23.1%). The expected counts closely matched the observed counts across all conditions, suggesting a balanced distribution.

Among participants aged 24 or younger, 40 out of 51 chose the organic cotton T-shirt. This included 14 in the no nudge condition, 13 in the default nudge condition, and 13 in the social proof condition. For the age group 25-33 years, 38 out of 52 participants selected the organic cotton T-shirt, with 10 in the no nudge condition, 11 in the default nudge condition, and 17 in the social proof condition. In the age group 34 years or older, 34 out of 49 chose the organic cotton T-shirt, distributed as 14 in the no nudge condition, and 10 in both the default nudge and social proof conditions.

Regarding gender, females predominantly chose the organic T-shirt, with 60 out of 71 making this choice (21 in the no nudge condition, 19 in the default nudge condition, and 20 in the social proof condition). Males had a slightly lower selection rate, with 50 out of 78 choosing the organic cotton T-shirt (15 in the no nudge condition, 15 in the default nudge condition, and 20 in the social proof condition).

These results show a strong preference for the organic cotton T-shirt across all age groups and genders, with the highest selection rate among females. The social proof condition appeared to be particularly effective for participants aged 25-33 years, suggesting that social influence may impact their choices.

Table 7: Crosstabulation comparing nudge condition with T-shirt choice

	T-shirt Choice	
	Organic Cotton	Regular Cotton
Nudge Condition		
No Nudge	38	13

Default Nudge	34	15
Social Proof	40	12

Note: Pearson Chi-Square = .766, df = 2, p = .682

Table 8: Crosstabulation comparing nudge condition with T-shirt choice based on age

	Nudge Condition		
	No Nudge	Default Nudge	Social Proof
Age <= 24			
Organic Cotton	14	13	13
Regular Cotton	3	3	5
Age 25 - 33			
Organic Cotton	10	11	17
Regular Cotton	5	5	4
Age 34 +			
Organic Cotton	14	10	10
Regular Cotton	5	7	3

Table 9: Crosstabulation comparing nudge condition with T-shirt choice based on gender

	Nudge Condition		
	No Nudge	Default Nudge	Social Proof
Male			
Organic Cotton	15	15	20
Regular Cotton	10	9	9
Female			
Organic Cotton	21	19	20
Regular Cotton	2	6	3
Non-binary /third gender			
Organic Cotton	2		
Regular Cotton	1		

A Chi-Square test for independence was conducted on the whole sample to assess the possible relationship (association) between the two categorical variables (nudge condition and T-shirt choice). The Pearson Chi-Square value was .766 with 2 degrees of freedom, resulting in a p-value = .682, indicating that

the association between the two variables was not statistically significant. The likelihood ratio test produced similar results (Chi-Square = .759, df = 2, p = .684), and the linear-by-linear association test also showed no significance (Chi-Square = .079, df = 1, p = .778). Results of the test are presented in Table 10, below.

Table 10: Chi-Square Test Result

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.766	2	.682
Likelihood Ratio	.759	2	.684
Linear-by-Linear Association	.079	1	.778
N of Valid Cases	152		

These results indicate no significant relationship between the type of nudge condition and the choice of T-shirt (organic vs. regular cotton). In other words, the nudge conditions (no nudge, default nudge, social proof) did not significantly associate with participants' T-shirt choices. Thus, H1 was not supported, as a higher percentage of participants in the no nudge condition chose the organic cotton T-shirt compared to the default nudge condition, and no significant relationship was observed. Regarding H2, while a higher percentage of participants exposed to social proof chose the organic cotton T-shirt than those in the no nudge condition, the results are non-significant. Therefore, we cannot attribute the choice to the type of nudge to which participants were exposed, leading to the rejection of H2. Consequently, H3 is also rejected.

4.3 Logistic Regression

In order to verify the impact of a set of the investigated variables (participants in the default nudge condition, participants in the social proof condition, evaluation costs, attitudes towards green products and buying green products, environmental concern, word-of-mouth intention, and community engagement) on a dichotomous dependent variable (consumer choice of organic or regular cotton T-shirt), a logistic regression was run. A logistic regression model estimates the likelihood that a given observation will belong to one of two categories of a binary dependent variable based on one or more predictor variables. A binary logistic regression model was deemed appropriate because there were only two possible discrete outcomes, organic or regular – the analysis aimed to investigate the factors influencing the choice of organic T-shirt. Therefore, the independent variables included in the model were: the inclusion of participants in the default nudge condition, the inclusion of participants in the social proof nudge condition, the evaluation costs, participants' attitudes towards green products and buying green products, participants' environmental concern, their positive word-of-mouth for green products intention, and the community engagement. The dependent variable was instead participants' choice (coded as follows: 0 = regular T-shirt; 1 = organic T-shirt). Including the predictors resulted in a statistically significant model (Chi-Square = 44.505, p = <.001),

