STOCKHOLM SCHOOL OF ECONOMICS

1351 Master's thesis in Business Management

Academic year 2024–2025

Packaging the Future:
A Quantitative Study on the role of Goal-Framing Interventions on Reusable Packaging Choice

Jessica Mugavero (42536) and Elis Reitalu (42590)

Abstract. Online shopping has become a cornerstone of modern retail, offering consumers unparalleled convenience. Subsequently, the rapid growth of e-commerce has led to a significant rise in parcel deliveries, intensifying the environmental concerns associated with packaging waste. In response, reusable e-commerce packaging has emerged as a potential solution, especially amid recent EU regulations. Previous research has mainly addressed this topic through a production lens while consumer behaviour concerning reusable packaging has received limited attention, demonstrating a notable lack of understanding how to effectively engage consumers and drive adoption. With a quantitative approach rooted in experimental design, this thesis aims to investigate whether and how different interventions can influence consumers' choice of reusable packaging at the online checkout stage. Based on goal-framing theory, interventions were designed to align with normative, gain, and hedonic goal-frames. Findings from 330 respondents reveal that interventions can indeed influence consumers' decisions, with monetary incentives being most effective. Further, results demonstrate that interventions aligned with individuals' personal values may be particularly effective in driving behavioural change, pointing to a nuanced relationship between these two constructs which warrants further investigation. These findings address a notable gap in the literature concerning consumer behaviour in relation to reusable packaging in an e-commerce context, while also offering insights for practitioners looking to implement behavioural intervention strategies to nudge customers towards reusable packaging.

Keywords: Pro-environmental behaviour, reusable packaging, e-commerce, behavioural interventions, goal-framing theory

Supervisor:	Karina Töndevold Liljedal
Date examined:	27.05.2025
Discussant(s):	Tyra Löthman and Hanna Pellkvist
Examiners:	Magnus Söderlund and Constanze Eib

Acknowledgments

We would like to begin by extending our gratitude to our supervisor Karina Töndevold Liljedal for her support, guidance and words of encouragement throughout this project.

We would also like to thank the participants of our two studies, without whom this thesis would have not been possible. We are also deeply thankful to the industry stakeholders who generously agreed to participate in this study, whose insights have been incredibly valuable.

Lastly, we are immensely grateful to our families and friends for their unwavering support and encouragement.

Jessica & Elis

Definitions

Reusable packaging	Packaging used for shipping online orders to end consumers in a B2C setting (Ram et al., 2024; EU, 2025) designed to be returned after delivery, so that it can be used for future orders.
Pro-environmental behaviour	Refers to "any action that enhances the quality of the environment" (Steg et al., 2014a), such as reducing waste, making energy-efficient choices, or opting for sustainable products.
Normative goal frame	Associated with personal and injunctive norms (Steg et al., 2016). Individuals in a normative frame will behave in a pro-environmental way because it is the appropriate thing to do (Lindenberg & Steg, 2007). Operationalized via environmental information.
Gain goal frame	Associated with improving, or preventing the decrease of, one's resources (Lindenberg & Steg, 2007). In this frame, pro-environmental behaviour is more likely if it yields personal benefits (Steg et al., 2016). Operationalized via monetary incentive.
Hedonic goal frame	Driven by the pursuit of pleasure and immediate gratification (Lindenberg & Steg, 2007). Hedonic goals are found to influence pro-environmental behaviour if those actions are perceived as

	effortless, enjoyable, and personally rewarding (Zhang et al., 2024; Tang et al., 2019). Operationalized via hedonic message.
Interventions	Interventions, akin to nudging, are strategies aiming at influencing individual's actions and behaviours in a non-coercive manner. By modifying the way different options are presented, individuals can be subtly guided towards a desired behaviour. From a goal-framing perspective, interventions can increase the salience of certain goal frames in a given decision-making situation. By emphasising different motivations (normative, gain, hedonic), interventions influence which considerations become most relevant to consumers at the moment of choice, and consequently behaviour (Stern, 1999).

Abbreviations

E-PVQ	Environmental Portrait Value Questionnaire
GFT	Goal-framing theory
PBC	Perceived behavioural control
PPF	Perceived price fairness

Table of contents

1. Introduction

1.1 Background

Online shopping has become a cornerstone of modern retail, offering unparalleled convenience and accessibility to a variety of products and services, significantly shifting consumers' shopping habits. As consumers have embraced the comfort of shopping from their homes, online sales have surged, and this upward trajectory shows no signs of slowing down. Only in the EU, the share of e-shoppers grew from 53% to 75% between 2010 and 2023 (European Council, 2022), demonstrating the rapid growth of e-commerce and its integration in consumers' lives over the past decade.

Nonetheless, the convenience of online shopping comes at the cost of higher CO2 emissions, traffic congestion and pollution. In particular, the industry's ongoing growth is significantly increasing the number of parcels being delivered: in 2021, there were 159 billion parcels shipped worldwide, a figure which tripled from 2015 (Statista, 2022). In Sweden, a recent study found that 89% of consumers shop online at least monthly (Postnord, 2024). Consequently, this has led to an 8.3% increase in parcels delivered under 2024, totaling 214 million packages sent from e-tailers to private individuals (Transportföretagen, 2024).

Packaging accounts for a significant portion of e-commerce CO2 emissions, as products shipped directly to consumers require individual packaging (Mangiaracina et al., 2015). While the impact of packaging and packaging waste varies by product type, it has been shown to contribute approximately 18.6% of the supply chain emissions (Oliver Wyman, 2021). In particular, the packaging associated with the online sale of fashion items exhibits the highest levels of CO2 emissions, compared to that of books and electronics (Oliver Wyman, 2021). Fashion items are the most frequently purchased products online, both at the EU level (European Council, 2022) and in Sweden (Svensk Handel, 2025), where fashion constitutes the second-largest e-commerce category.

In light of the increasing volume of online orders being delivered, reusable packaging has emerged as a potential solution to mitigate the CO2 emissions associated with packaging and the e-commerce industry, as well as minimize the massive amount of waste generated (European Environment Agency, 2024). In a B2C e-commerce context, reusable packaging can be defined as packaging used for shipping online orders to end consumers (European Union, 2025), designed to be returned after delivery for use in future orders. Several market

actors (e.g., RePack (n.d.) and RE-ZIP (n.d.)) have introduced circular packaging solutions to challenge the traditional, wasteful norms associated with packaging in e-commerce. Prioritizing reuse over recycling is in line with the EU's Waste Management Hierarchy, which emphasizes that reducing waste through reuse offers greater environmental benefits than recycling (European Commission, 2023). Recent regulatory directives further highlight the importance of reusable packaging across industries (European Union, 2025), with the introduction of reuse targets signalling growing institutional support.

Nevertheless, market adoption of such solutions remains relatively low at present, as reusable packaging tends to be more expensive and burdensome for both businesses and consumers (McKinsey, 2023; Coehlo et al., 2020). Available information suggests that currently three fashion e-tailers in Sweden offer reusable packaging at checkout; however, it remains unclear how and if consumers can be nudged to adopt these solutions. As consumers are expected to take an active role in a circular economy (Møller Haase et al., 2024) and recognizing their position as primary drivers of change (Olsson, 2023), exploring consumer behaviour in this context presents a significant opportunity to uncover strategies to encourage pro-environmental behaviour.

1.2 Research gap

Despite growing awareness of sustainability issues in e-commerce, existing research has primarily focused on last mile delivery given its significant environmental impact (Mangiaracina et al., 2015; Olsson, 2023). Although packaging is a major contributor to the environmental footprint of e-commerce, this issue has been an underexplored topic in academic research (Mangiaracina et al., 2015; Pålsson & Olsson, 2023). Only recently has it gained attention, with studies pointing to its impact both in terms of greenhouse gas emissions, accounting for up to 30% of CO2 emissions in online retail (Zimmermann & Bliklen, 2020), as well as waste generated (Pålsson & Olsson, 2023).

While research has explored ways to extend the useful life of packaging, particularly focusing on consumer willingness to engage with reuse systems (Heeremans et al., 2025; Greenwood et al., 2021), a notable gap remains in literature concerning consumer adoption of reusable packaging in online retail settings (Pålsson & Olsson, 2023). Indeed, existing research has largely placed focus on reuse systems in the food and beverage sectors, with the application of these findings to e-commerce remaining unexplored.

The existing body of work on this topic mainly addresses reusable packaging from a production perspective, highlighting reduction in CO2 emissions, waste, and overall costs when compared to single-use alternatives (Zimmermann & Bliklen, 2020; González Romero et al., 2024). Three recent studies have also explored reusable packaging solutions, advocating for the promotion of circular packaging (Escursell et al., 2021; Baskoro, 2020; Lai et al., 2022). In line with this, the Sweden-based CIRKLA project aims to develop scalable reusable packaging systems by engaging with industry stakeholders and focusing on efficient return solutions (Aster, 2024).

While previous contributions have laid an important foundation, consumer behaviour in relation to reusable packaging in e-commerce settings has been largely overlooked. Addressing this gap opens an entirely new venue of research within the field of pro-environmental consumer behaviour, with the potential to provide valuable insights into how to design effective strategies to encourage consumer adoption of reusable packaging when making online purchases. Thus, this thesis responds to calls for further research on e-commerce packaging (Pålsson & Olsson, 2023; Mangiaracina et al., 2015) while also addressing the broader concern about the limited understanding of the complexities underlying individuals' pro-environmental decision-making (Wyss et al., 2022).

In light of the growing attention both from an academic perspective and within the broader sustainability discourse and acknowledging consumers' pivotal role in the success of sustainability initiatives, we deem it relevant to explore how and if consumers can be influenced to choose reusable packaging when shopping online.

1.3 Purpose and research question

The aim and purpose of this study is to determine whether and how using different interventions at the online checkout stage can influence consumers' choice of reusable packaging. Specifically, we build on goal-framing theory which suggests that activating goal frames (normative, gain, and hedonic) using tailored interventions can positively influence pro-environmental behaviour.

This thesis contributes to extending research both on pro-environmental behaviour and reusable packaging in e-commerce, while advancing the application of goal-framing theory by responding to calls for further research on behavioural interventions – an area which has been largely neglected in previous studies (do Canto et al., 2022). Empirically, this study is

expected to offer interesting insights for retailers looking to implement reusable packaging options at checkout to support EU sustainability objectives. Thus, this quantitative study will be guided by the following research question:

> ***RQ**: How do different interventions at checkout influence consumers' choice of reusable packaging when shopping online?*

1.4 Delimitations

The current study is delimited to an investigation of how consumers can be influenced to adopt reusable solutions when making online purchases. The adoption of reusable packaging solutions by a few Swedish retailers signals a growing interest in sustainable packaging alternatives within the e-commerce sector. Therefore, exploring the factors that drive consumer adoption is deemed to be an appropriate starting point for this novel area of research.

Furthermore, this study will investigate consumer behaviour towards reusable packaging in the context of online shopping for fashion items. Given the expected increase of the fashion e-commerce sector in Sweden over the next four years (ECDB, 2023), this focus appears particularly relevant. Additionally, as clothing items are less fragile when compared to, e.g., electronics, the fashion industry is deemed a suitable starting point for the wider implementation of reusable packaging, as it allows the opportunity to minimize over-packing without compromising product protection.

This thesis is further delimited to the Swedish market; therefore, the sample utilized in this study consists of individuals residing in Sweden.

1.5 Disposition

This thesis is structured into 6 main chapters. The introductory chapter is followed by an overview of the proposed framework and a review of the relevant literature, forming the basis of our hypotheses. Chapter 3 outlines the methodological approach, followed by a presentation of the empirical data in Chapter 4, and discussion of the results in Chapter 5. Chapter 6 concludes the thesis by summarizing the key findings in relation to the study's purpose, highlighting the contributions made, the thesis' limitations, and suggestions for future research.

2. Literature review, theoretical framework, and hypotheses development

In this chapter, we provide a comprehensive review of previous studies that support our research purpose and question. This thesis builds on two bodies of knowledge in relation to environmental sustainability: the first focused on e-commerce, while the second situated in behavioural studies. After introducing a brief overview of the proposed framework, this chapter establishes the theoretical foundation of this thesis while presenting hypotheses guiding this research.

2.1 Overview of the framework

Acting pro-environmentally entails a social dilemma, as individual and societal or environmental interests are at odds (e.g. Schuitema & de Groot, 2015). Thus, when faced with alternatives, consumers may be required to make sacrifices or incur personal additional costs. In these situations, multiple, often incompatible, goals are taken into consideration.

Building on goal-framing theory, this thesis proposes that interventions, namely environmental information, monetary incentives, and hedonic appeals, can influence pro-environmental behaviour by encouraging consumers to opt for reusable packaging at online checkout by making that choice more appealing. Given that individuals' values are particularly influential in decision-making when supported by situational cues (what this thesis refers to as *interventions*) (Steg et al., 2014a), we further propose that the effectiveness of interventions depends on the values endorsed by individuals. Specifically, when interventions align with an individual's predominant values, they are more likely to result in a stronger behavioural response (do Canto et al., 2022). Additionally, we expand goal-framing theory by considering additional factors that may provide a more nuanced understanding of pro-environmental behaviour. In particular, perceived behavioural control and price fairness are considered key variables that may moderate the effectiveness of these interventions, thereby offering deeper insights into the mechanisms underlying pro-environmental behaviour (see Figure 1).

The analytical elements are divided into 6 parts: (i) a dependent variable measuring pro-environmental behaviour, i.e. the choice of reusable packaging, (ii) an independent variable, i.e., the goal frames which are operationalized and activated via interventions, (iii) three

moderating variables capturing the individuals' values that may influence the strength of the relationship between the interventions and choice, (iv) one moderating variable measuring individuals' perceived behavioural control, and lastly (v) one moderating variable capturing individuals' perceived price fairness of the reusable packing option.

What follows is a review of relevant literature forming the foundation for this thesis' theoretical framework and hypotheses.

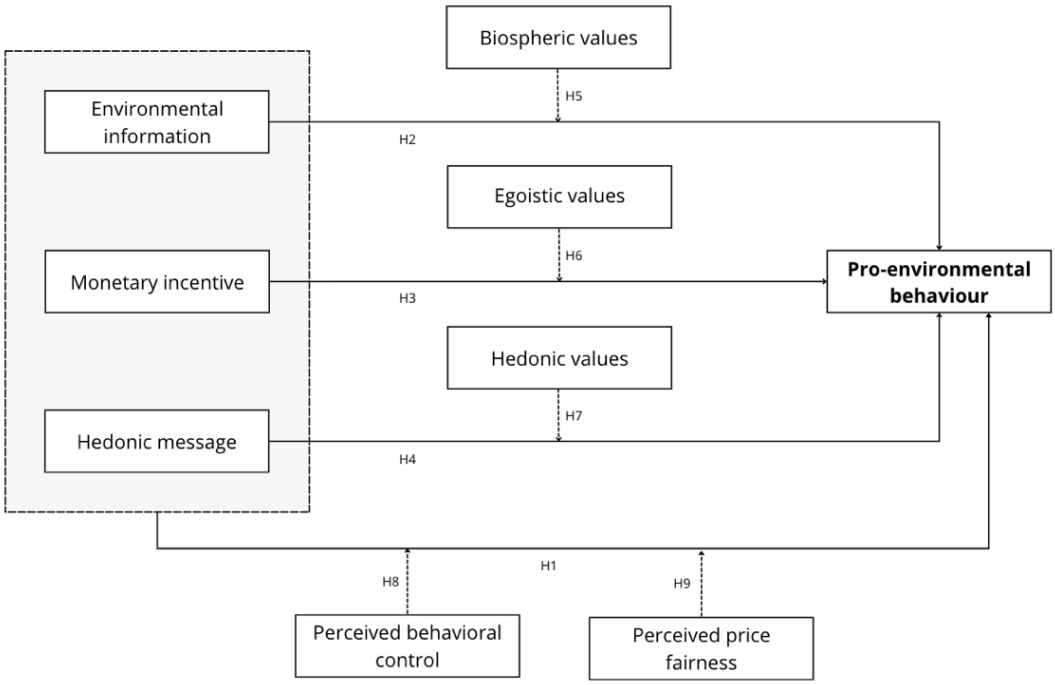


***Figure 1**. Proposed conceptual model.*

2.2 Environmental impact of e-commerce

The environmental impact of e-commerce is a growing concern as online shopping continues to expand globally. Although prior research has primarily focused on last mile delivery (Mangiaracina et al., 2015; Ignat & Chankov, 2020), the impact of e-commerce extends far beyond. In particular, the widespread use of single-use packaging needed to ship products to customers contributes notably to environmental degradation (Mangiaracina et al., 2015). Research points to its impact both in terms of greenhouse gas emissions, accounting for up to 30% of CO2 emissions in online retail (Zimmermann & Bliklen, 2020), as well as waste generated (Pålsson & Olsson, 2023).

Although retailers are increasingly opting for recycled materials, Silva and Nilsson (2024) note issues with improper recycling which could contribute to pollution. While consumers'

environmental concern typically drives their recycling behaviour, lacking understanding of what can and cannot be recycled, along with inconvenience, present important barriers to recycling (Jacobsen et al., 2022).

Despite increasing recycling efforts, the massive amount of waste generated in Europe is still of paramount concern (European Environment Agency, 2024), which has prompted research into ways to extend packaging' value after first use (Heeremans et al., 2025; Greenwood et al., 2021). Kim et al. (2022) indicate that online shopping generates 4.8 times more packaging waste than offline shopping, suggesting that the continued rise of e-commerce will accelerate packaging waste in the future. While not yet widely researched, reusable packaging has recently been proposed as a solution to reduce the packaging waste generated by e-commerce.

2.2.1 Reusable packaging

To address the environmental impact of packaging, the European Union (2025) laid out new requirements and objectives for e-commerce packaging in the Packaging and Packaging Waste Regulation, including a re-use target. Minimizing the use of packaging materials is considered one of the most effective measures to protect the environment due to its potential to extend the packaging's life cycle and thereby reduce waste (Lai et al., 2022).

Reusable packaging generally refers to packaging which has been designed to carry out multiple trips in its lifetime by being refilled or reused for the same purpose for which it was conceived (Bradley & Corsini, 2023). Studies exploring willingness to engage with reuse systems show positive attitudes toward the latter, especially among younger, eco-conscious consumers (Noëth et al., 2024). However, practical inconveniences, such as return requirements, have been identified as potential barriers to broader adoption (Miao et al., 2023).

A recent literature review (Pålsson & Olsson, 2023) noted that while e-commerce has a major environmental impact, research on e-commerce packaging and potential for re-use are lacking. In the past years, a few studies have emerged comparing the environmental impact of disposable and reusable e-commerce packaging, with findings revealing that transitioning to reusable packaging can not only reduce costs for e-tailers (Clement & Spinler, 2025), but also CO2 emissions and waste. Three studies explored reusable packaging solutions for e-commerce in a B2C setting, advocating for the promotion of circular packaging in light of the

increasing e-commerce transactions and EU policies (Escursell et al., 2021; Baskoro, 2020; Lai et al., 2022). Nevertheless, reusable packaging is only environmentally advantageous if used often enough, pointing to the importance of consumer involvement in the return process (Zimmermann & Bliklen, 2020).

2.3 Pro-environmental consumer behaviour

As environmental concerns intensify, there is growing awareness that substantial improvements can only be realized by altering individual consumer behaviour (Ölander & Thøgersen, 1995; Olsson, 2023).

Pro-environmental behaviour refers to "any action that enhances the quality of the environment" (Steg et al., 2014a) such as reducing waste or opting for sustainable products. Considering that behavioural change is necessary to protect environmental sustainability, studying pro-environmental behaviour has attracted a lot of interest. For instance, Novoradovskaya et al. (2020) underline the effectiveness of behavioural change interventions on increasing the use of reusable cups, highlighting that consumer involvement is indispensable for the success of circular initiatives (Shevchenko et al., 2023).