indicating that the covariates collectively contribute to predicting the choice of organic products. The Pseudo R-square values suggest that the model explains approximately 37.1% of the variance in the choice of organic products. Individually examined, attitudes towards green products (p <.001) and word of mouth (p = .013) were significant predictors increasing the likelihood of choosing the organic cotton T-shirt. Environmental concern approached significance (p = .060), indicating that higher environmental concern may decrease the likelihood of choosing organic cotton, although this result is marginally significant. These findings highlight the importance of positive attitudes towards green products and buying green products and the influence of word-of-mouth in promoting sustainable consumer choices.

Table 11: Omnibus Test of Model Coefficients

	Chi-Square	**df**	**Sig.**
Model	44.505	7	<.001

Table 12: Model Summary

Step	**-2 Log Likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	130.700	.254	.371

Table 13: Variables in the Equation

	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
DEFAULT	.032	.548	.003	1	.954	1.032
SOCIALP	.011	.547	.000	1	.984	1.011
EvCosts	-.377	.215	3.082	1	.079	.686
GreenP	.829	.238	12.110	1	<.001	2.292
EnvirC	-.441	.234	3.548	1	.060	.644
Wom	.505	.203	6.172	1	.013	1.657
CommEng	.177	.239	.549	1	.459	1.194
Constant	-1.978	1.226	2.603	1	.107	.138

Note: DEFAULT = Participants in the default nudge condition, SOCIALP = Participants in the social proof condition, EvCosts = Evaluation cost, GreenP = Attitudes towards green products and buying green products, EnvirC = Environmental Concern, Wom = Word-of-mouth intention, CommEng = Community engagement.

4.4 Moderation Analysis with PROCESS macro

Four separate moderation analyses with the PROCESS macro (Hayes, 2022) were run to examine the moderating effects of participants' attitudes towards green products and evaluation cost on the relationship between nudge type (default nudge or social proof; independent variable) and T-shirt choice (regular or organic cotton; dependent variable 1) or positive word of mouth for green products (dependent variable 2). The PROCESS model is a statistical tool for analyzing how variables influence each other, including direct and indirect effects, and how these relationships change under different conditions. It uses techniques like OLS (Ordinary Least Squares) and logistic regression to understand complex interactions (Hayes, 2022).

The first analysis examined the moderating effect of attitudes towards green products and buying green products in the relationship between nudge condition and T-shirt choice, as illustrated in Figure 2. The likelihood ratio test indicated that the overall model was statistically significant (Chi-Square = 28.9371, $p <$ .001). The Pseudo R-square values (McFadden = .2467, Cox & Snell = .2491, Nagelkerke = .3627) suggested that the model explained a substantial portion of the variance in T-shirt choice. The constant term was significant, indicating a baseline likelihood of choosing an organic T-shirt (B = -9.5295, SE = 4.3276, p = .0277). However, the effect of the nudge condition on T-shirt choice was non-significant (p = .1676). In contrast, attitudes towards green products and buying green products significantly influenced the likelihood of choosing an organic T-shirt (B = 2.0913, SE = .9039, p = .0207). Instead, the interaction between nudge condition and attitudes towards green products and buying green products was non-significant (p = .2060), suggesting that the impact of attitudes on T-shirt choice did not vary significantly across different nudge conditions. The results, presented in Table 14, indicate that participants' attitudes towards green products and buying green products play a significant role in their likelihood of choosing an organic T-shirt. At the same time, the type of nudge (default or social proof) does not significantly affect this choice. Furthermore, the non-significant interaction term implies that the influence of favorable attitudes towards green products and buying green products on the choice of an organic T-shirt remains consistent regardless of the nudge condition applied.

Figure 2: Conceptual model of the moderating effect of attitudes towards green products on the relationship between nudge condition and T-shirt choice

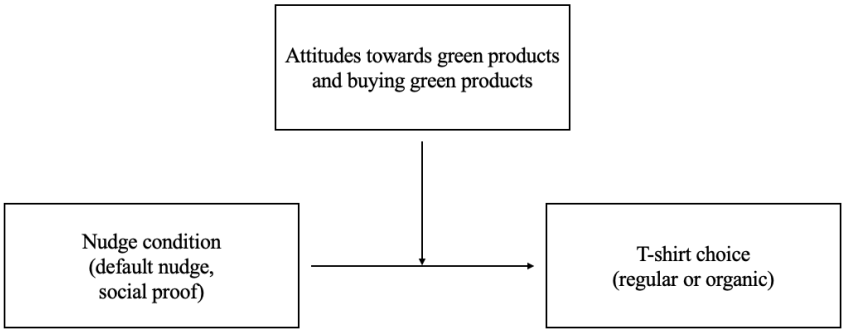


Table 14: Model Summary of the moderating effect of attitudes towards green products on the relationship between nudge condition and T-shirt choice

	coeff	**se**	**Z**	***p***	**LLCI**	**ULCI**
constant	-9.5295	4.3276	-2.2020	.0277	-18.0114	-1.0476
NudgeC	3.5439	2.5678	1.3801	.1676	-1.4889	8.5767
GreenP	2.0913	.9039	2.3137	.0207	.3197	3.8628
Int_1	-.6750	.5338	-1.2646	.2060	-1.7212	.3711

Note: $N = 101$. NudgeC = Nudge condition, GreenP = Attitudes towards green products and buying green products, Int_1 = Interaction term (NudgeC x GreenP).

The second PROCESS macro analysis that was conducted, as visualized in Figure 3, explored another moderating variable, participants' evaluation cost, between the same relationship, i.e., the effect of nudge condition on T-shirt choice. The overall model was not statistically significant (Chi-Square = 1.1014, $p = .7767$), with Pseudo R-squared values (McFadden = .0094, Cox & Snell = .0108, Nagelkerke = .0158) indicating minimal variance explained in T-shirt choice. The constant term was non-significant ($p = .5306$), showing no baseline likelihood of choosing an organic T-shirt. Neither the nudge condition ($p = .8195$) nor evaluation cost ($p = .6362$) significantly influenced T-shirt choice. Furthermore, the interaction between the nudge condition and evaluation costs was also non-significant ($p = .5704$). These results, shown in Table 15, indicate that, in this case, neither evaluation cost nor the type of nudge significantly affects the likelihood of choosing an organic T-shirt, and their interaction does not vary across different nudge conditions.

Figure 3: Conceptual model of the moderating effect of evaluation cost on the relationship between nudge condition and T-shirt choice

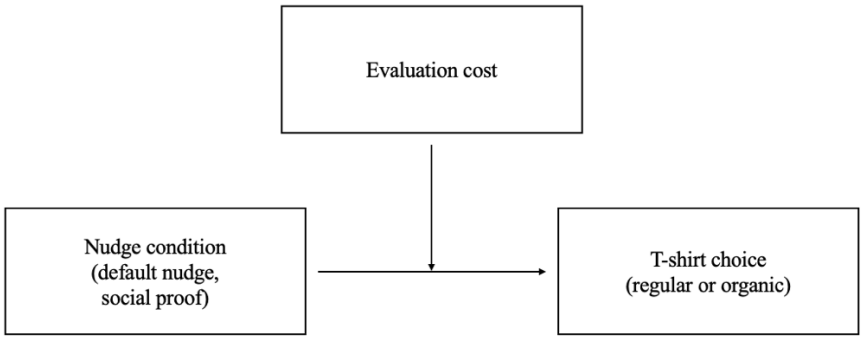


Table 15: Model Summary of the moderating effect of evaluation cost on the relationship between nudge condition and T-shirt choice

	coeff	**se**	**Z**	***p***	**LLCI**	**ULCI**
constant	1.3585	2.1661	.6271	.5306	-2.8871	5.6040
NudgeC	-.3005	1.3168	-.2282	.8195	-2.8815	2.2804
EvCosts	-.3143	.6644	-.4730	.6362	-1.6165	.9879
Int_1	.2384	.4201	.5675	.5704	-.5851	1.0619

Note: $N = 101$. NudgeC = Nudge condition, EvCosts = Evaluation cost, Int_1 = Interaction term (NudgeC x EvCosts).

A third PROCESS macro analysis, illustrated in Figure 4, explored how attitudes towards green products and buying green products might moderate the relationship between nudge condition and positive word-of-mouth intention for green products. The overall model was statistically significant ($F = 26.7613$, $p < .001$), with an R-squared value of .4529, indicating that it explains a substantial portion of the variance in participants' positive word-of-mouth on green products. The constant term was non-significant ($p = .4067$), showing no inherent baseline level of positive word-of-mouth. Neither the nudge condition ($p = .2024$) nor attitudes towards green products and buying green products ($p = .1755$) significantly influenced word-of-mouth. The interaction between nudge condition and attitudes was also non-significant ($p = .1108$), indicating that attitudes' impact on positive word-of-mouth did not vary across nudge conditions. Thus, neither nudge conditions nor attitudes towards green products and buying green products significantly affected positive word-of-mouth intention for green products, and their interaction remained consistent regardless of the nudge condition applied. The results of this analysis are presented in Table 16.