Acting pro-environmentally entails a social dilemma, as individual and societal or environmental interests are at odds (Schuitema & de Groot, 2015), which may require consumers to make sacrifices or incur additional costs. Indeed, while many express positive attitudes towards pro-environmental behaviour (Eckhardt et al., 2010), their actions often fail to align with these attitudes. This inconsistency, known as the attitude-behaviour gap (Kollmuss & Agyeman, 2002), highlights the challenge of translating environmental concern into concrete behavioural change. Several empirical studies illustrate this gap (e.g., Magnusson et al., 2001; Szmigin et al., 2009). In a reusable packaging context, Silva and Nilsson (2024) note that while individuals generally react positively when presented with reusable packaging solutions, the perceived sacrifice and inconvenience involved in returning the packaging can undermine their initial willingness to engage in such solutions.

Twenty-three years after the publication of Kollmuss and Agyeman's research, much remains to be uncovered about how to drive pro-environmental behaviour.

2.3.1 Choice of packaging

In this study, pro-environmental behaviour is investigated through the lens of individual choice. Specifically, the dependent variable is a binary choice between reusable and single-use packaging in a simulated online shopping scenario, wherein the choice of reusable packaging represents pro-environmental behaviour. This choice captures the underlying social dilemma of pro-environmental decision-making, whereby consumers are often confronted with a trade-off between short-term personal gain, such as increased convenience, and long-term environmental benefits.

As the choice is made in a hypothetical context, rather than being observed in actual behavior, this study relies on stated preferences. A single binary choice question with one option typically representing the status quo – such as single-use packaging – is among the most commonly used preference elicitation formats (Carson & Groves, 2007). Stated choice methods are used to forecast behavioural responses to product or policy changes (Beck et al., 2016), making them particularly useful in the case of reusable packaging where the product in question is not widely adopted, and thus observing real-world choices is not feasible.

This method aligns with several consumer behaviour studies in the sustainability domain that rely on hypothetical choice tasks to explore how individuals respond to different types of information and contextual cues. For instance, Ignat and Chankov (2020) found that displaying CO2 emissions in a hypothetical online shopping environment can influence consumers' choice towards the more sustainable delivery option. Similarly, Thomas et al. (2022) demonstrated that introducing a 1$ discount at checkout influenced the likelihood of choosing a greener delivery option.

In parallel, a large literature stream has examined willingness to pay (WTP) as an indicator of pro-environmental preferences, indicating that consumers are willing to pay a price premium for sustainable products when exposed to certain cues (De Canio, 2023; Loureiro & Lotade, 2005). While WTP is not the focus of this study, it captures a similar aspect of pro-environmental behaviour as the one examined in this paper, whereby individuals are prompted to make a choice weighing certain trade-offs. Compared to open-ended WTP questions, the binary choice format offers a more straight-forward and intuitive approach to examining consumer behaviour. The choice approach is closer to real-life market settings wherein consumers are faced with discrete choices: "here is an item, it costs $x, will you take it?" (Hanemann, 1994).

Ultimately, such environmental choices are not only a reflection of individual preferences but are influenced by broader psychological processes and motivations. To conceptualize the mechanisms underlying pro-environmental behaviour, this study draws on goal-framing theory. The following section elaborates on its application to understand the different motivations guiding pro-environmental decision making.

2.3.2 A goal-framing perspective on pro-environmental behaviour

The drivers behind pro-environmental behaviour have been addressed by several studies, pointing to individual morality (Thøgersen, 1996) and environmental concern (Smiley et al., 2022), among others. Although Stern (2000) suggests that pro-environmental behaviour is shaped by a complex interplay of factors, the three most prominent theories used within environmental psychology, i.e., Theory of Planned Behaviour, Value-Belief-Norm theory and Affect theories, focus on one specific kind of driver (Lindenberg & Steg, 2007). In particular, self-interest, moral obligation, and hedonic aspects have been each considered in isolation to explain various kinds of pro-environmental behaviour (e.g., Paul et al., 2016; Pasquariello et al., 2024).

More recently, a theory emerged focusing on the motivational aspect of behavioural change. Proposed by Lindenberg and Steg (2007), goal-framing theory (GFT) suggests that most behaviours are influenced by multiple goals: goals "frame" the way individuals process information and act upon it. Three goal frames have been identified as guiding behaviour: the normative goal "to do the right thing", the gain goal "to guard or improve one's resources", and the hedonic goal "to feel better right now" (Lindenberg & Steg, 2007; Steg et al., 2016).

While previous research has examined these motivations in isolation, GFT argues that pro-environmental behaviour results from different motives depending on the context (Lindenberg & Steg, 2007).

Normative goals

Normative goals are associated with personal norms and beliefs of what behaviours others will approve or disapprove (Steg et al., 2016), guiding individuals to act in a pro-environmental way because it is the appropriate thing to do (Lindenberg & Steg, 2007). Activating this frame – such as through sustainable labelling (Thøgersen & Alfinito, 2020) or by emphasizing the environmental impact of an action (Bergquist et al., 2017) –

can motivate people to engage in that behaviour by tapping into their moral duty and responsibility (de Groot & Steg, 2009).

A normative goal provides the most stable basis for pro-environmental behaviour as it is not based on self-interest or perceived pleasure (de Groot & Steg, 2009). However, this goal frame is the weakest and the most dependent on external support – as suggested by Lindenberg and Steg (2007), individuals often need guidance to steer them in the right direction.

Gain goals

Gain goals direct individuals towards improving or preventing the decrease of one's resources (Lindenberg & Steg, 2007). Therefore, pro-environmental behaviour is more likely if it yields personal benefits (Steg et al., 2016). Previous studies have found that gain goals significantly influence pro-environmental behaviour, such as visiting green hotels (Wang et al., 2022) or investing in renewable energy (Dóci & Vasileiadou, 2015).

Messages framed to appeal to self-interest have been shown to successfully promote different pro-environmental behaviours by highlighting personal gains such as saving time (Westin et al., 2020) or rewards (De Dominicis et al., 2017; Maki et al., 2016). This is also noted by Steg et al. (2016) who point out that when gain goals are in focus, individuals are sensitive about information on incentives and personal gains, and will thus engage in pro-environmental behaviour if the latter aligns with their self-interest.

Hedonic goals

Hedonic goals are driven by the pursuit of pleasure and immediate gratification. (Lindenberg & Steg, 2007). Individuals in a hedonic frame will consider how carrying out a particular action will make them feel and choose the option which is thought to bring the most pleasure (Steg et al., 2016). Hedonic goals are found to influence pro-environmental behaviour if those actions are perceived as effortless, enjoyable, and personally rewarding (Zhang et al., 2024; Tang et al., 2019).

The anticipation of positive emotions serves as a powerful motivator for pro-environmental behaviour (Hartmann et al., 2017; Onwezen et al., 2013). For instance, Schneider et al. (2017) and Bergquist et al. (2020) both found that positive messaging successfully influenced sustainable behaviour by targeting positive emotions.

Although all three goals are likely to affect the choices people make at any given time, the strength of each differs across situations. As a result, one goal tends to predominate above the others in a given context: Lindenberg and Steg (2007) refer to it as the *focal goal* or *goal frame*. While not yet widely applied, GFT has surfaced as an interesting framework to identify the motivations that can drive behavioural change in an environmental context (do Canto et al., 2022).

Based on previous research demonstrating that activating different goal frames can effectively influence pro-environmental behaviour in various domains, it is reasonable to expect similar effects in the context of reusable packaging. By activating specific goal frames at the point of decision-making, consumers can be guided towards more sustainable choices. We hypothesise the following:

H1: Activating goal frames positively influences the choice of reusable packaging.

Two main factors influence the strength of goals: interventions and values (Steg et al., 2016), which will be discussed in the following sections.

2.3.3 Interventions

As presented above, pro-environmental behaviour may require consumers to make sacrifices, hampering the adoption of such behaviours. In this regard, interventions can make the desired behaviour more appealing and easier to perform. Akin to nudging, interventions aim to influence individual's actions and behaviours in a non-coercive manner: by modifying the way different options are presented, individuals can be subtly guided towards a desired behaviour (Mertens et al., 2022).

From a goal-framing perspective, interventions can increase the salience of certain goal frames in a decision-making situation. By emphasising certain motivations (normative, gain, hedonic), interventions influence which considerations become most relevant to consumers at the moment of choice, and consequently affect behaviour (Stern, 1999). In the present study, interventions enable the operationalization of the associated goal-frames.

Stern proposed two strategies to influence behaviour: providing information about the benefits of behavioural change, and financial incentives. Additionally, given that evoking positive feelings has been shown to positively influence pro-environmental behaviour (e.g., Rezvani et al., 2018; Reinholdsson et al., 2022), we consider hedonic appeals as a third intervention strategy.

2.3.3.1 Environmental information

Consumers are unlikely to engage in sustainable behaviours if they are not aware of the problem at hand and the positive actions they can take (White et al., 2019). De Groot and Steg (2009) argue that engagement increases when individuals receive information on why specific environmentally responsible actions are important, especially when seen as inconvenient. Supporting this, both Rajapaksa et al. (2019) and Plamondon et al. (2022) found that providing environmental information effectively influenced environmental behaviour and attitudes.

Providing information has also been reported to be effective in increasing consumers' preference for reusable food packaging (Mastria et al., 2024). In an e-commerce context, displaying CO2 emissions for different delivery options proved to be effective in shifting consumer preference towards the more sustainable option (Ignat & Chankov, 2020; Thomas et al., 2022). Disclosing information about the environmental impact of a particular behaviour can thus emphasize moral obligation, allowing to direct focus on normative goals to prompt individuals to engage in the pro-environmental action (Westin et al., 2020).

Aligned with previous research demonstrating the positive impact of information on pro-environmental behaviour, we propose that activating a normative goal by providing CO2 emission information for packaging options at checkout will positively influence the choice of reusable packaging. Thus, our hypothesis follows:

> **H2**: Activating a normative goal frame positively influences the choice of reusable packaging.

2.3.3.2 Monetary incentives

Stern (1999) argues that information alone can only influence behaviour to a limited extent, and only for certain individuals. He holds that monetary incentives can make environmentally friendly options more attractive. Indeed, financial incentives have emerged as a significant factor influencing pro-environmental behaviours (e.g., Maki et al., 2016; Kroker & Lange, 2024). In an e-commerce setting, Thomas et al. (2020) found that introducing a 1$ discount influenced the likelihood of choosing a greener delivery option.

Monetary incentives can thus frame a pro-environmental decision as a personally rewarding action: by using financial rewards to activate gain goals, individuals are more likely to perceive the behaviour as aligning with their self-interest and thus engage in such action

(Steg et al., 2016). As reusable e-commerce packaging entails both a fee and effort required to return it, this thesis posits that offering a monetary incentive can make the environmentally friendly option more appealing (Stern, 1999). Thus, we hypothesize the following:

> **H3**: Activating a gain goal frame positively influences the choice of reusable packaging.

2.3.3.3 Hedonic appeals

While financial incentives appeal to self-interest offering tangible rewards, hedonic appeals emphasize intrinsic satisfaction (Berquist et al., 2020). For instance, Reinholdsson et al. (2022) investigated the impact of a hedonic message on vegetarian food purchases and found that it had the largest positive effect on vegetarian sales. Hedonic appeals were also found to be more effective than financial and normative messages in reducing room cleaning requests in a hotel (Trabandt et al., 2024).

The effectiveness of hedonic appeals in influencing pro-environmental behaviour stems from their ability to evoke positive feelings: individuals are more inclined to engage in pro-environmental behaviour when they derive some form of positive emotion (Corral-Verdugo et al., 2009; Berquist et al., 2020). Drawing on previous studies, we expect that activating a hedonic goal frame by displaying a positive message at checkout will positively influence the decision to select reusable packaging.

> **H4**: Activating a hedonic goal frame positively influences the choice of reusable packaging.

2.3.4 Values

Values are relatively stable, deeply ingrained personal criteria on which individuals base their thoughts and actions, thus serving as a guiding principle (Schwartz, 1992). As values guide behaviour, they also determine the likelihood that a particular goal is salient in a particular situation (Steg et al., 2014b).

Values have emerged as an important factor to explain and predict pro-environmental behaviour (de Groot & Steg, 2009; Thøgersen & Ölander, 2002). Indeed, as acting pro-environmentally entails a social dilemma requiring individuals to balance competing interests (e.g., Schuitema & de Groot, 2015), values serve as underlying tenets in determining the type of trade-off to make.

In the context of pro-environmental behaviour, we distinguish between self-enhancement values, i.e. hedonic and egoistic, and self-transcendent values, that is biospheric and altruistic (Steg et al., 2014a). Hedonic and egoistic values lead individuals to focus on goals that primarily benefit themselves, either through personal pleasure and enjoyment, or through the improvement of one's resources (Steg & de Groot, 2012). From a goal-framing perspective, individuals who endorse self-enhancement values are more likely to hold and respond to a gain or hedonic-oriented frame, as they will consider the personal costs or benefits of environmental actions (Steg & de Groot, 2012).

In contrast, biospheric and altruistic values reflect a concern for nature and the environment, and the wellbeing of other human beings, respectively (Steg & de Groot, 2012). As pro-environmental behaviour is associated with both societal and environmental benefits, self-transcendent values are typically the most crucial predictor of positive attitudes and behaviour towards the environment (Onel & Mukherjee, 2016; Bolderdijk et al., 2013). Several studies have shown that individuals that value the environment are more willing to behave in a pro-environmental way (Thøgersen, 2011, Nguyen et al., 2016, Ram et al., 2024).

From a GFT perspective, values can influence decision-making when they are activated through interventions (Steg et al., 2014b). Consequently, it has been suggested that interventions result in a stronger behavioural response when the values activated align with an individual's predominant values (do Canto et al., 2022). Therefore, we argue that interventions can help frame choices in a way that aligns with individuals' value orientation.

2.3.5 The interaction between interventions and values

2.3.5.1 Environmental information and biospheric values

Biospheric values emerge as an important determinant in predicting the effectiveness of information disclosure in nudging pro-environmental behaviour. Both Schoenefeld and McCauley (2016) and Onel and Mukherjee (2016) report that environmental information only influenced pro-environmental behaviour among those already concerned with social and environmental issues. Therefore, individuals holding stronger self-transcendent values tend to be more attentive and sensitive to information highlighting sustainability matters (Nguyen et al., 2023; Caspersen & Navrud, 2021). Steg et al. (2014a) propose that biospheric values hold particular relevance for strengthening normative goals and consequently drive pro-environmental behaviour.

Building on the argument by Steg et al. (2014a), we hypothesise that providing environmental information about packaging options at checkout will positively influence the choice of reusable packaging especially for those individuals holding biospheric values, as displaying CO2 emission information will bring those values to the forefront and encourage pro-environmental behaviour.

> **H5**: The positive effect of activating a normative goal is stronger for individuals with higher levels of biospheric values.

2.3.5.2 Monetary incentives and egoistic values

Appealing to self-interest can provide a successful pathway to pro-environmental behaviour for those individuals considering the personal costs or benefits of environmental actions (Steg & de Groot, 2012). Several studies indicate that self-enhancing messages, such as offering monetary incentives, are more effective for individuals with egoistic values (Nilsson et al., 2016) and can motivate pro-environmental behaviour among those who would otherwise be less inclined to act in sustainable ways (Steg et al., 2014b).

Considering the reasoning of Steg et al. (2014a) that particular interventions can activate certain values, we argue that monetary incentives – as a self-enhancing strategy – activate egoistic values. Further, given the authors' argument that individuals endorsing stronger egoistic values are more likely to respond to a gain-oriented goal frame, our hypothesis follows:

> **H6**: The positive effect of activating a gain goal is stronger for individuals with higher levels of egoistic values.

2.3.5.3 Hedonic appeals and hedonic values

As the strength of goals depends on the values individuals endorse (Steg et al., 2016), hedonic values are likely to influence the strength of hedonic goals (Lindenberg & Steg, 2007). To this point, Choi and Johnson (2019) report that hedonic values effectively predicted intention to purchase green products. Similarly, hedonic values have also been found to strengthen hedonic goals in second-hand luxury consumption (Rathi et al., 2023).

This aligns with Steg et al. (2014a) who suggest that individuals tend to make decisions congruent with their values, and therefore, while hedonic values are not self-transcendent ones, they have been found to play a key role in pro-environmental behaviour if the latter is

associated with pleasure and personal gratification. Thus, as hedonic appeals bring hedonic values to the fore (Steg et al., 2014a), we expect them to be more effective in influencing behaviour for those holding higher levels of hedonic values.

> **H7**: The positive effect of activating a hedonic goal frame is stronger for individuals with higher levels of hedonic values.

2.3.6 Perceived behavioural control

Perceived behavioural control (PBC) can be defined as the perceived ease or difficulty of performing a behaviour (Ajzen, 2002). In the context of pro-environmental behaviour, PBC suggests that individuals are more inclined to engage in sustainable activities when they perceive it to be effortless and within their control (Ajzen).

Several studies report PBC as a strong determinant of pro-environmental behaviour, as seen in de Groot and Steg (2007) and Gao et al. (2017). These findings are echoed by de Leuuw et al. (2015) and Ateş (2020) who note that perceptions of control have a noteworthy effect on eco-friendly behaviour and can determine whether individuals are willing to engage in such actions. Thus, PBC is likely to significantly influence the decision-making process, particularly when consumers are confronted with a choice that demands additional effort (Ajzen, 2002). Additionally, PBC has also been found to moderate the impact of persuasive messaging in several studies investigating pro-environmental behaviour (e.g., Liu et al., 2022; Oh et al., 2020).

Some authors have attempted to enhance the explanatory power of GFT by including additional constructs to better understand what drives pro-environmental behaviour (Onel & Mukherjee, 2017; Westin et al., 2020; Zhang et al., 2024). Considering that reusable packaging does require a degree of effort from consumers, as they are responsible for returning the packaging, we argue that the effectiveness of interventions will depend on whether the behaviour is perceived as overly complex or inconvenient. Thus, PBC is treated as a moderating variable, following Ajzen's (1985) original conceptualization. Our hypothesis follows:

> **H8**: Perceived behavioural control positively moderates the effect of the interventions on the choice of reusable packaging.

2.3.7 Perceived price fairness

Price plays a critical role in consumers' decision making and is one of the key factors influencing pro-environmental behaviour (Osterhus, 1997). In particular, perceived price fairness (PPF), i.e., the extent to which consumers judge a price as reasonable, acceptable or justifiable (Xia et al., 2004), can significantly impact purchase decisions. As noted by Gleim et al. (2013), green behaviours pose a social dilemma for consumers, as they often involve a higher personal cost, yet contribute to the greater good. Thus, the perceived financial burden can often lead to resistance.

Several studies indicate price as an important barrier when making sustainable consumption choices (Wiederhold & Martinez, 2018; Pereira et al., 2021), suggesting that consumers avoid purchasing sustainable products when the price is higher than more conventional alternatives (Bray et al., 2011). While GFT posits that pro-environmental behaviour can be influenced by various motivational drivers, it fails to consider other critical factors that may still hinder the adoption of such behaviours.

Price has been treated as a moderating variable in several studies exploring pro-environmental behaviour (e.g., Lavuri, 2022; Yue et al., 2020) and has been found to significantly influence the extent to which consumers are willing to engage in green consumption. Although in these studies price moderated the relation between environmental concern or green attitude and green consumption intentions, we propose that a similar effect may occur with behavioural interventions. Specifically, the effectiveness of such interventions in influencing the choice of reusable packaging may depend on the perceived price fairness of that option.