Figure 4: Conceptual model of the moderating effect of attitudes towards green products on the relationship between nudge condition and positive word of mouth

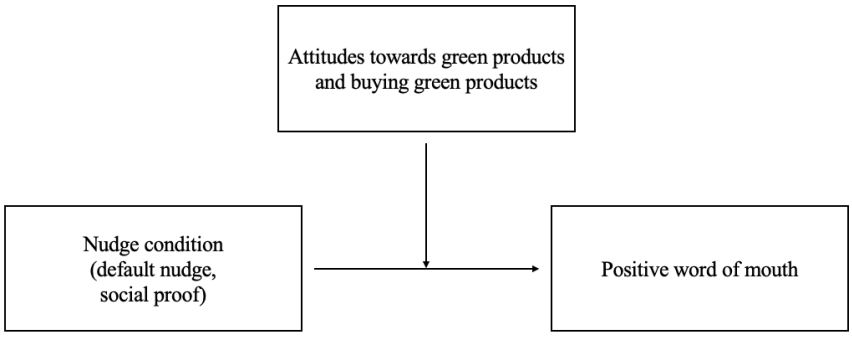


Table 16: Model Summary of the moderating effect of attitudes towards green products on the relationship between nudge condition and positive word-of-mouth

	coeff	**se**	**Z**	***p***	**LLCI**	**ULCI**
constant	1.2909	1.5491	.8334	.4067	-1.7836	4.3654
NudgeC	-1.3499	1.0518	-1.2834	.2024	-3.4375	.7377
GreenP	.4011	.2939	1.3649	.1755	-.1822	.9844
Int_1	.3215	.1997	1.6093	.1108	-.0750	.7179

Note: *N* = 101. NudgeC = Nudge condition, GreenP = Attitudes towards green products and buying green products, Int_1 = Interaction term (NudgeC x GreenP).

Finally, a fourth PROCESS macro analysis examined the moderating effect of evaluation cost on the relationship between nudge condition and positive word-of-mouth intention for green products, as illustrated in Figure 5. The overall model was statistically significant (F = 2.9589, *p* = .0361), with an R-squared value of .0838, indicating that it explains a modest portion of the variance of participants' intention to spread positive word-of-mouth. The constant term was significant (B = 5.5800, SE = 1.6096, *p* = .0008), suggesting a positive word-of-mouth baseline. The nudge condition (*p* = .1036) and evaluation cost (*p* = .1085) did not significantly influence positive word-of-mouth individually. However, their interaction was significant (B = .6732, SE = .3018, *p* = .0280), indicating that the effect of the nudge condition varies with evaluation cost. Specifically, at higher levels of evaluation cost (4.2500), the nudge condition significantly influenced positive word-of-mouth (B = 1.2812, SE = .5032, *p* = .0125), while at lower (1.7500) and moderate (3.0000) levels, the effect was not significant. The results are presented in Table 17, below.

Figure 5: Conceptual model of the moderating effect of evaluation cost on the relationship between nudge condition and positive word of mouth

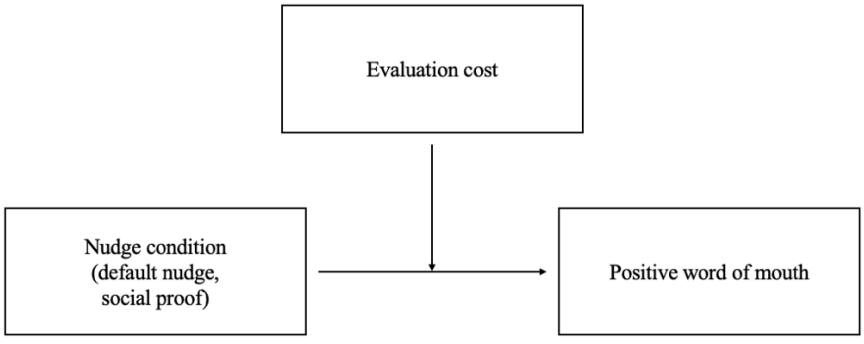


Table 17: Model Summary of the moderating effect of evaluation cost on the relationship between nudge condition and positive word-of-mouth

	coeff	**se**	**Z**	***p***	**LLCI**	**ULCI**
constant	5.5800	1.6096	3.4668	.0008	2.3855	8.7745
NudgeC	-1.5799	.9616	-1.6430	.1036	-3.4884	.3286
EvCosts	-.7988	.4931	-1.6200	.1085	-1.7774	.1799
Int_1	.6732	.3018	2.2303	.0280	.0741	1.2723

Note: $N = 101$. NudgeC = Nudge condition, EvCosts = Evaluation cost, Int_1 = Interaction term (NudgeC x EvCosts).

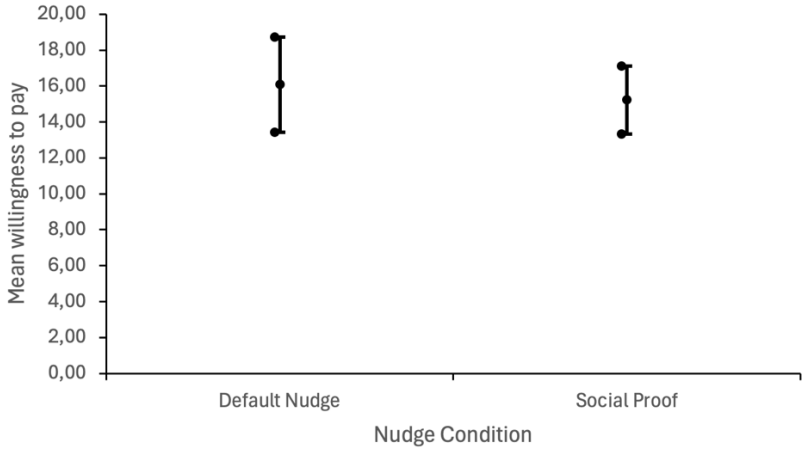
Overall, across all the PROCESS macro analyses conducted, it is evident that the nudge condition alone (whether default nudge or social proof) does not significantly affect either T-shirt choice or positive word-of-mouth intention for green products. Instead, participants' attitude towards green products and buying green products significantly influence T-shirt choice, but not word-of-mouth intention, while evaluation cost alone does not significantly affect either outcome. However, the interaction between nudge condition and evaluation cost significantly influences word-of-mouth intention, particularly at higher levels of evaluation cost. This suggests that the effectiveness of nudges may depend on the context of evaluation cost, highlighting the complexity of the behavior change mechanism in promoting green products.

4.5 Independent-Samples T-test to compare participants' WTP as a function of the nudge type

An independent-sample t-test was also conducted to compare the mean willingness to pay for the organic cotton T-shirt between two groups, those exposed to the default nudge and those exposed to social proof. The group statistics showed that the default nudge group (n = 49) reported a mean willingness to pay of 16.08 euros with a standard deviation of 9.473. In comparison, the social proof group (n = 52) had a mean willingness to pay of 15.23 euros with a standard deviation of 6.96. The t-test result was not significant, $t(99) = 0.517$, $p = .607$. This indicates no statistically significant difference in the willingness to pay for the organic cotton T-shirt between the default nudge and the social proof groups.

In conclusion, the independent-sample t-test result showed no significant difference in willingness to pay for the organic cotton T-shirt between participants exposed to the default nudge and those exposed to social proof. Both groups exhibit similar willingness to pay, as indicated by the non-significant p-value.

Figure 6: Bar chart comparing the mean willingness to pay for the organic cotton T-shirt between participants exposed to the default nudge and the participants exposed to the social proof



CHAPTER 5
DISCUSSION AND CONCLUSION

5.1 General Discussion

This research has explored the effectiveness of two different nudges, namely default nudge and social proof, on steering consumers towards choosing sustainable fashion options. Building on previous research, this study seeks to answer the following research question: *What are the most effective digital nudging strategies for fostering environmentally responsible consumption patterns within the online fashion industry?*

The concept of nudging, introduced by Thaler and Sunstein (2009), posits that subtle changes in the choice architecture can significantly influence behavior without restricting freedom of choice. This study's findings, which show no significant differential effect of default or social proof nudges in selecting organic cotton T-shirts, challenge the general assumption of nudging's effectiveness in all contexts. Schubert (2017) and Sunstein (2017) highlighted the contextual dependency of nudges, suggesting that their effectiveness may vary based on specific circumstances and target behaviors.

H1 suggested that participants exposed to default nudges would demonstrate a higher likelihood of choosing the sustainable organic cotton T-shirt over the regular cotton T-shirt than those in the no-nudge condition. Despite the theoretical support for default nudges simplifying decision-making by setting the sustainable option as the standard choice, and probably due to the limited sample of this study, the results did not support H1. Additionally, H2, which posited that social proof nudges would increase the likelihood of choosing the sustainable option by leveraging peer behaviors and norms was neither supported (Cialdini, 2014).