> **H9**: Perceived price fairness positively moderates the effect of the interventions on the choice of reusable packaging.

3. Methodology

The following chapter will present this thesis' selected research approach and design, including a discussion of the preparatory interviews conducted, as well as the pre-test and main study. Lastly, the quality of data is considered.

3.1 Research approach

As the aim of this paper is to investigate the influence of interventions on the choice of reusable packaging, this study is rooted in an ontological aspect of *objectivism* and epistemological aspect of *positivism.* First, *objectivism* implies that social phenomena exist independently of individuals' perceptions and interpretation (Bell et al., 2022). In this study, consumer behaviour regarding the choice of reusable packaging is viewed as an objective reality that can be studied systematically. Second, this research adopts *positivism* as an epistemological perspective, aligning with this thesis' objective to test whether specific interventions can nudge consumers toward selecting reusable packaging.

This thesis embraces a deductive research approach, whereby the above hypotheses are tested in an empirical study (Bell et al., 2022). As we seek to measure and analyse the effects of different interventions on consumer choice, as well as understand the relationship between different variables, this research is of quantitative nature. The scientific perspective and research approach utilized in this study enable statistical testing of the findings.

3.2 Exploratory interviews

As our research intends to have practical implications into how consumers can be influenced to choose reusable packaging in an e-commerce setting, it was important to determine whether this topic was of interest to industry stakeholders in Sweden. A total of 7 interviews were conducted online, each lasting between 20 to 30 minutes (see Table 1). The interviews were centred around (i) the importance of reusable packaging in the broader context of sustainability, (ii) the role of consumers and potential obstacles to adoption, and (iii) the future of reusable packaging. The interviewees' insights were incorporated following verbal disclosure and recorded informed consent. The interview guide template is available in Appendix A.

#	Position	Organization	Interview date
1	*Criteria and Sustainability Manager*	Certification Body	07.02.2025
2	*Head of E-commerce*	Fashion Retailer	11.02.2025
3	*Researcher*	University	12.02.2025
4	*Senior Green Technology Lead*	Logistics Company	13.02.2025
5	*Branch Manager*	Logistics Company	18.02.2025
6	*Sustainability Coordinator*	Fashion Retailer	20.02.2025
7	*Researcher*	Sustainability Project	03.03.2025

Table 1. *Overview of interview participants.*

All interviews confirmed the relevance of reusable e-commerce packaging, underlining the increasing importance in light of new EU regulations. Further, stakeholders validated the pivotal role of consumers as drivers of change, recognizing that the environmental benefits of reusable packaging can only be realized if consumers actively engage with it. Two factors were consistently emphasized as possibly hindering consumers' adoption: the non-refundable fee of reusable packaging, and the effort required to return the packing. Thus, it was deemed important to incorporate these factors as two additional moderating variables in our framework, recognizing that while values may influence the effectiveness of interventions on pro-environmental behaviour, perceived price fairness and behavioural control can add further depth to the findings.

3.3 Research design

As we seek to investigate the impact of different interventions on behaviour, this thesis employs an experimental research design. Experimental research is effective in providing insights into actual consumer behaviour, making it the preferred design for the purpose of this paper (Morales et al., 2017). An experiment can be described as the random allocation of individuals to different groups, each exposed to different stimuli (Söderlund, 2018). Randomization is necessary to ensure that any difference between the groups can be attributed to the manipulation of the independent variable (Bell et al., 2022).

The manipulation of the independent variable is a hallmark of experimental research design as it allows to compare whether different stimuli influence the dependent variable (Bell et al., 2022). In this study, the experimental procedure entailed exposure to a fictitious checkout page, where the different interventions (i.e. environmental information, monetary incentive, and hedonic appeal) enabled to manipulate the independent variable, i.e., the goal frames. A baseline checkout page (i.e., one with no interventions present) was used as a frame of reference for evaluating the effectiveness of interventions.

Before exposure to the checkout page, participants were presented with a description of a scenario and asked to envision themselves in that situation. The "scenario technique" is often used to substitute for real-life setting, as it offers realism by allowing to approximate real-life decision-making situations (Koschate-Fischer & Schandelmeier, 2014). The scenario was kept constant to ensure that any observed effects on behaviour could be attributed solely to the interventions on the checkout page, rather than external contextual variations.

Although experimental research design can be prone to social desirability bias, whereby participants may alter their responses to align with socially accepted behaviours (Ried et al., 2022), this bias can be mitigated by ensuring anonymized data collection to increase participants' sense of psychological safety. Responses in our study were gathered anonymously, and participants were informed that no identifiable information would be collected.

3.4 Research method

The research consisted of two studies: a pre-test and the main study. Both studies collected responses using a self-administered online questionnaire – one of the main instruments for gathering quantitative data (Bell at al., 2022). This allowed to collect responses from a large sample of the population, thereby making the findings more generalizable.

Both the pre-test and main study were distributed online and in English, given Sweden's high levels of English proficiency (EF, n.d.). To mitigate the risk of any misunderstandings, the pre-test was conducted on non-native English speakers, ensuring that the questionnaire was clear and comprehensible to a diverse audience.

3.5 Pre-test

A pre-test was conducted to evaluate the effectiveness of the variation of the independent variable and to test key components of the experiment (Koschate-Fischer & Schandelmeier, 2014), such as realism and clarity of the stimuli and scenario. The pre-test manipulated the independent variable through different interventions at checkout, and was conducted using a within-subjects design, whereby all participants were exposed to all treatment conditions. This type of design was preferred as it requires a smaller sample size, compared to a between-subjects design (Koschate-Fischer & Schandelmeier, 2014).

As participants are exposed to all treatments, one limitation of this design is the carry-over effect, whereby exposure to one treatment can alter behaviour in a later treatment (Koschate-Fischer & Schandelmeier, 2014; Söderlund, 2018). While it is generally recommended to vary the order in which the treatments are presented to participants, the purpose of the pre-test was to mainly assess understanding and overall plausibility of the experimental setup. As seen in Section 3.5.3, no evidence of a carry-over effect was observed.

3.5.1 Stimuli development

Before being exposed to the stimuli, participants were instructed to envision themselves in an online shopping situation and reaching the checkout stage. A description of reusable packaging was provided to ensure understanding across participants. By specifying the type of shopping and providing a description of reusable packaging, the scenario aimed to bring a cohesive interpretation across respondents.

Following the scenario, participants were presented with an image of our developed stimulus. The latter was designed to closely resemble a real retailer's website. The price of reusable packaging (30 SEK) was chosen based on a review of retailers (3) currently offering reusable packaging options at checkout. Consistent with industry practices, the regular packaging option was pre-selected as the default option.

A total of five stimuli versions were designed, featuring a checkout page with the following: 1) no interventions, 2) the CO2 emissions of both packaging options, 3a) a 10% discount, 3b) a 50 SEK discount for choosing reusable packaging, and 4) a hedonic appeal for the reusable packaging option. Two different checkout pages with varying monetary incentives were designed to evaluate participants' preferences and ultimately inform our main study.

3.5.2 Data collection

The pre-test utilized a convenience sample, i.e., one that was easily accessible to the researchers (Bell et al., 2022). While convenience sampling presents some risks, like the difficulty of generalizing the findings, the pre-test mainly aimed to gather insights regarding the clarity and realism of the scenario and stimuli; thus, this sampling method was deemed appropriate.

Data was collected from 49 individuals, of which 24 identified as female, 24 as male, and 2 preferred not to answer. The sample's age ranged from 18 to 64 years old, ensuring representation across different age groups. Thus, this sample was deemed appropriate for capturing diverse perspectives. The complete questionnaire can be found in Appendix B.

3.5.3 Measures and results

What follows below is a discussion of the measures utilized in the pre-test. Unless otherwise specified, multi-item measures were assessed using a 7-point Likert scale: "Strongly disagree" (1) to "Strongly agree" (7).

Manipulation checks

A manipulation check is a test used in experimental research to determine whether a manipulation was successful at influencing participants as intended (Söderlund, 2018). As noted by Ejelöv and Luke (2020), a manipulation check allows to identify any issues in the treatment that may need to be addressed.

To determine whether our stimuli had an overall impact on participants' intentions to choose reusable packaging, the item *"After completing this survey, do you feel more inclined to choose reusable packaging?"* was used. Out of the 49 respondents, 47% (n = 23) indicated that they felt more inclined to choose reusable packaging, while 53% (n = 26) remained indifferent or maintained their previous choice. While we are interested in actual pro-environmental behaviour, the intention-based measure allowed to verify that the treatments indeed have an influence before proceeding with the main study.

Additionally, three items were used to assess whether the goal frames were properly communicated and activated (see Table 2).

Manipulation check measures

Condition		Measure	Mean	SD
Normative		*I clearly understand the environmental benefits of choosing reusable packaging*	5.80	1.51
Gain	10% off	*I clearly understand what was the reward for choosing the reusable packaging*	6.66	0.73
	50 SEK off		6.40	1.07
Hedonic		*The message effectively conveys the idea of feeling good or enjoying the positive impact of your choice*	4.86	1.89

Table 2. *Responses to manipulation checks.*

Respondents assessed the two monetary incentives the highest: mean values of 6.66 (*SD* = 0.73) and 6.40 (*SD* = 1.07), indicating that the financial rewards were clearly grasped, and the gain goals were effectively communicated. The normative goal frame scored slightly lower (*M* = 5.80, *SD* = 1.51), possibly due to participants' difficulty in interpreting the depicted CO2 emission figures and their impact. The hedonic appeal received the lowest rating (*M* = 4.86, *SD* = 1.89), which could initially suggest that the message failed to convey the idea of feeling good. However, respondents' feedback suggests that they did not find the hedonic appeal as an effective tool overall: "*While it does convey the message, I think that in a modern world it will rarely lead to changing your choice.*". This indicates scepticism about the effectiveness of hedonic appeals rather than a failure in the manner of messaging.

Perceived price level

To assess participants price perception, the item *"The price of the reusable packaging is reasonable"* was asked after exposure to the first Baseline condition. The combined mean value, 4.56 out of 7 (*SD* = 1.70), suggests that respondents somewhat agree that the price of reusable packaging is reasonable, however the relatively high standard deviation indicates considerable variation in opinions.

Additionally, the item "*The offered discount of choosing reusable packaging is reasonable"* assessed whether the discount was perceived as an attractive incentive. Those who preferred the 10% discount indicated a higher rating (*M* = 6.03, *SD* = 1.17) compared to those preferring 50 SEK discount (*M* = 5.70, *SD* = 1.89). Overall, both types of discounts were deemed reasonable, with mean scores well above the scale midpoint (4).

Perceived realism

Participants were presented with three statements to measure the realism of the scenario, the stimuli, and the presence of packing options at checkout (see Table 3). The combined mean

score was 5.99 (*SD* = 1.41), indicating that the experiment was designed realistically, and closely resembled a real-life situation.

Perceived realism measures

Measure	Mean	SD
I can imagine myself in the described scenario	5.63	1.52
The checkout page closely resembled a real online shopping experience	6.51	0.92
I would not feel surprised if presented with packaging options during checkout	5.84	1.57
Overall mean	**5.99**	**1.41**

Table 3. *Responses to perceived realism measures.*

Perceived clarity

To ensure participants clearly understood the scenario and messaging, several statements were included to assess perceived clarity (see Table 4). Overall, respondents grasped the concept of reusable packaging well (*M* = 5.78, *SD* = 1.49). The shopping scenario itself was described very clearly (*M* = 6.22, *SD* = 1.21). The measures assessing the clarity of communication in the interventions were also well understood, with a mean of 5.98 (*SD* = 1.33) for the environmental impact and a mean of 5.65 (*SD* = 1.49) for the hedonic appeal. These findings suggest that participants considered the experiment realistic across various aspects.

Perceived clarity measures

Condition	Measure	Mean	SD
Baseline	*The concept of reusable packaging is clear to me*	5.78	1.49
Baseline	*The scenario was clearly described*	6.22	1.21
Normative	*The environmental information was presented in a way that was easy to read*	5.98	1.33
Hedonic	*The message was simple and straightforward to read and understand*	5.65	1.49

Table 4. *Responses to perceived clarity measures.*

Positioning of key information

In a checkout page, it is important that all information is positioned visibly for customers to see. This was assessed using 4 items (see Table 5). The combined mean score of 6.16 (*SD* = 1.26) gives a strong indication that key information was positioned visibly and clearly.

Positioning of key information measures

Condition		Measure	Mean	SD
Baseline		*The packaging options were clearly visible to me*	6.27	1.27
Normative		*The environmental information was positioned clearly on the checkout page*	6.10	1.28
Gain	10% off	*The reward information was positioned clearly on the checkout page*	6.37	1.04
	50 SEK off		5.90	1.91
Hedonic		*The message was positioned clearly on the checkout page*	5.98	1.23
		Overall mean	**6.16**	**1.26**

Table 5. *Responses to positioning of key information measures.*

As discussed in Section 3.5.1, a limitation of within-subject design is the potential carry-over effect. A possible carry-over effect could have been observed in this measure as it was assessed for each intervention. As no trends in the mean values were observed – either from participants learning to perform better or participants performing worse due to tiredness or boredom (Price et al., 1999) – this suggests that no carry-over effects are present.

3.5.4 Improvement of the treatments

Following the data analysis, the treatments were slightly modified to further ensure clarity.

Firstly, respondents pointed out some visual elements of the checkout page that made it difficult to recognize the sustainable option and pay notice to relevant elements. Following the feedback, the colour of the packaging section was changed to green and text colour was darkened and made bold.

Concerns were also raised regarding the difficulty of comparing the CO2 emissions for the packaging options. Additionally, feedback suggested that it might be challenging for some consumers to understand what CO2 really represents. While replacing CO2 emissions with another metric could have compromised the realism of the checkout page, a text statement was added under the reusable packing option “Save 0.19 kg CO2e by choosing this option”, and the CO2 emissions for the regular packaging option was removed to prevent information overload.

As anticipated, another issue that emerged was the price of the reusable packing. While the pre-test confirmed it to be a potential obstacle, the price used was an average of the current market prices at the time this thesis was written. To incorporate the findings from the pre-test

while maintaining ecological validity, the price was adjusted from 30 SEK to 29 SEK, aligned with the price of reusable packing offered by GANNI (n.d.)

Lastly, as our results indicated a strong preference for the 10% discount on the next order, with 83.7% of respondents choosing it over a 50 SEK discount, the main study implemented the 10% discount for the monetary intervention.

3.6 Main study

3.6.1 Procedure

This thesis' hypotheses were tested by conducting a between-subjects, single-factor experiment. As the aim is to investigate how consumers can be influenced to select reusable packing at checkout by activating different goal frames, the latter served as the independent variable, which was operationalized and manipulated through the use of interventions. A between-subject design, whereby participants are randomly assigned to and experience only one treatment condition (Koschate-Fischer & Schandelmeier, 2014), was preferred for the main study as it can more closely simulate a real-life checkout scenario and eliminate the risks of carry-over effect.

A self-administered online questionnaire was used to collect data. As the scenario in the pre-test proved effective in simulating a real-life situation, the same was used in the main study. The scenario was followed by exposure to one randomized checkout page (see Appendix C), where participants were asked to make a choice between regular and reusable packaging. The questionnaire comprised of 25 items and is available in Appendix D.

3.6.2 Data collection

A convenience sampling method was utilized for the main study. As the topic is a novel area of research and this thesis primarily aims to provide an understanding on how to influence consumers to choose reusable packaging, the sampling method is deemed appropriate. Moreover, efforts were made to ensure diversity among participants in terms of demographics.

Respondents were recruited both from the personal networks of the authors as well as a various Facebook groups for people based in Sweden. Data collection took place over a

period of 25 days, from 10/03/2025 to 03/04/2025. A total of 337 respondents completed the questionnaire and the latter took between 4-5 minutes to complete.

To exclude inattentive respondents, two attention checks were included. The first appeared following exposure to the checkout page and asked a simple "yes" or "no" question. The second was placed at the end of the questionnaire asking, "*What was the survey about?*" with three options. Seven respondents failed those checks and were therefore excluded, leaving a total of 330 participants for analysis.

Of the 330 participants, 46% identified as male (n = 151) and 53% as female (n = 174) (see Table 6). Three respondents preferred not to disclose their gender and two identified as non-binary. Respondents' age ranged from 17 to 75 years with the average being 30 years old. The sample size for each condition exceeds the recommended threshold of 20 participants per treatment condition in experimental designs (Hair et al., 2010).

		n	%
Total sample		**330**	1
Gender	Male	151	46%
	Female	174	53%
	Non-binary	2	1%
	Prefer not to disclose	3	1%
Age	Under 18	1	0%
	18–24	137	42%
	25–34	112	34%
	35–44	41	12%
	45+	36	11%
	Prefer not to disclose	3	1%
Experimental conditions	Baseline	85	26%
	Normative	84	25%
	Gain	78	24%
	Hedonic	83	25%

Table 6. *Sample description.*

3.6.3 Measures

Choice of packaging

The dependent variable – choice of packaging – is a binary choice between reusable and single-use packaging, which is measured by participants' stated preference. Participants were exposed to one of the four check-out pages and asked to make a choice: *"Based on the*

information provided in the check-out page, which packaging option do you choose?". This format captures participants' stated preferences and is commonly used in experimental studies where real-world behaviour cannot be observed (Beck et al., 2016).

Given the limited adoption of reusable packaging and lack of data on consumers' revealed preferences in this context, the stated preference method gives insights into how consumers are likely to behave when presented with the two packaging options under different experimental conditions.

Values

Values were assessed using the Environmental Portrait Value Questionnaire (E-PVQ) methodology which was specifically developed to measure values in environmental research (Bouman et al., 2018). This measure has received significant attention in research (e.g. Dong et al., 2020; Margaça et al., 2024). The E-PVQ consists of 17 items measuring biospheric, altruistic, egoistic and hedonic values. However, as altruistic values are not relevant to the focus of this study, the E-PVQ was not utilized in full.

In the present study, the measure consists of 12 items coded on a seven-point Likert scale ranging from "Totally not like me" (1) to "Totally like me" (7). The scale achieved good internal reliability, as indicated by Cronbach's alpha values in Table 7.

Value measures

Values	Measure	Mean	SD	Cronbach's α
Biospheric	*It is important to me to prevent environmental pollution* *It is important to me to protect the environment* *It is important to me to respect nature* *It is important to me to be in unity with nature*	5.36	0.99	**0.829**
Egoistic	*It is important to me to have control over others' actions* *It is important to me to have authority over others* *It is important to me to be influential* *It is important to me to have money and possessions* *It is important to me to work hard and be ambitious*	4.17	1.14	**0.782**
Hedonic	*It is important to me to have fun* *It is important to me to enjoy life's pleasures* *It is important to me to do things I enjoy*	6.01	0.87	**0.798**

Table 7. *Responses to value measures based on E-PVQ.*

Perceived behavioural control

PBC was assessed using a two-item measure coded on a seven-point Likert scale ranging from "Strongly disagree" (1) to "Strongly agree" (7). PBC is generally measured by asking

direct questions about capability to perform a behaviour, such as the perceived ease or difficulty of performing the behaviour, or with the degree of control over performing it (Ajzen, 2002). As noted by Ajzen (2020), no standard questionnaire is available for this measure, as he recommends developing items based on the research objective.

Following Ajzen (2006), two items were utilized in this study to capture the PBC (see Table 8). The scales' Cronbach's alpha was 0.613, which in the realm of PBC is deemed acceptable: based on a meta-analysis of 90 studies, the average Cronbach's alpha is 0.65, ranging from 0.61 to 0.90 (Ajzen, 2002).