The results align with previous research by Sunstein (2017), which emphasized that nudges often have varied effectiveness and, in some cases, may be ineffective or counterproductive. Despite leveraging default and social proof nudges, the anticipated change in T-shirt choices was not observed, suggesting the behavioral assumptions might not fully capture the nuances of consumer decision-making in the online fashion context. Furthermore, the complexity of the information presented may have reduced the effectiveness of the nudges. Simplifying the messaging or providing more apparent cues could potentially enhance the nudge impact. The resistance or reactance to perceived control, as noted by Sunstein (2017), might explain why the nudges did not significantly influence T-shirt choice. Participants might have felt manipulated, leading to reactance and reduced effect (Sunstein, 2017). Additionally, the effectiveness of verbal and visual nudges in promoting eco-friendly fashion choices, as demonstrated by Roozen et al. (2021), was not replicated in this study, suggesting that the specific implementation of nudges may significantly impact their success. Jesse et al. (2021) also emphasized the relevance of the specific nature of the nudge employed.

Moreover, the comparison between default nudge and social proof conditions showed no significant difference in the likelihood of choosing the organic cotton T-shirt, leading to rejecting H3. Although Berger et al. (2022) found default nudges as the most effective digital nudging strategy, the results suggest that while nudges can be powerful, their effectiveness may be context-dependent, as noted by Schubert (2017).

Finally, this study found that attitudes towards green products and buying green products, in addition to positive word-of-mouth intention for green products, significantly influenced T-shirt choice. These findings align with research by Lades (2014) and Roozen et al. (2021), who highlighted the importance of personal values and environmental awareness in driving sustainable consumption. This study also found that when evaluation costs are perceived as high, the interaction between the nudge condition and evaluation costs significantly influences positive word-of-mouth intention for green products. Furthermore, the different nudges did not result in varying willingness to pay for the sustainable version of the T-shirt. This study suggests that intrinsic motivations and personal values may be more crucial than external nudges in certain contexts.

5.2 Theoretical Implications

This research contributes to the broader field of behavioral economics and consumer behavior, particularly within the environmental sustainability field. The findings offer valuable insights and raise essential considerations that can inform future research and guide practitioners in the area. Firstly, this study provides an empirical evidence on the relationship between different digital nudges, namely default nudges and social proof, and their effectiveness in promoting sustainable choices in the online fashion industry. The main finding of this study showed that the nudges did not significantly influence the immediate selection of

T-shirts. This finding highlights the complexity and context-dependency of nudging strategies, emphasizing the need for nuanced approaches in their implementation.

Additionally, this study underscores the importance of intrinsic motivations, personal attitudes toward green products and the intention to spread positive word-of-mouth about green products in driving sustainable consumption. This insight aligns with previous research by Lades (2014) and Roozen et al. (2021), emphasizing the critical role of personal values and environmental awareness. By investigating the impact of digital nudges on sustainable fashion choices, this study expands the understanding that nudging strategies should be tailored to specific contexts and behaviors, contributing to a more comprehensive body of knowledge on sustainable consumer behavior.

Furthermore, the study's emphasis on the role of personal attitudes and values provides a valuable perspective for future research, suggesting that possible interventions should consider both intrinsic and extrinsic factors to enhance their effectiveness. This approach can guide researchers and practitioners in designing more holistic and impactful nudging interventions that foster sustainable consumption patterns and contribute to broader environmental goals.

5.3 Managerial Implications

The findings of this study have several important managerial implications for businesses and e-commerce platforms aiming to promote sustainable consumer behavior through digital nudging strategies.

The study's findings, paired with what is suggested by previous research (Schubert, 2017; Sunstein, 2017), highlight that nudge effectiveness can be highly context-dependent. Managers should, therefore, be cautious about generalizing the success of these nudges across different decision-making environments. This suggests the need for customized approaches tailored to specific consumer segments and purchasing contexts. Additionally, this study indicates that the specific design and implementation of nudges are critical to their success. Managers should experiment with different nudge designs to identify the most effective approaches, including placement variety, format, and framing of nudges to better align with consumer preferences and behaviors.

Intrinsic motivations and personal attitudes towards green products, along with the intention to spread positive word of mouth about green products, significantly influence the choice of sustainable T-shirts. Managers should focus on strategies that enhance these intrinsic motivations by educating consumers about the environmental impact of their purchases, emphasizing the benefits of sustainable products, and aligning marketing messages with consumers' personal values and environmental concerns.

Moreover, the complexity of the information presented in the study may have reduced the effectiveness of the nudges. Managers should aim to simplify their messaging and provide clear and concise

information that makes the sustainable choice more appealing and easier to understand. This might involve using straightforward language and visual aids and avoiding overwhelming consumers with too much information at once. Additionally, the potential for consumer reactance to perceived control or manipulation by nudges suggests that managers should be transparent about their intentions. Communicating the benefits of sustainable choices without making consumers feel coerced is crucial, as this can build trust and reduce resistance to nudges.

5.4 Limitations and Future Research

This study acknowledges several limitations, mainly related to the experimental design and the factors capable of influencing the nudge type effectiveness. For instance, while the logistic regression analysis identified significant predictors of sustainable choices, the overall model explained a moderate portion of the variance in T-shirt choice, suggesting that other unexamined factors may also play an essential role in influencing consumer behavior. However, despite this limitation, the results have highlighted the necessity for context-specific nudging strategies. Future research should explore the nuanced factors that influence the effectiveness of digital nudges in different consumer contexts. Understanding these factors can help design more effective interventions tailored to specific behaviors and environments.

Another limitation of this study may be the implementation of nudges. Their specific implementation might affect the effectiveness of the nudges, specifically default and social proof. Different designs or variations of these nudges can possibly produce different results. Future research can explore various implementations of nudging strategies to determine the most effective approaches.

Furthermore, the lack of statistical significance in the association between nudge conditions and T-shirt choice may also indicate that the nudges in this study may need to be stronger or more effectively designed to drive substantial behavior change. The study's sample size might explain the non-significance of certain results. Moreover, the sample consisted of participants from different countries, leading to varying nudge effectiveness across diverse cultural contexts. Further research should use a larger sample size to provide more statistical power, potentially revealing significant effects that a smaller might miss. Researchers can consider stratifying the sample by country or culture to better understand how nudges perform in different cultural contexts. This can involve conducting separate analyses for each cultural group or including cultural variables in the analysis.

Moreover, this study relied on measuring attitudes and behaviors, which are self-reported data and can be subject to social desirability bias. Participants might have reported more favorable attitudes and behaviors than they would exhibit in reality, which could mean that the nudge could potentially play a more important role than what was found in this study. Future research should incorporate experimental designs that include behavioral measures in real-world settings to better assess the true impact of nudges on

consumer behavior. Additionally, employing longitudinal studies can help determine the long-term effectiveness and sustainability of nudge interventions, providing a more comprehensive understanding of their influence on consumer habits over time.

5.5 Conclusion

The main finding of this research is that neither social proof nor default nudges significantly influenced participants' choices between organic and regular cotton T-shirts. This challenges existing assumptions about the straightforward efficiency of the nudges in steering consumer behavior toward sustainability. The results indicate that creating effective and impactful nudges requires a more nuanced understanding and specific guidelines to optimize their design and implementation. However, the study highlighted the importance of intrinsic factors such as positive attitudes towards green products and buying them, as well as the intention to spread positive word of mouth about green products in driving sustainable choices. This suggests that intrinsic motivations may play a crucial role in sustainable fashion consumption.

While digital nudges hold promise for promoting sustainable behavior, their success depends on nuanced, context-specific implementation. Future research should continue to explore the conditions under which nudges are most effective and consider combining nudges with broader educational and motivational strategies to foster sustainable consumer choices.

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APPENDIX

Appendix A – Questionnaire; Conditions

No Nudge Condition

Imagine you are going to buy a white T-shirt. These are your options.

Organic Cotton
White short sleeve T-shirt with round neck. The organic cotton fabric feels soft and luxurious.

Regular Cotton
White short sleeve T-shirt with round neck. The regular cotton fabric feels soft and luxurious.

ADD

*Which T-shirt do you choose?

- Organic Cotton
- Regular Cotton

How much would you be willing to pay for this T-shirt? (in Euros)

Organic Cotton

0 50

Regular Cotton

0 50

Default Nudge Condition

Imagine you are going to buy a white T-shirt. These are your options.

Organic Cotton
White short sleeve T-shirt with round neck. The organic cotton fabric feels soft and luxurious.

Regular Cotton
White short sleeve T-shirt with round neck. The regular cotton fabric feels soft and luxurious.

ADD

*Which T-shirt do you choose?

Organic Cotton

How much would you be willing to pay for this T-shirt? (in Euros)

Organic Cotton

0 50

Regular Cotton

0 50

Social Proof Condition

Imagine you are going to buy a white T-shirt. These are your options.