Perceived behavioural control measures

Measure	Mean	SD	Cronbach's α
I find the process of using reusable packaging to be straightforward and easy	4.28	1.58	
I feel that choosing reusable packaging is completely within my control	4.70	1.67	
Overall mean	**4.49**	**1.38**	**0.613**

Table 8. *Responses to PBC measures.*

Perceived price fairness

PPF was determined through the question *"I believe that the price of the reusable packaging is reasonable"* and measured on a seven-point Likert scale ranging from "Strongly disagree" (1) to "Strongly agree" (7). This helped determine whether price is a barrier to choosing reusable packaging. A single item was chosen for the measure given the simplicity of the construct.

Thought protocol

A thought protocol was used to capture respondents' thought process and reasoning after being exposed to the stimuli and making their packaging choice. Thought protocols allow to gain a more complete understanding of individual's responses to certain stimuli (Berg & Liljedal, 2021). The gathered key themes were price sensitivity, effort associated with the packaging and unfairness about consumers bearing the costs (see Appendix E).

3.6.4 Data quality

3.6.4.1 Reliability

Stability

The measures used in this study are grounded in well-established frameworks. Values are a relatively stable personal criteria (Schwartz, 1992) and widely acknowledged to underlie individuals' pro-environmental behaviour (e.g., Steg et al., 2014a). Measures of PBC have also been extensively validated and therefore deemed sufficiently stable. While PPF may fluctuate with market conditions, its use is appropriate given the study's focus on present consumer behaviour.

Internal reliability

To ensure that the items within a multi-item scale measure the same intended variable (Bell et al., 2022), the measures were tested using Cronbach's Alpha. As seen in Section 3.6.3, measures indicated acceptable internal reliability for exploratory research.

3.6.4.2 Validity

Measurement validity

To ensure that a measure captures the phenomenon it intends to capture (Bell et al., 2022), this study utilized established measures. Values were assessed using the E-PVQ methodology, which was developed specifically for environmental research (Bouman et al., 2018). The PBC items were developed following Ajzen's (2006) guidelines. PPF was measured using a single item given the simplicity of the construct. Single-item measures have also been used to assess other simple constructs, like purchase (Berg & Liljedal, 2023) and word-of-mouth intentions (Solja et al., 2018).

Internal validity

Internal validity captures the causal relationship between the independent and the dependent variable (Bell et al., 2022). The pre-test ensured that different goal frames were properly activated via interventions (see Section 3.5.3), supporting the attribution of the observed effects to the interventions. The scenario technique also provided control over confounding variables (Söderlund, 2019), reducing their influence.

Ecological validity

Several steps were taken to ensure that the findings reflect real-world settings (Bell et al., 2022). The scenario technique offers realism by allowing to approximate real-life decision-making situations (Koschate-Fischer & Schandelmeier, 2014), and a pre-test confirmed the

realism and clarity of the stimuli, which were designed to closely resemble a real retailer's website (see Section 3.5.3).

External validity

To ensure the generalizability of findings, and to offset the limitations associated with convenience sampling, responses were collected from a diverse sample, both in terms of gender and age. As the sample size for each condition exceeds the recommended threshold of 20 participants per treatment condition in experimental designs (Hair et al., 2010), the study is well-positioned to provide robust results for each intervention.

3.6.4.3 Replicability

To ensure the findings of this study could be replicated, particular care was taken to document in detail the method used in this research as well the analysis of the data.

4. Results and analysis

To determine whether different interventions at checkout have an influence on the choice of reusable packaging, this chapter analyses empirical data to support or disprove the hypotheses generated previously.

4.1 Analytical approach

The empirical analysis was conducted based on data collected via the questionnaire and analysed using R Studio software. Given the binary nature of the dependent variable, i.e., the choice of packaging, a logistic regression was deemed most appropriate for the analysis (Hair et al., 2019). The logistic regression model revolves around predicting the probability of a situation (Stoltzfus, 2011) – in this case the likelihood of choosing reusable packaging, depending on the intervention condition, and the moderating effects of values, PBC and PPF. Preceding the regression analysis, Chi-square tests were conducted to explore the associations between categorical variables. These methods have been applied in other experimental studies that include a binary dependant variable, as seen in Thomas et al. (2022) and Kristensson, et al. (2017).

Moderating variables – values, PBC and PPF – were depicted in a regression as interaction terms – in this case, an interaction term between the moderator and experimental condition. Moderation was validated given a significant interaction effect and a lack of correlation with the dependent and independent variable (Söderlund, 2023). The continuous variables were mean-centred which is a common practice when estimating moderation effects (Caughlin, 2024). In addition, Gender and Age were included as control variables to account for potential confounding factors (Hair et al., 2019). Due to the low number of respondents identifying as non-binary (n = 2) or not disclosing their gender (n = 3), these groups were excluded from the regression analysis as the small sample sizes limit the reliability of statistical comparisons. Thus, Gender was treated as a binary variable, wherein females are assigned the value of 1 and males 0.

The estimates of the logistic regression were transformed into odds ratios for easier interpretation. If odds ratio is greater than 1, it can be interpreted that the probability of an event occurring is greater than not occurring. The significance of the coefficients and interaction terms was tested using a Wald test (Pennsylvania State University, n.d.).

Each model was tested for multicollinearity using the Variance Inflation Factor (VIF), and the model performance was evaluated using Nagelkerke R-Square and Hosmer-Lemeshow goodness-of-fit test. In addition, logistic model assumptions were tested. All models reached appropriate levels of fit and significance and the logistic model assumptions were fulfilled, see Appendix F for detailed description of tests.

4.2 Preliminary analysis

The primary interest of this paper lies in observing the consumers' choice of packaging – reusable or regular – and whether that choice can be influenced by different interventions, i.e., the experimental conditions (see Table 9).

Experimental condition	Intervention	Message
Baseline condition	No intervention	*N/A*
Normative condition	Displaying environmental impact information on the reusable option	*Save 0.19 kg CO2e by choosing this option*
Gain condition	Monetary incentive for choosing reusable packaging	*Go reusable & get 10% off your next order*
Hedonic condition	Hedonic message to feel good about choosing the reusable option	*Make every order feel even better – go reusable*

Table 9. *Experimental conditions and the corresponding interventions.*

Across all conditions, 21.8% of respondents chose reusable packaging (n = 72) and 78.2% opted for regular packaging (n = 258). The Gain condition exhibited the highest success rate, with 35.9% of respondents opting for reusable packaging as seen in Table 10. The Normative condition also showed a high adoption rate (28.6%). The Hedonic condition was the least effective, with only 10.8% selecting reusable packaging – an even lower proportion than in the Baseline condition (12.9%).

	Baseline	Normative	Gain	Hedonic	Total
Reusable packaging	11	24	28	9	**72**
Regular packaging	74	60	50	74	**258**
Total responses	**85**	**84**	**78**	**83**	**330**
Share of reusable	*12.9%*	*28.6%*	*35.9%*	*10.8%*	*21.8%*

Table 10. *Distribution of observations between packaging type and condition.*

To formally examine the relation between choice of packaging and conditions, a Chi-square test of independence was conducted. The observations were grouped into two: a control group (Baseline) and intervention group (Normative, Gain, Hedonic conditions). The average adoption in the intervention group was 24.9% compared to 12.9% in the control group. The Chi-square test of independence indicates a statistically significant relation ($\chi^2 = 4.61$, $p = 0.032$), suggesting that respondents exposed to any intervention were significantly more likely to choose reusable packaging compared to those in the control group. Thus, we find sufficient evidence to **support Hypothesis 1.**

H1: Activating goal frames positively influences the choice of reusable packaging.

4.3 Relation between condition and choice

Following a significant Chi-square test from Section 4.2, a targeted logistic regression was conducted with condition as the independent variable and choice of packaging as the dependent variable (see Equation (1)).

$$\text{logit}(\text{P}(\text{Choice}_\text{i} = 1)) = \beta_0 + \beta_1 \cdot Condition_{Normative,\,i} + \beta_2 \cdot Condition_{Gain,\,i} +$$

$$+ \beta_3 \cdot Condition_{Hedonic,\,i} + \beta_4 \cdot Gender_i + \beta_5 \cdot Age_i + \varepsilon_i$$

Where logit(P) is the log-odds of choosing reusable packaging, and $Choice_i = 1$, indicates that respondent i chose reusable packaging. Condition variables represent each of the intervention conditions. Covariate $Gender_i$ is a binary variable (1 = female, 0 = male) and covariate Age_i is represented in years. ε_i is the error term.

Equation 1. *Logistic regression model.*

Wald test statistics indicated that both the Gain ($\beta = 1.511$, $p < 0.001$) and Normative ($\beta = 1.142$, $p = 0.008$) conditions significantly increased the likelihood of choosing reusable packaging (see Table 11). Specifically, based on the odds ratio, participants were 4.53 times more likely to choose reusable packaging in the Gain condition, and 3.13 times more likely in the Normative condition compared to Baseline. The Hedonic condition showed no significant impact on the choice of packaging ($p = 0.616$).

Predictor	Estimate β	Odds Ratio Exp(β)	p-value
(Intercept)	-3.412	0.033	(0.000) ***
ConditionNormative	1.142	3.133	(0.008) **
ConditionGain	1.511	4.532	(0.000) ***
ConditionHedonic	-0.258	0.773	(0.616)
Gender	0.077	1.081	(0.790)
Age	0.044	1.045	(0.000) ***

*Significance codes: '***' <0.001, '**' <0.01, '*'<0.05, '.'<0.1*

Nagelkerke R^2 = 0.200	*AIC = 312.57*
Hosmer-Lemeshow χ^2 = 5.77, p = 0.674	*BIC = 335.24*

Table 11. *Estimation results of the logistic regression from Equation (1).*

Taken together, activating normative and gain goal frames have a positive impact on the choice of reusable packaging. **Thus, Hypotheses 2 and 3 are supported**. Given the lack of significant effect in the Hedonic condition, **Hypothesis 4 is rejected**.

> **H2**: Activating a normative goal frame positively influences the choice of reusable packaging.
>
> **H3**: Activating a gain goal frame positively influences the choice of reusable packaging.
>
> **H4**: Activating a hedonic goal frame positively influences the choice of reusable packaging.

The covariate Age was a significant positive predictor of reusable packaging choice (β = 0.044, $p < 0.001$), indicating that with each additional year of age, the odds of choosing reusable packaging increased by 4.5%. Gender was not a significant predictor of packaging choice ($p = 0.790$).

4.4 Moderating effects of values

Hypotheses 5, 6, and 7 propose that values moderate the effectiveness of interventions. Specifically, the interventions not only activate certain values, but they result in a stronger behavioural response when the activated values align with an individual's predominant values.

As a starting point, a comparison of means was conducted to determine whether conditions activate targeted values. The analysis below reveals that respondents in the Normative

condition rated their biospheric values significantly higher than in other intervention conditions (see Table 12). A similar trend is observed for egoistic values in Gain condition, although the difference in means is not significant. Interestingly, hedonic values were assessed lower in the Hedonic condition than in other conditions. Thus, while Normative and Gain interventions worked in activating specific values, the Hedonic appeal did not result in higher prioritization of hedonic values.

		Mean					
Condition	Values	All conditions	Target condition	Other conditions	Δ Mean	t-stat	p-value
Normative	*Biospheric*	5.36	5.57	5.28	0.29	2.53	(0.012) *
Gain	*Egoistic*	4.17	4.35	4.11	0.24	1.54	(0.125)
Hedonic	*Hedonic*	6.01	5.91	6.04	-0.13	-1.16	(0.249)

Table 12. *Means of values across Target condition and Other conditions.*

Examining the respondents' packaging choice within the value-condition pairs (see Table 13), in both Normative and Gain conditions, stronger endorsement of the targeted values – biospheric and egoistic, respectively – correlated with the selection of the reusable packaging option. In contrast, hedonic values operated in the opposite manner in the Hedonic condition, as choosing reusable packaging was associated with lower hedonic values.

		Mean					
Condition	*Values*	All conditions	Reusable packaging	Regular packaging	Δ Mean	t-stat	p-value
Normative	*Biospheric*	5.36	5.84	5.46	0.38	1.87	(0.068)
Gain	*Egoistic*	4.17	4.63	4.20	0.43	1.36	(0.182)
Hedonic	*Hedonic*	6.01	5.70	5.93	-0.23	-0.72	(0.491)

Table 13. *Means of values across respondents choosing Reusable or Regular packaging within a specific condition.*

Nevertheless, comparing the mean values only captures the differences between respondents and does not account for moderation effects. To further test the moderating effects of values, a simplified regression model was estimated examining the interaction between values and conditions only in the context of a single experimental condition. Three different models were run based on the logic seen in Equation (2).

$$\text{logit}(\text{P}(\text{Choice}_i = 1)) = \beta_0 + \beta_1 \cdot Condition_{j,i} + \beta_2 \cdot Value_{c,i} +$$

$$+ \beta_3 \cdot Condition_{j,i} \cdot Value_{c,i} + \beta_4 \cdot Gender_i + \beta_5 \cdot Age_i + \varepsilon_i$$

Where $Condition_{j,i}$ is a dummy variable for the specific experimental condition j and $Value_{c,i}$ is the value type (e.g. biospheric, egoistic, or hedonic). $Gender_i$ and Age_i are covariates and ε_i is the error term.

Equation 2. *Logistic regression model.*

4.4.1 Moderating effect of biospheric values in Normative condition

First, the moderating effect of biospheric values in the Normative condition was examined. Based on the estimated model (see Table 14), the interaction term between Normative condition and biospheric values is insignificant ($\beta = 0.317$, $p = 0.377$), indicating that biospheric values hold no moderating effect on the likelihood of choosing reusable packaging.

Predictor	Estimate β	Odds Ratio Exp(β)	p-value
(Intercept)	-2.624	0.072	(0.000) ***
ConditionNormative	0.403	1.496	(0.218)
Biospheric	0.294	1.341	(0.094) .
ConditionNormative × Biospheric	0.317	1.373	(0.377)
Gender	-0.057	0.945	(0.848)
Age	0.039	1.040	(0.001) ***

*Significance codes: '***' <0.001, '**' <0.01, '*'<0.05, '.'<0.1*

Nagelkerke R^2 = 0.136	*AIC = 327.92*
Hosmer-Lemeshow χ^2 = 10.02, p = 0.264	*BIC = 350.58*

Table 14. *Estimation results of the logistic regression from Equation (2) in Normative condition.*

However, when plotting the relation between the probability of choosing reusable packaging and biospheric values, it becomes evident that the likelihood of choosing reusable packaging increases with higher biospheric values, with the effect being stronger in the Normative condition (see Figure 2).

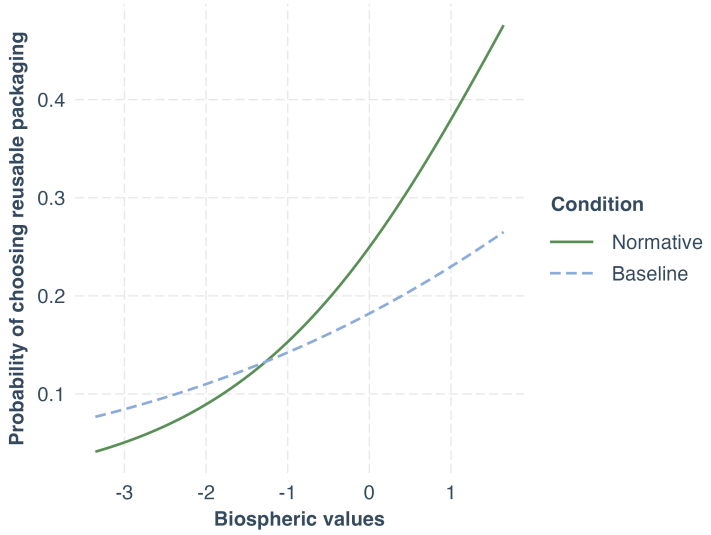


Figure 1. *Interaction between biospheric values and Normative condition.*

While the visual representation gives basis to suggest that effect of the Normative condition on reusable packaging choice is stronger for individuals holding higher levels of biospheric values, the interaction term in the regression model lacks statistical significance, indicating no reliable moderating effect. Thus, **Hypothesis 5 is rejected**.

> **H5**: The positive effect of activating a normative goal is stronger for individuals with higher levels of biospheric values.

4.4.2 Moderating effect of egoistic values in Gain condition

When examining the moderating effect of egoistic values in Gain condition, the estimated model revealed a significant interaction effect as assessed by the Wald test ($\beta = 0.530$, $p = 0.038$) (see Table 15). Specifically, each one-point increase in egoistic values increases the odds of choosing reusable packaging by 70%. Moreover, egoistic values are not significantly related to the dependent variable Choice ($p = 0.673$) nor to the Gain condition ($p = 0.125$), meaning the independence criteria for moderation is met. Thus, egoistic values are a pure moderator.

Predictor	Estimate β	Odds Ratio Exp(β)	p-value
(Intercept)	-2.911	0.054	(0.000) ***
ConditionGain	1.025	2.788	(0.001) **
Egoistic	-0.185	0.831	(0.242)
ConditionGain × Egoistic	0.530	1.699	(0.038) *
Gender	0.129	1.137	(0.653)
Age	0.039	1.040	(0.001) **

*Significance codes: '***' <0.001, '**' <0.01, '*'<0.05, '.'<0.1*

Nagelkerke R^2 = 0.165	*AIC = 321.07*
Hosmer-Lemeshow χ^2 = 7.32, p = 0.503	*BIC = 343.73*

Table 15. *Estimation results of the logistic regression from Equation (2) in Gain condition.*

As seen in Figure 3, higher egoistic values decrease the likelihood of choosing reusable packaging in the Baseline condition. In contrast, under the Gain condition the effect is reversed, with higher egoistic values predicting green behaviour.

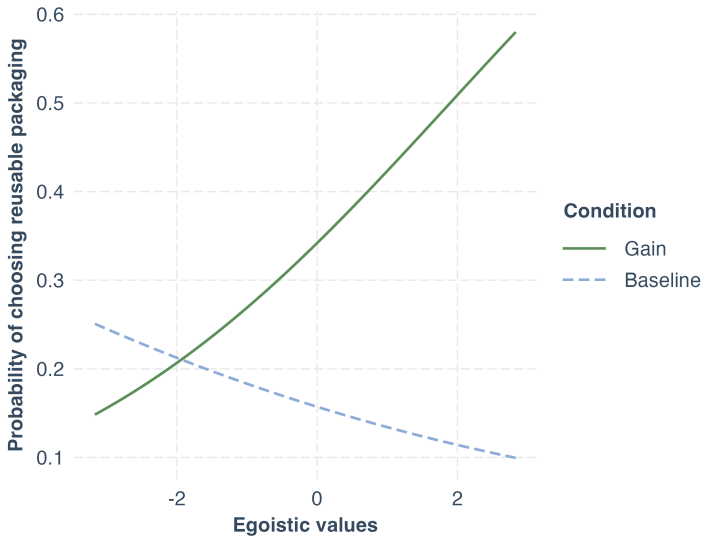


Figure 2. *Interaction between egoistic values and Baseline condition.*

This relation can be further investigated by observing the effect of Gain condition on three levels of egoistic values, measured on the 7-point Likert scale and mean-centred: low (−1 point below mean), average ($M = 0$) and high (+1 point above mean). The intervention proved effective only for respondents holding average or high levels of egoistic values (see Table 16), with the probability of choosing reusable packaging increasing by 15.65pp and 22.60pp, respectively.

Egoistic values	AME	SE	p-value	95% CI
−1	0.079	0.067	(0.239)	[-0.0522, 0.2094]
0	0.157	0.046	(0.001) **	[0.0669, 0.2461]
+1	0.226	0.047	(0.000) ***	[0.1341, 0.3179]

Table 16. *Average marginal effects of Gain condition across levels of egoistic values.*

This suggests that Gain condition is more effective for individuals holding higher levels of egoistic values ($\beta = 0.530$, $p = 0.038$). Thus, **Hypothesis 6 is supported**.

> **H6**: The positive effect of activating a gain goal is stronger for individuals with higher levels of egoistic values.

4.4.3 Moderating effect of hedonic values in Hedonic condition

Based on the estimated model, the Hedonic condition reduced the likelihood of choosing reusable packaging compared to Baseline condition ($\beta = -1.199$, $p = 0.004$) (see Table 17). The interaction term between Hedonic condition and hedonic values is insignificant ($\beta = 0.133$, $p = 0.773$), suggesting that the effect of the Hedonic condition does not depend on the levels of hedonic values a respondent holds.

Predictor	Estimate β	Odds Ratio Exp(β)	p-value
(Intercept)	-2.418	0.089	(0.000) ***
ConditionHedonic	-1.199	0.302	(0.003) **
Hedonic	-0.039	0.962	(0.834)
ConditionHedonic × Hedonic	0.133	1.143	(0.773)
Gender	0.186	1.205	(0.518)
Age	0.041	1.042	(0.001) ***

*Significance codes: '***' <0.001, '**' <0.01, '*'<0.05, '.'<0.1*

Nagelkerke R^2 = 0.139	*AIC = 327.15*
Hosmer-Lemeshow χ^2 = 10.51, p = 0.231	*BIC = 349.82*

Table 17. *Estimation results of the logistic regression from Equation (2) in Hedonic condition.*

Visualizing the relation between hedonic values and packaging choice reveals that in the Baseline condition, higher hedonic values are associated with lower likelihood of choosing the green packaging (see Figure 4). The relation is reversed in the Hedonic condition: as hedonic values increase, the probability of choosing reusable packaging increases as well.

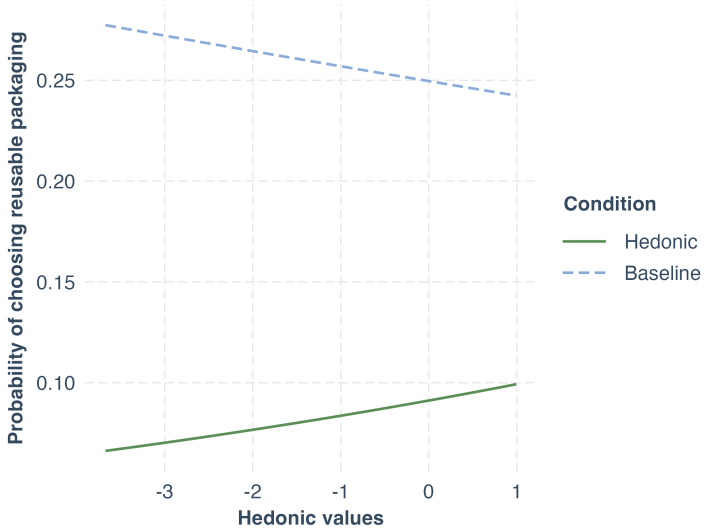


Figure 3. *Interaction between hedonic values and Hedonic condition.*

This means that, to a certain extent, higher hedonic values do seem to amplify the effect of Hedonic condition. However, given the insignificant interaction term observed in the regression model, there is no evidence of a reliable moderating effect of hedonic values. Thus, **Hypothesis 7 is rejected.**

> **H7**: The positive effect of activating a hedonic goal frame is stronger for individuals with higher levels of hedonic values.

4.5 Moderating effects of Perceived Behavioural Control and Perceived Price Fairness

To test whether PBC and PPF have a moderating role between experimental conditions and choice of packaging, two separate logistic regressions were run based on the following equation (see Equation (3)). Given the limited sample size, the effects were assessed separately to avoid overfitting the model.

$$\text{logit}(\text{P}(\text{Choice}_i = 1)) = \beta_0 + \beta_1 \cdot Condition_{c,i} + \beta_2 \cdot Moderator_{c,i} +$$

$$+ \beta_3 \cdot Condition_{c,i} \cdot Moderator_{c,i} + \beta_4 \cdot Gender_i + \beta_5 \cdot Age_i + \varepsilon_i$$

Where $Condition_{c,i}$ is a categorical variable for the experimental conditions, with Baseline as the reference group and $Moderator_{c,i}$ is either mean-centred PBC or PPF. The interaction term represents all interaction between each condition and the moderator. $Gender_i$ and Age_i are control variables and ε_i is the error term.

Equation 3. *Logistic regression model.*

4.5.1 Moderating effect of perceived behavioural control

Across all conditions, those choosing reusable packaging exhibited higher levels of PBC, indicating that opting for green packaging is associated with perceiving higher levels of control and convenience (see Table 18). Mean PBC level was highest among those choosing reusable packaging in the Normative condition ($M = 5.42$).

	Mean PBC				
Condition	Reusable packaging	Regular packaging	Δ Mean	t-stat	p-value
Normative	5.42	4.09	1.33	4.67	(0.000) ***
Gain	4.96	4.33	0.63	1.95	(0.056) .
Hedonic	4.89	4.39	0.50	1.46	(0.169)
Baseline	5.18	4.39	0.80	1.44	(0.176)
Intervention	5.13	4.27	0.86	4.68	(0.000) ***

Table 18. *Means of PBC across respondents choosing Reusable or Regular packaging within a specific condition.*

The regression model output in Table 19 also suggests that PBC holds a significant positive impact on the choice of reusable packaging ($\beta = 0.655$, $p = 0.032$), indicating that with each one-point increase in the level of PBC, the odds of choosing reusable packaging increase by 92.6%. However, none of the interaction terms between the experimental conditions and PBC have a significant impact, indicating that PBC does not moderate the effectiveness of the condition but rather holds a direct positive effect regardless of interventions.

Predictor	Estimate β	Odds Ratio Exp(β)	p-value
(Intercept)	-3.649	0.026	(0.000) ***
ConditionNormative	1.157	3.180	(0.036) *
ConditionGain	1.789	5.983	(0.001) ***
ConditionHedonic	0.012	1.012	(0.984)
ConditionNormative × PBC	0.340	1.404	(0.408)
ConditionGain × PBC	-0.358	0.699	(0.314)
ConditionHedonic × PBC	-0.344	0.709	(0.423)
PBC	0.655	1.926	(0.032) *
Gender	-0.091	0.913	(0.767)
Age	0.044	1.045	(0.001) ***

*Significance codes: '***' <0.001, '**' <0.01, '*'<0.05, '.'<0.1*

Nagelkerke $R^2 = 0.315$	*AIC = 291.30*
Hosmer-Lemeshow $\chi^2 = 9.48$, $p = 0.303$	*BIC = 329.08*

Table 19. *Estimation results of the logistic regression from Equation (3) for PBC.*

Thus, given the lack of significant interaction terms, **Hypothesis 8 is rejected**.

> **H8**: Perceived behavioural control positively moderates the effect of the interventions on the choice of reusable packaging.

4.5.2 Moderating effect of perceived price fairness

PPF was assessed based on how reasonable the price of the reusable packaging was deemed; thus, higher PPF indicates higher perceived fairness. Across all conditions, mean PPF was significantly higher among those choosing reusable packaging, as indicated by the significant t-tests (see Table 20).

	Mean PPF				
Condition	Reusable packaging	Regular packaging	Δ Mean	t-stat	p-value
Normative	5.38	2.98	2.39	6.47	(0.000) ***
Gain	4.96	3.48	1.48	3.89	(0.000) ***
Hedonic	4.33	3.01	1.32	3.55	(0.004) **
Baseline	4.82	3.22	1.60	3.10	(0.008) **
Intervention	5.03	3.13	1.90	8.49	(0.000) ***

Table 20. *Means of PPF across respondents choosing Reusable or Regular packaging within a specific condition.*

The model displays a significant positive effect of PPF on the likelihood of choosing reusable packaging ($\beta = 0.613$, $p = 0.008$) (see Table 21). The transformed odds ratio suggests that with each one-point increase to the assessed fairness of price, the odds of choosing reusable packaging increase by 84.5%. The interaction terms between PPF and conditions are all insignificant.

Predictor	Estimate β	Odds Ratio Exp(β)	p-value
(Intercept)	-3.721	0.024	(0.000) ***
ConditionNormative	0.920	2.510	(0.109)
ConditionGain	1.456	4.287	(0.006) **
ConditionHedonic	-0.021	0.979	(0.973)
ConditionNormative × PPF	0.389	1.475	(0.226)
ConditionGain × PPF	-0.085	0.918	(0.767)
ConditionHedonic × PPF	0.144	1.155	(0.687)
PPF	0.613	1.845	(0.008) **
Gender	-0.263	0.769	(0.433)
Age	0.050	1.051	(0.001) ***

*Significance codes: '***' <0.001, '**' <0.01, '*'<0.05, '.'<0.1*

Nagelkerke R^2 = 0.430	*AIC = 258.98*
Hosmer-Lemeshow χ^2 = 10.87, p = 0.209	*BIC = 296.73*

Table 21. *Estimation results of the logistic regression from Equation (3) for PPF.*

Considering the insignificant interaction terms, price perception holds no moderating effect between the choice of packaging and condition. Thus, **Hypothesis 9 is rejected.**

H9: Perceived price fairness positively moderates the effect of the interventions on the choice of reusable packaging.

4.6 Summary of hypothesis testing

Relation	Hypotheses		
Condition and choice	H1	*Activating goal frames positively influences the choice of reusable packaging.*	**Supported p < 0.05**
Condition and choice	H2	*Activating a normative goal frame positively influences the choice of reusable packaging.*	**Supported p < 0.05**
Condition and choice	H3	*Activating a gain goal frame positively influences the choice of reusable packaging.*	**Supported p < 0.001**
Condition and choice	H4	*Activating a hedonic goal frame positively influences the choice of reusable packaging.*	Not supported p > 0.05
Moderating effect of values	H5	*The positive effect of activating a normative goal is stronger for individuals with higher levels biospheric values.*	Not supported p > 0.05
Moderating effect of values	H6	*The positive effect of activating a gain goal is stronger for individuals with higher levels of egoistic values.*	**Supported p < 0.05**
Moderating effect of values	H7	*The positive effect of activating a hedonic goal frame is stronger for individuals with higher levels of hedonic values.*	Not supported p > 0.05
Moderating effect of PBC	H8	*Perceived behavioural control positively moderates the effect of the interventions on the choice of reusable packaging.*	Not supported p > 0.05
Moderating effect of PPF	H9	*Perceived price fairness positively moderates the effect of the interventions on the choice of reusable packaging.*	Not supported p > 0.05

Table 22. *Summary of hypothesis testing.*

5. Discussion

This section discusses the results presented in Chapter 4 from a theoretical perspective. The findings are also complemented by insights gathered from exploratory interviews as well as the main study's thought protocol.

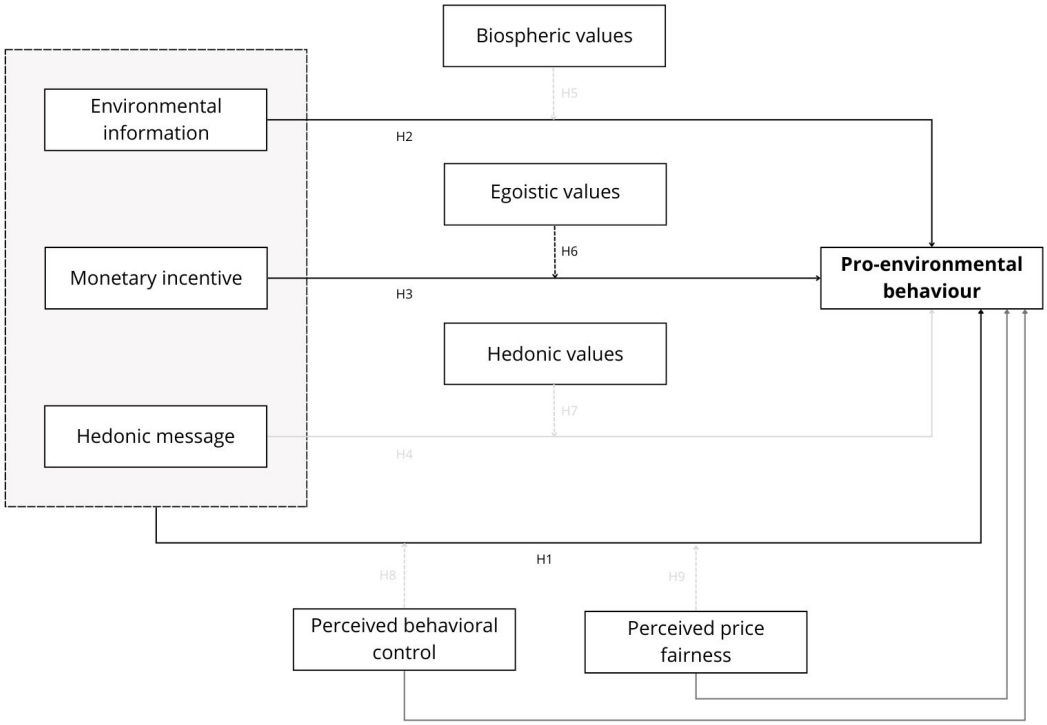


Figure 4. *Revised conceptual model post hypothesis testing. Black and grey arrows indicate empirically supported relations; and faded arrows indicate lack of empirical support.*

5.1 The relationship between goal-frames and pro-environmental behaviour

The aim of this study was to examine whether and how using different interventions can influence consumers' choice of reusable packaging. As previously discussed, this study builds on GFT which suggests that activating goal frames using tailored interventions can positively influence pro-environmental behaviour.

The results indicate that, overall, the activation of goal frames increases the likelihood of consumers selecting the reusable packaging option compared to a control group where no goal was made salient. These findings are consistent with prior research (e.g., Onel & Mukherjee, 2017; Westin et al., 2020), offering further empirical validation for the

application of GFT in influencing sustainable consumer behaviour. Framing the message on the checkout page with normative, gain, and hedonic implications enabled shifting the motivational lens through which consumers approached the packaging decision. These findings provide support for a core proposition of GFT, namely that interventions can increase the salience of certain goal frames in a decision-making situation, and therefore influence behaviour (Steg et al., 2014a).

Although it was hypothesized that activating goal frames at checkout would positively influence the choice of reusable packaging, the results exceeded expectations, with the average adoption rate doubling under the experimental conditions – from 12.9% to 24.9%. This evidence further underscores the potential of behavioural cues in shaping consumers decision by making the sustainable option more appealing.

A closer examination at the performance of each intervention reveals that both the normative and the gain goal frame increased the likelihood of choosing reusable packaging by 4.53 and 3.13 times respectively, while the hedonic intervention had no statistically significant impact on the packaging choice. The findings broadly align with Onel and Mukherjee (2017) who identified the gain goal frame as the most effective in promoting green behaviour, followed by the normative frame. While they reported a modest effect of hedonic appeals, our findings indicate no effect.

5.1.1 Monetary incentives and the choice of packaging

As seen above, the Gain condition had the highest impact in nudging towards reusable packaging. The effectiveness of activating a gain goal frame through a monetary incentive highlights the persuasive power of appealing to self-interest to promote pro-environmental behaviour (e.g., Maki et al., 2016; Lanzini & Thøgersen, 2014). The appeal of these types of interventions lies in their ability to tap into the rational mindset of individuals, framing the choice in terms of personal gain rather than a moral or social obligation. This point is mirrored in comments left by respondents:

"A future discount is a good incentive for me to choose the reusable packaging"

"Getting 10% off the next order is a good idea to motivate sustainability for those who are not maybe so much into it"

These insights further reinforce the argument that pro-environmental choices can be effectively motivated by self-enhancing reasons (De Dominicis et al., 2017), thereby challenging the prevailing assumption that moral and social obligations are the sole drivers of such behaviours. Aligned with GFT, our findings demonstrate that when individuals are prompted to consider personal benefits, they are more likely to behave in a way that aligns with those perceived gains (Steg et al., 2016). The 10% discount offered at checkout acted as an immediate gain that outweighed the fee of the reusable packaging option, making the sustainable option appear more attractive and economically advantageous.

5.1.2 Environmental information and the choice packaging

Based on GFT and prior literature, we have hypothesized that activating a normative goal frame would positively influence the choice of reusable packaging. As shown above, respondents in the Normative condition were 3.13 times more likely to choose reusable packaging, providing support for our hypothesis. Consistent with previous e-commerce research (Ignat & Chankov, 2020; Thomas et al., 2022), our findings suggest that even small interventions can be sufficient in triggering individuals' moral duty and responsibility – key mechanisms through which normative goal frames ultimately influence behaviour. This is evident in several respondents' comments:

"[Choosing the reusable option] will make me feel better about the purchase"

"It is a small price to pay for being more green"

Thus, displaying CO2 emission savings may encourage individuals to act in line with what they perceive to be the appropriate thing to do (Lindenberg & Steg, 2007). Demonstrating that highlighting the consequences of one's action successfully encourages individuals to act pro-environmentally allows our study to validate the effectiveness of normative goal frames (Lindenberg & Steg, 2007). Additionally, it adds valuable insights to the broader literature in the field of sustainable consumer behaviour, which emphasizes the role of moral obligation in influencing pro-environmental behaviour (White et al., 2019).

5.1.3 Hedonic appeals and the choice of packaging

Prior research suggests that hedonic appeals can encourage sustainable behaviour by emphasizing the emotional reward and intrinsic satisfaction associated with such actions (e.g., Westin et al., 2020; Reinholdsson et al., 2022). Drawing on previous studies, we

suggested that displaying a positive message at checkout would elicit a similar effect on consumers' choice of reusable packaging. The results paint a rather intriguing picture, as they indicate that the hedonic intervention not only had no significant impact on the choice of packaging but performed slightly worse than the baseline condition (10.8% vs 12.9% choosing green option).

One possible explanation for our findings is that the nature of the decision may not be easily framed as a source of pleasure or emotional reward. Unlike other activities which evoke more feelings of enjoyment, packaging decisions in an online shopping context may have a weak association to hedonic goals, offering limited personal gratification compared to visiting hotels (Miao & Wei, 2013) or consuming fast foods (Reinholdsson et al., 2022). This aligns with Onel and Mukherjee's (2017) study, who reported an insignificant correlation between hedonic goals and recycling – an action which is not inherently linked to pleasure or enjoyment.

Although the displayed hedonic message attempted to elicit positive emotions, appeals to personal gratification may have felt displaced and insincere in this context – as a result, respondents became increasingly critical of the reusable packaging option:

"I think (big) companies have funds to ship reusable packages by default without asking people to pay more"

"I will not pay extra to do more work"

These insights suggest that, in this particular context, the hedonic appeal not only lacked persuasiveness, but contributed to a sense of frustration. Our findings suggest exercising caution when employing hedonic appeals to influence sustainable behaviour, as their effectiveness may be context dependent. Indeed, different pro-environmental behaviours may require tailored interventions, depending on whether the behaviour can be clearly tied to people's personal enjoyment – in these domains, activating a hedonic goal frame may be particularly relevant and effective (e.g., Liobikiene et al., 2017). However, when the pro-environmental behaviour is not intrinsically rewarding, the use of hedonic appeals may be ineffective and backfire in those cases where the message is perceived as inauthentic or manipulative.

5.2 The interaction between interventions and values

The analysis of the moderating effect of values between the interventions and choice of packaging revealed a more nuanced relationship than observed in earlier studies. We were able to demonstrate that certain interventions do indeed activate specific values, aligning with Steg et al. (2014a). Although they placed particular focus on the activation of biospheric values through normative interventions, the present study suggests that a similar mechanism underlies the activation of egoistic values through gain-framed interventions.