Organic Cotton
White short sleeve T-shirt with round neck. The organic cotton fabric feels soft and luxurious.

87% of our customers prefer the organic cotton T-shirt for its environmental benefits

Regular Cotton
White short sleeve T-shirt with round neck. The regular cotton fabric feels soft and luxurious.

ADD

*Which T-shirt do you choose?

- Organic Cotton
- Regular Cotton

How much would you be willing to pay for this T-shirt? (in Euros)

Organic Cotton

0 50

Regular Cotton

0 50

Appendix B – Questionnaire; All Conditions

Dear Participant, thank you very much for your interest in our study. We are conducting a research on decision-making processes and the impact of various nudge strategies on choice behavior for academic purposes. Your task is easy and consists of answering some simple questions related to identify your preferences, the effort you experienced in making decisions, your attitudes towards green products, and other relevant factors. All your responses will be handled in the most confidential manner, and no research findings will be associated with you. Thank you for participating.

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*Choice effort

	1 - Extremely low effort	2	3	4	5	6	7 - Extremely high effort
How much time/effort did it take to evaluate and compare the alternatives in order to feel comfortable making a choice?	○	○	○	○	○	○	○

*Evaluation costs

	1 - Strongly disagree	2	3	4	5	6	7 - Strongly agree
I could not afford the time to fully evaluate relevant purchase options	○	○	○	○	○	○	○
It was tough to compare the different products being offered	○	○	○	○	○	○	○
It was difficult for me to make this choice	○	○	○	○	○	○	○
I concentrated a lot while making this choice	○	○	○	○	○	○	○

*Purchase intention

	1 - Extremely low	2	3	4	5	6	7 - Extremely high
What is your purchase intention for T-shirt with organic cotton?	○	○	○	○	○	○	○
What is your purchase intention for T-shirt with regular cotton?	○	○	○	○	○	○	○

*Green products

	1 - Strongly disagree	2	3	4	5	6	7 - Strongly agree
I like green products	○	○	○	○	○	○	○
I feel positive toward green products	○	○	○	○	○	○	○
Green products are favorable	○	○	○	○	○	○	○
I like buying green products	○	○	○	○	○	○	○
I feel positive toward buying green products	○	○	○	○	○	○	○
Buying green products are favorable	○	○	○	○	○	○	○

*Environment

	1 - Strongly disagree	2	3	4	5	6	7 - Strongly agree
I am concerned about the environment	○	○	○	○	○	○	○
The condition of the environment affects the quality of my life	○	○	○	○	○	○	○
I am willing to make sacrifices to protect the environment	○	○	○	○	○	○	○
My actions impact the environment	○	○	○	○	○	○	○
It is important to pay attention to the text. Tick "7 - Strongly agree" on this line	○	○	○	○	○	○	○

*Word of Mouth

	1 - Strongly disagree	2	3	4	5	6	7 - Strongly agree
I “talk up” green products to people I know	○	○	○	○	○	○	○
I bring up green products in a positive way in conversations I have with friends and acquaintances	○	○	○	○	○	○	○
In social situations, I often speak favorably about green products	○	○	○	○	○	○	○

*Community

	1 - Strongly disagree	2	3	4	5	6	7 - Strongly agree
I feel an obligation to donate money to local charities	○	○	○	○	○	○	○
I feel that it is important to serve as a volunteer in my community	○	○	○	○	○	○	○
It is important to me to form close ties with others in my community	○	○	○	○	○	○	○
I am very concerned about the welfare of my community	○	○	○	○	○	○	○

I believe it is important to attend town hall or city council meeting and voice one's concerns about issues affecting the community	○	○	○	○	○	○	○
I would readily give money to help out a neighbor who fell on hard times	○	○	○	○	○	○	○
I believe that it is important to give of one's time to community activities	○	○	○	○	○	○	○
I frequently donate foodstuffs to local food drives	○	○	○	○	○	○	○

Demographic Questions

*What is your age?

*What is your gender?

- ○ Male
- ○ Female
- ○ Non-binary / third gender
- ○ Prefer not to say

*What nationality are you?

*What is the highest level of school you have completed or the highest degree you have received?

- ○ Less than high school
- ○ High school diploma
- ○ College or bachelor's degree
- ○ Master's or doctoral degree

*What is the level of your annual income?

- ◯ Less than 25.000 euros
- ◯ 25.000 - 49.999 euros
- ◯ 50.000 - 100.000 euros
- ◯ More than 100.000 euros