Egoistic values

The results demonstrate, that in the absence of interventions, higher egoistic values lead to a lower likelihood of choosing reusable packaging. However, when a gain-goal is activated, the picture shifts markedly – here, higher egoistic values become a driver of pro-environmental behaviour, significantly increasing the probability of selecting reusable packaging. This suggests that individuals holding stronger egoistic values are less likely to act pro-environmentally, unless the behaviour is framed in a way that aligns with their self-interest (De Dominicis et al., 2017; Dietz et al., 2005).

Only in the Gain condition are egoistic values associated with a preference towards green packaging. These findings lend empirical support for do Canto et al. (2022) proposition that interventions designed in a way to align with an individual's predominant values are more likely to result in a stronger behavioural response, as also seen in von Borgstede et al. (2014).

As individuals endorsing stronger egoistic values are not intrinsically motivated to act sustainably (Steg & de Groot, 2012), introducing a discount enabled reusable packaging to be reframed from being perceived as a burden into an opportunity for personal gain, thereby aligning with egoistic motivations. While much of the sustainability literature tends to position biospheric values as the foundational impulse guiding sustainable choices, our results have meaningful implications by demonstrating that egoistic motivation can be successfully mobilized to become a driver of pro-environmental behaviour.

Biospheric values

While value-congruent interventions proved effective for the Gain condition-egoistic values pairing, the same effect was not found for biospheric values in the Normative condition. Despite the activation of biospheric values through the intervention, no significant moderating effect was observed on the likelihood of choosing the reusable packaging option.

Considering the stance taken in previous research suggesting that biospheric values are a strong predictor of pro-environmental behaviour, particularly following exposure to environmental information (e.g., Caspersen & Navrud, 2021, Schoenefeld & McCauley, 2016), the results of this study are unexpected.

Further analysis of mean comparisons across value-condition pairs revealed that stronger endorsements of biospheric values in the Normative condition correlate with a higher likelihood of selecting reusable packaging, suggesting that value-congruent interventions may indeed enhance their effectiveness. This further implies that individuals with strong biospheric value orientations may be more responsive to messaging highlighting the environmental impact of an action, as suggested by prior studies.

However, as this relation was not empirically proven, the observed pattern cannot be interpreted as a reliable moderating effect. While no support for the hypothesis was found, the relation between biospheric values and normative goal-frames still merits further investigation, considering that the trends suggest a potential moderating effect of biospheric values that could become clearer under different conditions or with a larger sample.

Hedonic values

Lastly, the relationship between hedonic values and hedonic intervention was also investigated. As discussed above, displaying a positive message at checkout did not persuade individuals to choose the reusable packaging option but rather reduced the likelihood of choosing green packaging compared to the Baseline condition. Additionally, while both Gain and Normative interventions successfully activated targeted values, this was not the case for the Hedonic condition. A possible explanation could be attributed to the lack of strong emotional cues in the message: although the latter attempted to evoke positive emotions, this result suggests that the appeal failed to convincingly frame the behaviour as emotionally rewarding.

A mean comparison analysis in the Hedonic condition reveals that choosing reusable packaging is associated with lower hedonic values compared to choosing regular packaging. Although this points towards a negative relationship between the two, the visual representation based on the regression analysis indicates the opposite effect – as hedonic values increase, so does the probability of choosing reusable packaging. The discrepancy can be attributed to the covariate Age, which is negatively correlated with hedonic values ($r = -0.174$) and positively correlated with the choice of reusable packaging ($r = 0.192$). This

suggests that older individuals, who tend to hold lower hedonic values, are more likely to choose reusable packaging, while younger individuals with higher hedonic values are more inclined to select regular packaging.

Thus, failing to account for age might wrongly suggest that low hedonic values *cause* people to prefer reusable packaging – when in fact, it is their age influencing both. This result offers novel insights by demonstrating how age can systematically influence how hedonic values relate to pro-environmental behaviour. Taking this into account, implementing a segmentation strategy differentiating between age groups may be necessary when designing hedonic-based appeals.

5.3 The moderating effect of perceived behavioural control and perceived price fairness

Perceived behavioural control

Hypothesis 8 suggested that PBC positively moderates the effect of the interventions on the choice of reusable packaging. The results indicate that PBC holds a direct positive impact on packaging choice, although no moderating effect is present. This suggests that individuals' perceived control over the choice of packaging is an important factor regardless of whether interventions are deployed. The significant main effect means that individuals are more likely to engage in pro-environmental behaviour when the latter is perceived to be effortless and within their control (e.g., de Groot & Steg, 2007; Ajzen, 2002).

These findings also support a concern raised during the exploratory interviews, in which stakeholders emphasized that the effort involved in returning the packaging could pose a significant barrier to adopting the behaviour. This concern was evidenced by some respondents' remarks:

"I think it is unnecessary hassle to return the packaging"

"Reusable means I have to take an extra step to return it – I am not incentivized to take the extra step"

Overall, perceived behavioural control holds a direct effect on the choice of packaging, suggesting that stakeholders should contribute to the ease of use and convenience related to green packaging in order to encourage adoption.

Perceived price fairness

Lastly, we hypothesized that PPF would positively moderate the effect of the interventions on the choice of reusable packaging. Meaning, the interventions were expected to elicit a stronger behavioural response when the price was perceived as fair. While the empirical analysis revealed no moderating effect, the results demonstrate a direct effect, indicating that price independently influences consumer behaviour in pro-environmental choices.

This suggests that price sensitivity remains a barrier for sustainable behaviour adoption, as demonstrated by Bray et al. (2011) and Wiederhold and Martinez (2018). Participants' remarks further emphasized their unwillingness to pay such a high fee, echoing concerns expressed during exploratory interviews about price being an obstacle for adoption – unless the fee was refunded upon return of the packaging. Additionally, respondents perceived an unfair burden placed on them as private consumers, questioning why individuals should be the ones bearing greater costs and responsibility rather than large corporations:

" […] companies have funds to ship reusable packages by default without asking people to pay more"

"It should not be at my expense to pay more to be sustainable"

Overall, the direct effect of PPF on pro-environmental behaviour highlights that price fairness remains a key barrier in reusable packaging adoption, especially when consumers perceive the cost as unjustly shifted onto them.

6. Conclusion

This chapter begins by answering this study's research question and summarizing key findings. The following sections discuss the theoretical and managerial contributions of this thesis, acknowledge possible limitations, and present suggestions for further research.

The aim and purpose of this study was to determine whether and how using different interventions at the online checkout stage could influence consumers' choice of reusable packaging. The limited research on reusable packaging in an online shopping context, coupled with the lack of focus on consumer behaviour in this area, motivated an investigation on the influence of interventions on behaviour. Therefore, this thesis was guided by the following question: *How do different interventions at checkout influence consumers' choice of reusable packaging when shopping online?* By answering this question, this study sought to investigate not only the effectiveness of interventions in influencing pro-environmental behaviour, but also the underlying mechanisms through which they impact consumers' choices. GFT was utilized as the theoretical foundation for this study, whereby three goal frames were operationalized at checkout via interventions to examine their effect on the choice of reusable packaging.

The relevance of the paper lies in the applicability of findings for stakeholders and policymakers on promoting reusable packaging, while advancing understanding of the complexities underlying individuals' pro-environmental decision-making. The findings reveal that interventions can indeed influence consumers' decisions, with the gain-framed intervention proving to be the most effective in promoting pro-environmental behaviour. This points to the potential of leveraging self-interest motives to encourage sustainable behaviour. Additionally, the normative intervention emphasizing the environmental consequence of an action also proved to be effective. This resonates with the body of literature highlighting the role of personal and injunctive norms in shaping pro-environmental behaviour. Overall, these results offer both theoretical and practical insights in the field of sustainability and marketing, suggesting that marketing tools – like behavioural interventions – can play a significant role in influencing pro-environmental behaviour.

Additionally, the study uncovered an intriguing result: the hedonic intervention, which was designed to emphasize the emotional reward associated with the green action, performed worse than the baseline condition. This finding adds depth when answering our research question, suggesting that while interventions do influence pro-environmental behaviour,

particular caution should be exercised when employing hedonic appeals, as their effectiveness may be context dependent.

When evaluating the moderating role of values on the effectiveness of interventions, results reveal that such effect was only present in the gain intervention-egoistic values pair. Further analysis suggests that a similar pattern may also exist for the normative and hedonic interventions when paired with biospheric and hedonic values, respectively. This points to a nuanced relationship between these two constructs, warranting further investigation. Demonstrating that value-congruent interventions may be more effective represents a novel contribution both to GFT and the broader literature on pro-environmental behaviour. Lastly, with regards to perceived behavioural control and price, the analysis indicates a direct effect, whereby both factors independently affect pro-environmental behaviour. This highlights the importance of designing interventions that go beyond persuasive appeals by addressing other potential contextual and psychological barriers.

When considering the rising volume of e-commerce shipments, recent regulatory directives, and the pivotal role of consumers in driving change, this study offers relevant insights. By exploring how interventions can be deployed to drive behavioural change in an e-commerce context, this research not only contributes to the academic discourse, but aligns with broader societal and policy efforts to transition towards a true circular economy.

6.1 Theoretical contribution

The theoretical contributions of this thesis are grounded in the literature review and identified research gap, in which it was established that (i) the topic of reusable packaging in an e-commerce context has been under-researched; and (ii) the lack of attention to consumer behaviour toward its use.

Based on this research gap, this study sought to determine the influence of interventions on consumers' choice of reusable packaging. This was explored through a GFT lens, addressing calls for the application of this theory in the design of behavioural interventions (do Canto et al., 2022) and demonstrating its applicability in an e-commerce context. Further, we attempted to shed light on the relation between two constructs – values and interventions – providing initial insights into how interventions can become more effective when they align with individuals' prominent values. This was evidenced by the moderating effect of egoistic values on the gain-framed intervention, indicating that monetary incentives are particularly

effective for those holding stronger egoistic value orientations. To the best of our knowledge, the present is the first study to empirically establish this connection, initially proposed by do Canto et al. (2022).

Additionally, this thesis sought to expand GFT by considering two additional factors that might have moderated the effectiveness of interventions, namely PBC and PPF. Although results do not provide evidence for a moderating effect, both factors independently influence consumers' pro-environmental choices. This underscores the importance of considering both variables to encourage sustainable behaviour.

6.2 Managerial implications

The scope of this research lies in the fashion e-commerce segment; thus, findings are applicable – but not limited – to the professionals in the industry looking to implement behavioural intervention strategies to nudge customers towards reusable packaging. The context is especially important given EU's strengthening initiatives to drive reusable packaging adoption in an e-commerce setting (European Union, 2025).

A key managerial consideration is selecting the type of intervention. Although activating a gain goal frame via a 10% discount was proven to be the most effective, the strategy requires costs to implement; therefore, a trade-off between effectiveness and cost arises. At the same time, activating a normative goal frame was also effective, increasing the likelihood of green choice by 3.13 times. Given that providing environmental information incurs minimal costs while still yielding meaningful results, it represents a highly attractive and viable option to promote pro-environmental behaviour. When targeting the reusable packaging initiatives towards specific demographics, findings suggest that gender does not influence choice, while age has a notable positive effect – older individuals are more likely to choose reusable packaging. This implies that a more tailored and segmented approach can further improve the effectiveness of interventions.

Throughout the study, price and convenience emerged as key barriers in reusable packaging adoption, wherein respondents found it unfair to carry the cost, while also facing the responsibility of returning the packaging. The latter is a key contributor in determining its sustainability (González Romero et al., 2024; Zimmermann & Bliklen, 2020); therefore, this research calls for further discussion within the industry, including stakeholders from e-commerce, logistics companies and packaging providers, to develop a sustainable long-term

strategy. Key considerations include cost distribution and a reconfiguration of the return system – potentially modelled after the Swedish bottle deposit system – to ease the burden on consumers. In this context, initiatives such as the CIRKLA project represent promising steps forward; however, further collaboration across the industry is essential.

6.3 Limitations

One key limitation of the study is the employed convenience sampling method, which may limit the generalizability of the findings. Due to time constraints, a true probabilistic sampling method could not be implemented. While the sample size was satisfactory, a larger sample would have increased the statistical power and enabled more robust logistic regression analysis. For instance, given that only 9 respondents selected reusable packaging in the hedonic intervention, findings regarding the moderating effect of hedonic values should be interpreted with caution.

Second, while the scenario technique was utilized to approximate real-life decision-making situations (Koschate-Fischer & Schandelmeier, 2014), the experiment did not *completely* replicate a real purchase situation. This may have influenced the way respondents made their choice and how carefully they analysed the checkout page, likely paying more attention than they would have done in a real-life setting.

Third, in this study we focused on a fashion purchase, more specifically the purchase of a basic t-shirt. We acknowledge that a different product type and price level may elicit different responses. For example, consumers may be more willing to accept the fee for the reusable packaging when making higher value purchases.

6.4 Further research

To the best of our knowledge, the present thesis is one of the first studies investigating consumer behaviour towards reusable packaging in an online context, offering valuable initial insights and laying the groundwork for further research within this novel field.

First, considering this study's delimitation to the Swedish market, future research is needed to assess whether these findings hold in different countries, as response to sustainability initiatives can vary significantly across cultural contexts (McWilliams et al., 2006). Further research could also be conducted to explore consumer reusable packaging choices under different product categories and price to determine the broader applicability of the findings.

Second, a study of this nature could greatly benefit from a field experiment approach, which would enable researchers to observe consumers' behaviour in a true natural setting. As participants would be unaware of being part of a study, such design provides more ecologically valid insights into consumer behaviour.

Lastly, our findings revealed gain intervention to be the most effective in influencing pro-environmental behaviour (e.g., Maki et al., 2016). Nevertheless, a parallel stream of research criticizes the use of financial incentives, suggesting that once the incentive is removed, individuals will no longer behave in a pro-environmental manner (White et al., 2019). Longitudinal studies could offer intriguing insights by examining both the long-term effect of such interventions, as well as determine the sustainability of behavioural changes once external incentives are removed.

The proposed research directions build on the present findings and offer the potential to further advance understanding of how behavioural interventions can effectively promote the adoption of reusable packaging.

7. Reference list

Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. *Action Control*, *1*(1), 11–39. https://doi.org/10.1007/978-3-642-69746-3_2

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, *32*(4), 665–683. https://people.umass.edu/aizen/pubs/pbc.pdf

Ajzen, I. (2006). *Constructing a TPB Questionnaire: Conceptual and Methodological Considerations*. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=0574b20bd58130dd5a961f1a2db10fd1fcbae95d

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, *2*(4), 314–324. https://doi.org/10.1002/hbe2.195

Aster. (2024). *CIRKLA – A Groundbreaking Project for Circular E-commerce Packaging*. Aster. https://aster.lindholmen.se/en/news/cirkla-groundbreaking-project-circular-e-commerce-packaging

Ateş, H. (2020). Merging Theory of Planned Behavior and Value Identity Personal norm model to explain pro-environmental behaviors. *Sustainable Production and Consumption*, *24*, 169–180. https://doi.org/10.1016/j.spc.2020.07.006

Baskoro, M. L. (2020). Exploring The Emerging Trends of Reusable Shipping Packaging for E-Commerce. *JISA(Jurnal Informatika Dan Sains)*, *3*(2). https://doi.org/10.31326/jisa.v3i2.832

Beck, M. J., Fifer, S., & Rose, J. M. (2016). Can you ever be certain? Reducing hypothetical bias in stated choice experiments via respondent-reported choice certainty. *Transportation Research Part B: Methodological, 89*, 149–167. https://doi.org/10.1016/j.trb.2016.04.004

Bell, E., Bryman, A., & Harley, B. (2022). *Business Research Methods* (6th ed.). Oxford University Press.

Berg, H., & Liljedal, K. T. (2023). Why Casting Older Female Models Is Good for Advertising. *Journal of Advertising Research*, 2023-001. https://doi.org/10.2501/jar-2023-001

Bergquist, M., Nilsson, A., & Hansla, A. (2017). Contests versus Norms: Implications of Contest-Based and Norm-Based Intervention Techniques. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.02046

Bergquist, M., Nyström, L., & Nilsson, A. (2020). Feeling or following? A field-experiment comparing social norms-based and emotions-based motives encouraging pro-environmental donations. *Journal of Consumer Behaviour*. https://doi.org/10.1002/cb.1813

Bolderdijk, J. W., Gorsira, M., Keizer, K., & Steg, L. (2013). Values Determine the (In)Effectiveness of Informational Interventions in Promoting Pro-Environmental Behavior. *PLoS ONE*, *8*(12), e83911. https://doi.org/10.1371/journal.pone.0083911

Bouman, T., Steg, L., & Kiers, H. A. L. (2018). Measuring Values in Environmental Research: A Test of an Environmental Portrait Value Questionnaire. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.00564

Bradley, C., & Corsini, L. (2023). A literature review and analytical framework of the sustainability of reusable packaging. *Sustainable Production and Consumption*, *37*, 126–141. https://doi.org/10.1016/j.spc.2023.02.009

Bray, J., Johns, N., & Kilburn, D. (2011). An Exploratory Study into the Factors Impeding Ethical Consumption. *Journal of Business Ethics*, *98*(4), 597–608.

Carson, R. T., & Groves, T. (2007). Incentive and informational properties of preference questions. *Environmental and Resource Economics, 37*(1), 181–210. https://doi.org/10.1007/s10640-007-9124-5

Caspersen, E., & Navrud, S. (2021). The sharing economy and consumer preferences for environmentally sustainable last mile deliveries. *Transportation Research Part D: Transport and Environment*, *95*, 102863. https://doi.org/10.1016/j.trd.2021.102863

Caughlin, D. E. (2024). R for HR: An Introduction to Human Resource Analytics Using R. In *rforhr.com*. https://rforhr.com/center.html

Choi, D., & Johnson, K. K. P. (2019). Influences of environmental and hedonic motivations on intention to purchase green products: An extension of the theory of planned behavior. *Sustainable Production and Consumption*, *18*(1), 145–155. https://doi.org/10.1016/j.spc.2019.02.001

Clement, L., & Spinler, S. (2025). Advancing sustainability in e-commerce packaging: A simulation-based study for managing returnable transport items. *Transportation Research Part E: Logistics and Transportation Review*, *193*, 103868. https://doi.org/10.1016/j.tre.2024.103868

Coelho, P. M., Corona, B., ten Klooster, R., & Worrell, E. (2020). Sustainability of Reusable packaging–Current Situation and Trends. *Resources, Conservation & Recycling: X*,

6(2590-289X), 100037. Sciencedirect. https://www.sciencedirect.com/science/article/pii/S2590289X20300086

Corral-Verdugo, V., Bonnes, M., Tapia-Fonllem, C., Fraijo-Sing, B., Frías-Armenta, M., & Carrus, G. (2009). Correlates of pro-sustainability orientation: The affinity towards diversity. *Journal of Environmental Psychology*, *29*(1), 34–43. https://doi.org/10.1016/j.jenvp.2008.09.001

De Canio, F. (2023). Consumer willingness to pay more for pro-environmental packages: The moderating role of familiarity. *Journal of Environmental Management, 339*, Article 117828. https://doi.org/10.1016/j.jenvman.2023.117828

De Dominicis, S., Schultz, P. W., & Bonaiuto, M. (2017). Protecting the Environment for Self-interested Reasons: Altruism Is Not the Only Pathway to Sustainability. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.01065

de Groot, J. I. M., & Steg, L. (2009). Mean or green: which values can promote stable pro-environmental behavior? *Conservation Letters*, *2*(2), 61–66. https://doi.org/10.1111/j.1755-263x.2009.00048.x

de Groot, J., & Steg, L. (2007). General Beliefs and the Theory of Planned Behavior: The Role of Environmental Concerns in the TPB. *Journal of Applied Social Psychology*, *37*(8), 1817–1836. https://doi.org/10.1111/j.1559-1816.2007.00239.x

de Leeuw, A., Valois, P., Ajzen, I., & Schmidt, P. (2015). Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: Implications for educational interventions. *Journal of Environmental Psychology*, *42*(42), 128–138. https://doi.org/10.1016/j.jenvp.2015.03.005

Dietz, T., Fitzgerald, A., & Shwom, R. (2005). Environmental Values. *Annual Review of Environment and Resources*, *30*(1), 335–372. https://doi.org/10.1146/annurev.energy.30.050504.144444

do Canto, N. R., Grunert, K. G., & Dutra de Barcellos, M. (2022). Goal-framing theory in environmental behaviours: review, future research agenda and possible applications in behavioural change. *Journal of Social Marketing*, *13*(1). https://doi.org/10.1108/jsocm-03-2021-0058

Dóci, G., & Vasileiadou, E. (2015). "Let's do it ourselves" Individual motivations for investing in renewables at community level. *Renewable and Sustainable Energy Reviews*, *49*, 41–50. https://doi.org/10.1016/j.rser.2015.04.051

Dong, M., Palomo-Vélez, G., & Wu, S. (2020). Reducing the gap between pro-environmental disposition and behavior: The role of feeling power. *Journal of Applied Social Psychology*, *51*(3), 262–272. https://doi.org/10.1111/jasp.12733

ECDB. (2023). *Fashion eCommerce Market in Sweden*. Ecommercedb.com. https://ecommercedb.com/markets/se/fashion

Eckhardt, G. M., Belk, R., & Devinney, T. M. (2010). Why don't consumers consume ethically? *Journal of Consumer Behaviour*, *9*(6), 426–436. https://doi.org/10.1002/cb.332

EF. (n.d.). *EF EPI 2021 – EF English Proficiency Index – Sweden*. Www.ef.com. https://www.ef.com/wwen/epi/regions/europe/sweden/

Ejelöv, E., & Luke, T. J. (2020). "Rarely safe to assume": Evaluating the use and interpretation of manipulation checks in experimental social psychology. *Journal of Experimental Social Psychology*, *87*, 103937. https://doi.org/10.1016/j.jesp.2019.103937

Escursell, S., Massana, P. L., & Roncero, M. B. (2021). Sustainability in e-commerce packaging: A review. *Journal of Cleaner Production*, *280*(1), 124314. https://doi.org/10.1016/j.jclepro.2020.124314

European Commission. (2023). *Waste Framework Directive*. European Commission. https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

European Council. (2022). *E-commerce in the EU*. Consilium. https://www.consilium.europa.eu/en/infographics/e-commerce/

European Environmental Agency. (2024). *Waste and recycling*. Eea.europa.eu. https://www.eea.europa.eu/en/topics/in-depth/waste-and-recycling

European Union. (2025). *REGULATION (EU) 2025/40 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL*. Europa.eu. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202500040&pk_campaign=todays_OJ&pk_source=EUR-Lex&pk_medium=X&pk_content=Environment&pk_keyword=Regulation

GANNI. (n.d.). *GANNI - OFFICIAL ONLINE SHOP*. Ganni A/S. https://www.ganni.com/sv-se/home

Gao, L., Wang, S., Li, J., & Li, H. (2017). Application of the extended theory of planned behavior to understand individual's energy saving behavior in workplaces. *Resources, Conservation and Recycling*, *127*, 107–113. https://doi.org/10.1016/j.resconrec.2017.08.030

Gleim, M. R., Smith, J. S., Andrews, D., & Cronin, J. J. (2013). Against the Green: A Multi-method Examination of the Barriers to Green Consumption. *Journal of Retailing*, *89*(1), 44–61. https://doi.org/10.1016/j.jretai.2012.10.001

González Romero, I., Buldeo Rai, H., Ortiz Bas, Á., & Prado, C. (2024). Can reusable packaging revolutionise e-commerce? Unveiling the environmental impact through a comparative carbon footprint analysis. *Journal of Cleaner Production*, 143738–143738. https://doi.org/10.1016/j.jclepro.2024.143738

Greenwood, S. C., Walker, S., Baird, H. M., Parsons, R., Mehl, S., Webb, T. L., Slark, A. T., Ryan, A. J., & Rothman, R. H. (2021). Many Happy Returns: Combining insights from the environmental and behavioural sciences to understand what is required to make reusable packaging mainstream. *Sustainable Production and Consumption*, *27*, 1688–1702. https://doi.org/10.1016/j.spc.2021.03.022

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning Emea.

Hanemann, W. M. (1994). Valuing the Environment through Contingent Valuation. *Journal of Economic Perspectives, 8*(4), 19–43. https://doi.org/10.1257/jep.8.4.19

Hartmann, P., Eisend, M., Apaolaza, V., & D'Souza, C. (2017). Warm glow vs. altruistic values: How important is intrinsic emotional reward in proenvironmental behavior? *Journal of Environmental Psychology*, *52*, 43–55. https://doi.org/10.1016/j.jenvp.2017.05.006

Heeremans, E., Temmerman, J. D., Hendrik Slabbinck, & Geuens, M. (2025). Packaging the future: Determinants of use intentions and incentive structures of reusable packaging systems. *Resources Conservation and Recycling*, *212*, 107961–107961. https://doi.org/10.1016/j.resconrec.2024.107961

Ignat, B., & Chankov, S. (2020). Do e-commerce customers change their preferred last-mile delivery based on its sustainability impact? *The International Journal of Logistics Management*, *31*(3), 521–548. https://doi.org/10.1108/ijlm-11-2019-0305

Jacobsen, L. F., Pedersen, S., & Thøgersen, J. (2022). Drivers of and barriers to consumers' plastic packaging waste avoidance and recycling – A systematic literature review. *Waste Management*, *141*(1), 63–78. https://doi.org/10.1016/j.wasman.2022.01.021

Kim, Y., Kang, J., & Chun, H. (2022). Is online shopping packaging waste a threat to the environment? *Economics Letters*, *214*(110398), 110398. https://doi.org/10.1016/j.econlet.2022.110398

Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to pro-environmental behavior? *Environmental Education Research*, *8*(3), 239–260. https://doi.org/10.1080/13504620220145401

Koschate-Fischer, N., & Schandelmeier, S. (2014). A guideline for designing experimental studies in marketing research and a critical discussion of selected problem areas. *Journal of Business Economics*, *84*(6), 793–826. https://doi.org/10.1007/s11573-014-0708-6

Kristensson, P., Wästlund, E., & Söderlund, M. (2017). Influencing consumers to choose environment friendly offerings: Evidence from field experiments. *Journal of Business Research*, *76*, 89–97. https://doi.org/10.1016/j.jbusres.2017.03.003

Kroker, V., & Lange, F. (2024). Financial and prosocial incentives promote pro-environmental behavior in a consequential laboratory task. *Journal of Environmental Psychology*, *96*, 102331–102331. https://doi.org/10.1016/j.jenvp.2024.102331

Lai, N. Y. G., Kuah, A. T. H., Kim, C. H., & Wong, K. H. (2022). Toward sustainable express deliveries for online shopping: Reusing packaging materials through reverse logistics. *Thunderbird International Business Review*, *64*(4). https://doi.org/10.1002/tie.22259

Lanzini, P., & Thøgersen, J. (2014). Behavioural spillover in the environmental domain: An intervention study. *Journal of Environmental Psychology*, *40*, 381–390. https://doi.org/10.1016/j.jenvp.2014.09.006

Lavuri, R. (2022). Organic green purchasing: Moderation of environmental protection emotion and price sensitivity. *Journal of Cleaner Production*, *368*, 133113. https://doi.org/10.1016/j.jclepro.2022.133113

Lindenberg, S., & Steg, L. (2007). Normative, Gain and Hedonic Goal Frames Guiding Environmental Behavior. *Journal of Social Issues*, *63*(1), 117–137. https://doi.org/10.1111/j.1540-4560.2007.00499.x

Liobikienė, G., Grincevičienė, Š., & Bernatonienė, J. (2017). Environmentally friendly behaviour and green purchase in Austria and Lithuania. *Journal of Cleaner Production*, *142*, 3789–3797. https://doi.org/10.1016/j.jclepro.2016.10.084

Liu, Z., Yang, J. Z., Clark, S. S., & Shelly, M. A. (2021). Recycling as a planned behavior: the moderating role of perceived behavioral control. *Environment, Development and Sustainability*, *24*(2). https://doi.org/10.1007/s10668-021-01894-z

Loureiro, M. L., & Lotade, J. (2005). Do fair trade and eco-labels in coffee wake up the consumer conscience? *Ecological Economics,* *53*(1), 129–138. https://doi.org/10.1016/j.ecolecon.2004.11.002

Magnusson, M. K., Arvola, A., Koivisto Hursti, U., Åberg, L., & Sjödén, P. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal*, *103*(3), 209–227. https://doi.org/10.1108/00070700110386755

Maki, A., Burns, R. J., Ha, L., & Rothman, A. J. (2016). Paying people to protect the environment: A meta-analysis of financial incentive interventions to promote proenvironmental behaviors. *Journal of Environmental Psychology*, *47*, 242–255. https://doi.org/10.1016/j.jenvp.2016.07.006

Mangiaracina, R., Marchet, G., Perotti, S., & Tumino, A. (2015). A review of the environmental implications of B2C e-commerce: a logistics perspective. *International Journal of Physical Distribution & Logistics Management*, *45*(6), 565–591. https://doi.org/10.1108/ijpdlm-06-2014-0133

Margaça, C., Sánchez-García, C. S., Hernández Sánchez, B., & Mangas, S. L. (2024). Environmental values and education in Spanish universities: a questionnaire validation. *International Journal of Sustainability in Higher Education*, *25*(1), 161–181. https://doi.org/10.1108/ijshe-02-2023-0037

Mastria, S., Alessandro Vezzil, & Andrea De Cesarei. (2024). Switching to Reuse: The Impact of Information on Consumers' Choices for Reusable Food Packaging. *Sustainability*, *16*(14), 5937–5937. https://doi.org/10.3390/su16145937

McKinsey. (2023). *The potential impact of reusable packaging | McKinsey*. Www.mckinsey.com. https://www.mckinsey.com/industries/packaging-and-paper/our-insights/the-potential-impact-of-reusable-packaging

McWilliams, A., Siegel, D. S., & Wright, P. M. (2006). Corporate Social Responsibility: Strategic Implications. *Journal of Management Studies*, *43*(1), 1–18. wiley.

Mertens, S., Herberz, M., Hahnel, U. J. J., & Brosch, T. (2022). The effectiveness of nudging: A meta-analysis of choice architecture interventions across behavioral domains. *Proceedings of the National Academy of Sciences*, *119*(1). https://doi.org/10.1073/pnas.2107346118

Miao, X., Magnier, L., & Mugge, R. (2023). Switching to reuse? An exploration of consumers' perceptions and behaviour towards reusable packaging systems. *Resources, Conservation and Recycling*, *193*(0921-3449), 106972. https://doi.org/10.1016/j.resconrec.2023.106972

Møller Haase, L., Mugge, R., Mosgaard, M. A., Bocken, N., Jaeger-Erben, M., Pizzol, M., & Søgaard Jørgensen, M. (2024). Who are the value transformers, value co-operators and value gatekeepers? New routes to value preservation in a sufficiency-based circular

economy. *Resources, Conservation and Recycling*, *204*, 107502–107502. https://doi.org/10.1016/j.resconrec.2024.107502

Morales, A. C., Amir, O., & Lee, L. (2017). Keeping It Real in Experimental Research—Understanding When, Where, and How to Enhance Realism and Measure Consumer Behavior. *Journal of Consumer Research*, *44*(2), 465–476. https://doi.org/10.1093/jcr/ucx048

Nguyen, H. V., Thanh, L., & Thi, M. (2023). From environmental values to pro-environmental consumption behaviors: the moderating role of environmental information. *Current Psychology*. https://doi.org/10.1007/s12144-023-04569-2

Nguyen, T. N., Lobo, A., & Greenland, S. (2016). Pro-environmental purchase behaviour: The role of consumers' biospheric values. *Journal of Retailing and Consumer Services*, *33*, 98–108. https://doi.org/10.1016/j.jretconser.2016.08.010

Nilsson, A., Hansla, A., Heiling, J. M., Bergstad, C. J., & Martinsson, J. (2016). Public acceptability towards environmental policy measures: Value-matching appeals. *Environmental Science & Policy*, *61*, 176–184. https://doi.org/10.1016/j.envsci.2016.04.013

Noëth, E., Wim Van Opstal, & Els Du Bois. (2024). Introducing reusable food packaging: Customer preferences and design implications for successful market entry. *Business Strategy and the Environment*. https://doi.org/10.1002/bse.3820

Novoradovskaya, E., Mullan, B., & Hasking, P. (2020). Choose to reuse: Predictors of using a reusable hot drink cup. *Journal of Consumer Behaviour*, *19*(6), 608–617. https://doi.org/10.1002/cb.1834

Oh, J., Sudarshan, S., Jin, E., Nah, S., & Yu, N. (2020). How 360-Degree Video Influences Content Perceptions and Environmental Behavior: The Moderating Effect of Environmental Self-Efficacy. *Science Communication*, *42*(4), 423–453. https://doi.org/10.1177/1075547020932174

Ölander, F., & Thøgersen, J. (1995). Understanding of consumer behaviour as a prerequisite for environmental protection. *Journal of Consumer Policy*, *18*(4), 345–385. https://doi.org/10.1007/bf01024160

Oliver Wyman. (2021). *Is e-commerce good for Europe?* https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2021/apr/is-ecommerce-good-for-europe.pdf

Olsson, J. (2023, August 21). *Last-mile delivery services in retail: a consumer-centric approach*. Lund University. https://portal.research.lu.se/en/publications/last-mile-delivery-services-in-retail-a-consumer-centric-approach

Onel, N., & Mukherjee, A. (2017). Why do consumers recycle? A holistic perspective encompassing moral considerations, affective responses, and self-interest motives. *Psychology & Marketing*, *34*(10), 956–971. https://doi.org/10.1002/mar.21035

Onwezen, M. C., Antonides, G., & Bartels, J. (2013). The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. *Journal of Economic Psychology*, *39*(1), 141–153. https://doi.org/10.1016/j.joep.2013.07.005

Osterhus, T. L. (1997). Pro-Social Consumer Influence Strategies: When and How Do They Work? *Journal of Marketing*, *61*(4), 16. https://doi.org/10.2307/1252084

Pålsson, H., & Olsson, J. (2023). Current state and research directions for disposable versus reusable packaging: A systematic literature review of comparative studies. *Packaging Technology and Science*, *36*(6). https://doi.org/10.1002/pts.2722

Pasquariello, R., Bianchi, M., Mari, F., & Caso, D. (2024). Fostering local seasonality: An extended value-belief-norm model to understand sustainable food choices. *Food Quality and Preference*, 105248–105248. https://doi.org/10.1016/j.foodqual.2024.105248

Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption using theory of planned behavior and reasoned action. *Journal of Retailing and Consumer Services*, *29*, 123–134.

Pennsylvania State University. (n.d.). *12.1 - Logistic Regression | STAT 462*. Online.stat.psu.edu. https://online.stat.psu.edu/stat462/node/207/

Pereira, L., Carvalho, R., Dias, Á., Costa, R., & António, N. (2021). How does sustainability affect consumer choices in the fashion industry? *Resources*, *10*(4), 38. https://www.mdpi.com/2079-9276/10/4/38

Plamondon, G., Labonté, M.-È., Pomerleau, S., Vézina, S., Mikhaylin, S., Laberee, L., & Provencher, V. (2022). The influence of information about nutritional quality, environmental impact and eco-efficiency of menu items on consumer perceptions and behaviors. *Food Quality and Preference*, *102*, 104683. https://doi.org/10.1016/j.foodqual.2022.104683

Postnord. (2024). *E-commerce in the Nordics 2024 - Autumn*. Postnord.com. https://www.postnord.com/insights/reports/

Price, P. C., Jhangiani, R. S., Chiang, I-Chant. A., Leighton, D. C., & Cuttler, C. (2017). *Research Methods in Psychology* (3rd ed., pp. 77–100).

Rajapaksa, D., Gifford, R., Torgler, B., Garcia-Valiñas, M., Athukorala, W., Managi, S., & Wilson, C. (2019). Do monetary and non-monetary incentives influence environmental attitudes and behavior? Evidence from an experimental analysis. *Resources, Conservation and Recycling*, *149*, 168–176. https://doi.org/10.1016/j.resconrec.2019.05.034

Ram, N., Ahmad, P., Toth-Peter, A., de Torres de Oliveira, R., & Acharyulu, G. (2024). Developing a circular economy framework for e-commerce packaging materials: A study on behavioural intentions of online consumers. *Business Strategy and the Environment*. https://doi.org/10.1002/bse.4020

Rathi, R., Jain, S., & Garg, R. (2023). Exploring young consumer's adoption of secondhand luxury: insights from a qualitative study. *Journal of Fashion Marketing and Management*, *28*(1). https://doi.org/10.1108/jfmm-11-2022-0236

RE-ZIP. (n.d.). *RE-ZIP: Circular Packaging Concept*. RE-ZIP. https://re-zip.com/

Reinholdsson, T., Hedesström, M., Ejelöv, E., Hansla, A., Bergquist, M., Svenfelt, Å., & Nilsson, A. (2022). Nudging green food: The effects of a hedonic cue, menu position, a warm-glow cue, and a descriptive norm. *Journal of Consumer Behaviour*, *22*(3). https://doi.org/10.1002/cb.2129

RePack. (n.d.). *Reusable packaging service for ecommerce | RePack*. Www.repack.com. https://www.repack.com/

Rezvani, Z., Jansson, J., & Bengtsson, M. (2018). Consumer motivations for sustainable consumption: The interaction of gain, normative and hedonic motivations on electric vehicle adoption. *Business Strategy and the Environment*, *27*(8), 1272–1283. https://doi.org/10.1002/bse.2074

Ried, L., Eckerd, S., & Kaufmann, L. (2022). Social desirability bias in PSM surveys and behavioral experiments: Considerations for design development and data collection. *Journal of Purchasing and Supply Management*, *28*(1), 100743. https://doi.org/10.1016/j.pursup.2021.100743

S&P Global. (2022). *Variance Inflation Factor (VIF)*. Ihs.com. https://onlinehelp.ihs.com/Energy/AnalyticsExplorer/AE_9.0/Webhelp/Content/AnalyticsExplorer/VIF.htm

Schneider, C. R., Zaval, L., Weber, E. U., & Markowitz, E. M. (2017). The influence of anticipated pride and guilt on pro-environmental decision making. *PLOS ONE*, *12*(11), e0188781. https://doi.org/10.1371/journal.pone.0188781

Schoenefeld, J. J., & McCauley, M. R. (2016). Local is not always better: the impact of climate information on values, behavior and policy support. *Journal of Environmental Studies and Sciences*, *6*(4), 724–732. https://doi.org/10.1007/s13412-015-0288-y

Schuitema, G., & de Groot, J. I. M. (2015). Green consumerism: The influence of product attributes and values on purchasing intentions. *Journal of Consumer Behaviour*, *14*(1), 57–69. https://doi.org/10.1002/cb.1501

Schwartz, S. H. (1992). Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. *Advances in Experimental Social Psychology*, *25*(1), 1–65. https://doi.org/10.1016/s0065-2601(08)60281-6

Shevchenko, T., Saidani, M., Ranjbari, M., Kronenberg, J., Danko, Y., & Laitala, K. (2023). Consumer Behavior in the Circular economy: Developing a product-centric Framework. *Journal of Cleaner Production*, *384*(384), 135568. https://doi.org/10.1016/j.jclepro.2022.135568

Silva, N., & Nilsson, F. (2024). Exploring the circular last mile: reusable packaging in home delivery of food and groceries using a design science approach. *The International Review of Retail, Distribution and Consumer Research*, 1–22. https://doi.org/10.1080/09593969.2024.2414082

Smiley, K. T., Chen, Y.-A., & Shao, W. (2022). Being green in a green capital: Assessing drivers of pro-environmental behaviors in Copenhagen. *Cities*, *122*, 103538. https://doi.org/10.1016/j.cities.2021.103538

Söderlund, M. (2018). *Experiments In Marketing.* Studentlitteratur AB.

Söderlund, M. (2019). Can the label “member” in a loyalty program context boost customer satisfaction? *The International Review of Retail, Distribution and Consumer Research*, *29*(3), 340–357. https://doi.org/10.1080/09593969.2019.1598469

Söderlund, M. (2023). Moderator variables in consumer research: A call for caution. *Journal of Retailing and Consumer Services*, *73*, 103352. https://doi.org/10.1016/j.jretconser.2023.103352

Solja, E., Liljander, V., & Söderlund, M. (2018). Short brand stories on packaging: An examination of consumer responses. *Psychology & Marketing*, *35*(4), 294–306. https://doi.org/10.1002/mar.21087

Statista. (2022). *Infographic: 87 Billion Parcels Were Shipped in 2018*. Statista Infographics. https://www.statista.com/chart/10922/parcel-shipping-volume-and-parcel-spend-in-selected-countries/

Steg, L., Bolderdijk, J. W., Keizer, K., & Perlaviciute, G. (2014). An Integrated Framework for Encouraging Pro-environmental Behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology*, *38*, 104–115. https://doi.org/10.1016/j.jenvp.2014.01.002

Steg, L., & de Groot, J. I. M. (2012). Environmental Values. In *Oxford Handbooks Online*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199733026.013.0005

Steg, L., Lindenberg, P., & Keizer, K. (2016). Intrinsic motivation, norms and environmental behaviour: The dynamics of overarching goals. *International Review of Environmental and Resource Economics*, *9*(1-2), 179–207. https://doi.org/10.1561/101.00000077

Steg, L., Perlaviciute, G., van der Werff, E., & Lurvink, J. (2014). The Significance of Hedonic Values for Environmentally Relevant Attitudes, Preferences, and Actions. *Environment and Behavior*, *46*(2), 163–192. https://doi.org/10.1177/0013916512454730

Stern, P. C. (1999). Information, Incentives, and Proenvironmental Consumer Behavior. *Journal of Consumer Policy*, *22*(4), 461–478. https://doi.org/10.1023/a:1006211709570

Stern, P. C. (2000). New Environmental Theories: toward a Coherent Theory of Environmentally Significant Behavior. *Journal of Social Issues*, *56*(3), 407–424.

Stoltzfus, J. C. (2011). Logistic Regression: A Brief Primer. *Academic Emergency Medicine*, *18*(10), 1099–1104. https://doi.org/10.1111/j.1553-2712.2011.01185.x

Svensk Handel. (2025). *E-handelsindikatorn Årsrapport 2024*. Svenskhandel.se. https://www.svenskhandel.se/rapporter/e-handelsindikatorn-helar-2024

Szmigin, I., Carrigan, M., & McEachern, M. G. (2009). The Conscious consumer: Taking a Flexible Approach to Ethical Behaviour. *International Journal of Consumer Studies*, *33*(2), 224–231. https://doi.org/10.1111/j.1470-6431.2009.00750.x

Tang, Y., Chen, S., & Yuan, Z. (2019). The effects of hedonic, gain, and normative motives on sustainable consumption: Multiple mediating evidence from China. *Sustainable Development*. https://doi.org/10.1002/sd.2024

Thøgersen, J. (1996). Recycling and Morality. *Environment and Behavior*, *28*(4), 536–558. https://doi.org/10.1177/0013916596284006

Thøgersen, J. (2011). Green Shopping. *American Behavioral Scientist*, *55*(8), 1052–1076. https://doi.org/10.1177/0002764211407903

Thøgersen, J., & Alfinito, S. (2020). Goal activation for sustainable consumer choices: A comparative study of Denmark and Brazil. *Journal of Consumer Behaviour*, *19*(6), 556–569. https://doi.org/10.1002/cb.1824

Thøgersen, J., & Ölander, F. (2002). Human values and the emergence of a sustainable consumption pattern: A panel study. *Journal of Economic Psychology*, *23*(5), 605–630. https://doi.org/10.1016/s0167-4870(02)00120-4

Thomas W., R., Ueltschy Murfield, M. L., & Ellram, L. M. (2022). Leveraging sustainable supply chain information to alter last-mile delivery consumption: A social exchange perspective. *Sustainable Production and Consumption*. https://doi.org/10.1016/j.spc.2022.09.014

Trabandt, M., Wassili Lasarov, & Giampaolo Viglia. (2024). It's a pleasure to stay sustainably: Leveraging hedonic appeals in tourism and hospitality. *Tourism Management*, *103*, 104907–104907. https://doi.org/10.1016/j.tourman.2024.104907

Transportföretagen. (2024). *Paketindex K4 2024*. Transportföretagen.se. https://via.tt.se/files/3235972/3782555/145950/sv

von Borgstede, C., Andersson, M., & Hansla, A. (2014). Value-Congruent Information Processing: The Role of Issue Involvement and Argument Strength. *Basic and Applied Social Psychology*, *36*(6), 461–477. https://doi.org/10.1080/01973533.2014.958226

Wang, L., Wang, Z.-X., Zhang, Q., Jebbouri, A., & Wong, P. P. W. (2021). Consumers' intention to visit green hotels – a goal-framing theory perspective. *Journal of Sustainable Tourism*, 1–21. https://doi.org/10.1080/09669582.2021.1977937

Westin, K., Nordlund, A., Jansson, J., & Nilsson, J. (2020). Goal Framing as a Tool for Changing People's Car Travel Behavior in Sweden. *Sustainability*, *12*(9), 3695. https://doi.org/10.3390/su12093695

White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT Consumer Behaviors to Be More Sustainable: a Literature Review and Guiding Framework. *Journal of Marketing*, *83*(3), 22–49. Sagepub. https://doi.org/10.1177/0022242919825649

Wiederhold, M., & Martinez, L. F. (2018). Ethical Consumer Behaviour in Germany: the attitude-behaviour Gap in the Green Apparel Industry. *International Journal of Consumer Studies*, *42*(4), 419–429. https://doi.org/10.1111/ijcs.12435

Wyss, A. M., Knoch, D., & Berger, S. (2022). When and how pro-environmental attitudes turn into behavior: The role of costs, benefits, and self-control. *Journal of Environmental Psychology*, *79*, 101748. https://doi.org/10.1016/j.jenvp.2021.101748

Xia, L., Monroe, K. B., & Cox, J. L. (2004). The Price Is Unfair! A Conceptual Framework of Price Fairness Perceptions. *Journal of Marketing*, *68*(4), 1–15. JSTOR. https://doi.org/10.2307/30162012

Yue, B., Sheng, G., She, S., & Xu, J. (2020). Impact of Consumer Environmental Responsibility on Green Consumption Behavior in China: the Role of Environmental Concern and Price Sensitivity. *Sustainability*, *12*(5), 2074. https://doi.org/10.3390/su12052074

Zhang, C., Yu, Z., Huang, Y., Wang, M., Martin, S., Xiao, G., & Lu, X. (2024). Investigating the influence mechanism of goal-framing theory on urban residents' green travel behavior. *Sustainable Development*. https://doi.org/10.1002/sd.2962

Zimmermann, T., & Bliklen, R. (2020). Single-use vs. reusable packaging in e-commerce: comparing carbon footprints and identifying break-even points. *GAIA - Ecological Perspectives for Science and Society*, *29*(3), 176–183. https://doi.org/10.14512/gaia.29.3.8

8. Appendices

Appendix A: Interview guide template

Introduction

- Presenting the thesis topic
- Permission to record
- Permission to disclose answers in the thesis based on the consent form below:

The student's project. As an integral part of the educational program at the Stockholm School of Economics, enrolled students complete an individual thesis. This work is sometimes based upon surveys and interviews connected to the subject. Participation is naturally entirely voluntary, and this text is intended to provide you with necessary information that may concern your participation in the study or interview. You can at any time withdraw your consent and your data will thereafter be permanently erased.

Confidentiality. Anything you say or state in the survey or to the interviewers will be held strictly confidential and will only be made available to supervisors, tutors and the course management team

Secured storage of data. All data will be stored and processed safely by the SSE and will be permanently deleted when the project is completed.

No personal data will be published. The thesis written by the students will not contain any information that may identify you as a participant to the survey or interview subject.

Your rights under GDPR. You are welcome to visit https://www.hhs.se/en/about-us/contact/data-protection/ in order read more and obtain information on your rights related to personal data

Reusable packaging

Questions were modified in each interview depending on the role of the participants and on the discussion points that came up organically.

Question 1. Can you briefly describe your role at X and how you contribute to the company's sustainability efforts?

Question 2. In the context of sustainability, how important is packaging sustainability compared to other sustainability efforts overall?

Question 3. Do you think it receives enough attention, or is it often overshadowed by other efforts like emissions reduction?

Question 4. When it comes to adopting reusable packaging in e-commerce, how much influence do consumer choices have compared to company-led initiatives?

Ending questions

Question 1. How do you see the future of reusable packaging in fashion retail? Do you think it will become a mainstream option?

Question 2. What improvements would you like to see in reusable packaging systems?

Question 3. What operational challenges do you foresee in implementing reusable packaging at scale?

Question 4. Is there any additional insight or recommendation you'd like to share that could be relevant for our research?

Appendix B: Pre-test questionnaire

Q1

Hi and welcome!

This survey is carried out by two students at the Stockholm School of Economics as part of our master thesis. It serves as a pre-study for our main research, which explores how consumers make choices at checkout and how different presentation formats may influence decision-making.

Please note that this research is independent and not conducted in collaboration with any company. The survey takes approximately 5 min to complete and you can choose to end your participation at any time by closing your browser window. If you have any questions, you are most welcome to contact us at 42536@student.hhs.se.

Thank you for your participation!
Jessica Mugavero & Elis Reitalu

By continuing to the following pages, you agree that we will use your answers in our research. In accordance with the General Data Protection Regulation (GDPR), your personal data will be treated confidentially. The paper will not contain any information that can identify you as a participant in the survey. The data will be permanently deleted in June 2025.

You are welcome to visit https://www.hhs.se/gdpr/ to read more and get information about your rights related to personal data.

Q2

You will now be presented with **a shopping scenario**, followed by **4 different checkout pages** that we intend to use in the main study. Each checkout page represents a variation of how reusable packaging options are displayed. After reviewing them, you will be asked to answer a series of questions. Please observe the scenario and check-out pages carefully, as they contain small differences.

Q3

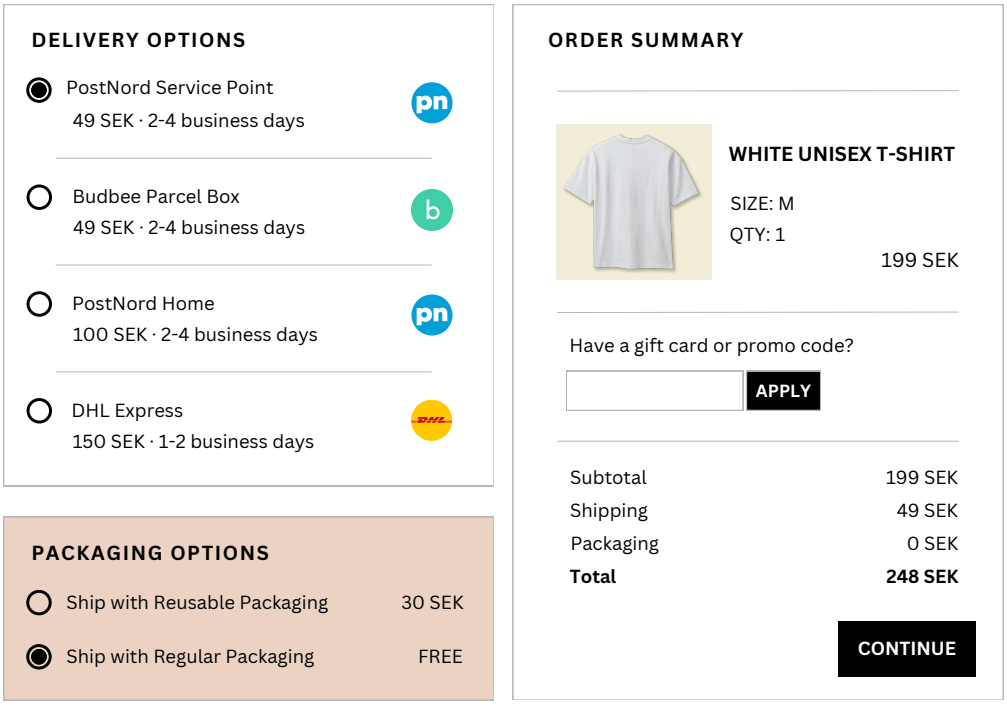
Imagine that you are shopping for a clothing item online and are at the check-out stage of your purchase. As part of the check-out process, you are presented with different shipping options, including choices for both the delivery method and the type of packaging used.

Reusable packaging is made of durable and recycled materials and is designed to be returned after delivery, so that it can be used for future orders. After receiving your order, the empty packaging can be dropped off at your nearest mailbox, where it will be collected, cleaned, and put back into circulation.

Please review the following information carefully, just as you would in a real online shopping situation.

Q4: Baseline condition

Please review the checkout page below and share your opinion on the following statements. *As noted before, reusable packaging is designed to be returned after delivery so it can be reused for future orders.*



To what extent do you agree or disagree with the following statements?

Q4.1 ***The concept of reusable packaging is clear to me***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q4.2 ***I can imagine myself in the described scenario***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q4.3 ***The scenario was clearly described***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q4.4 ***The checkout page closely resembled a real online shopping experience***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q4.6 ***The price of the reusable packaging is reasonable***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q4.7 ***I would not feel surprised if presented with packaging options during checkout***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q4.8 ***The packaging options were clearly visible to me***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q4.9 Do you have any thoughts you'd like to share about Scenario 1?

.....

Q5: Normative condition

Please review the checkout page below and share your opinion on the following statements. *As noted before, reusable packaging is designed to be returned after delivery so it can be reused for future orders.*

DELIVERY OPTIONS

- ◉ PostNord Service Point — 49 SEK · 2-4 business days
- ○ Budbee Parcel Box — 49 SEK · 2-4 business days
- ○ PostNord Home — 100 SEK · 2-4 business days
- ○ DHL Express — 150 SEK · 1-2 business days

PACKAGING OPTIONS

- ○ Ship with Reusable Packaging — 30 SEK, 0.12 kg CO2e
- ◉ Ship with Regular Packaging — FREE, 0.31 kg CO2e

ORDER SUMMARY

WHITE UNISEX T-SHIRT
SIZE: M
QTY: 1
199 SEK

Have a gift card or promo code?
[ ] APPLY

Subtotal	199 SEK
Shipping	49 SEK
Packaging	0 SEK
Total	**248 SEK**

CONTINUE

To what extent do you agree or disagree with the following statements?

Q5.1 ***I clearly understand the environmental benefits of choosing reusable packaging***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q5.2 ***The environmental information was presented in a way that was easy to read***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q5.3 ***The environmental information was positioned clearly on the checkout page***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q5.4 Do you have any thoughts you'd like to share about Scenario 2?

.....

Q6

You are now presented with two potential options:

OPTION 1:

DELIVERY OPTIONS

- ◉ PostNord Service Point — 49 SEK · 2-4 business days
- ○ Budbee Parcel Box — 49 SEK · 2-4 business days
- ○ PostNord Home — 100 SEK · 2-4 business days
- ○ DHL Express — 150 SEK · 1-2 business days

PACKAGING OPTIONS

- ○ Ship with Reusable Packaging — 30 SEK
  Go reusable & get 10% off your next order
- ◉ Ship with Regular Packaging — FREE

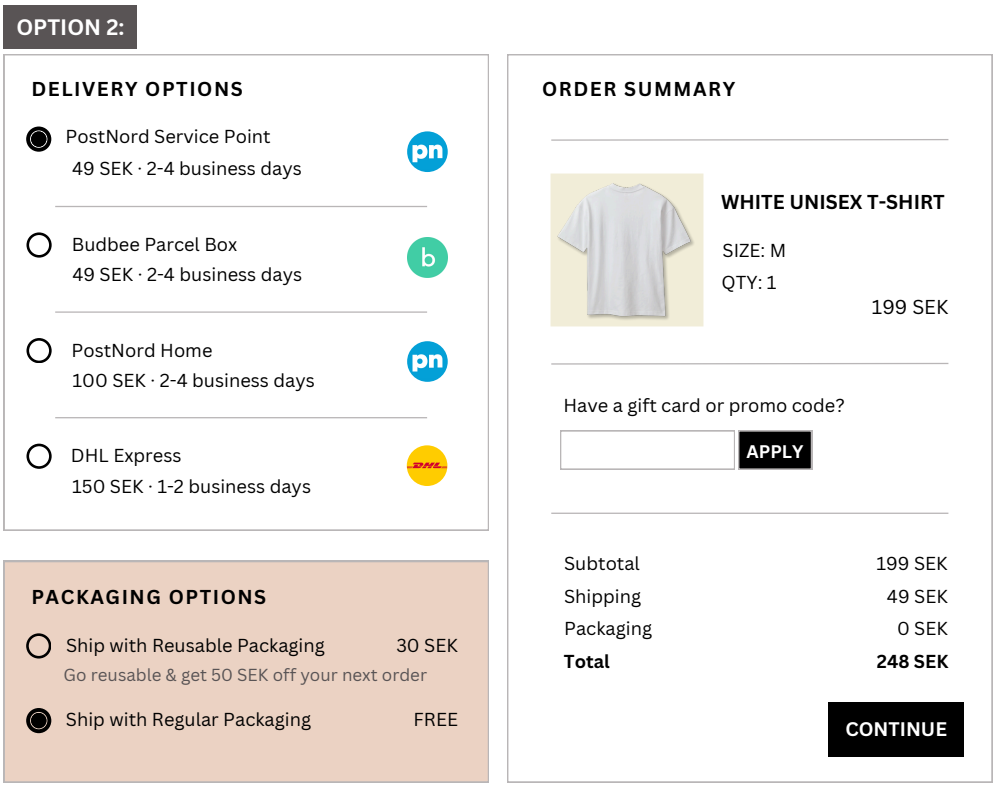
ORDER SUMMARY

WHITE UNISEX T-SHIRT
SIZE: M
QTY: 1
199 SEK

Have a gift card or promo code?
[ ] APPLY

Subtotal	199 SEK
Shipping	49 SEK
Packaging	0 SEK
Total	**248 SEK**

CONTINUE



Q6.1 Which of these two offers is more appealing to you when choosing reusable packaging at checkout?

- ○ 10% off your next order
- ○ 50 SEK off your next order

Q7: Gain condition

You are now viewing the checkout page you selected in the previous question. Please review it carefully and share your opinion on the following statements. *As noted before, reusable packaging is designed to be returned after delivery so it can be reused for future orders.*

<< PICTURE OF EITHER 10% OFF OR 50 SEK OFF INTERVENTION, DEPENDING ON THE CHOICE MADE IN Q6.1 >>

To what extent do you agree or disagree with the following statements?

Q7.1 ***I clearly understand what was the reward for choosing the reusable packaging***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q7.2 ***The reward information was positioned clearly on the checkout page***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q7.3 ***The offered discount for choosing reusable packaging is reasonable***

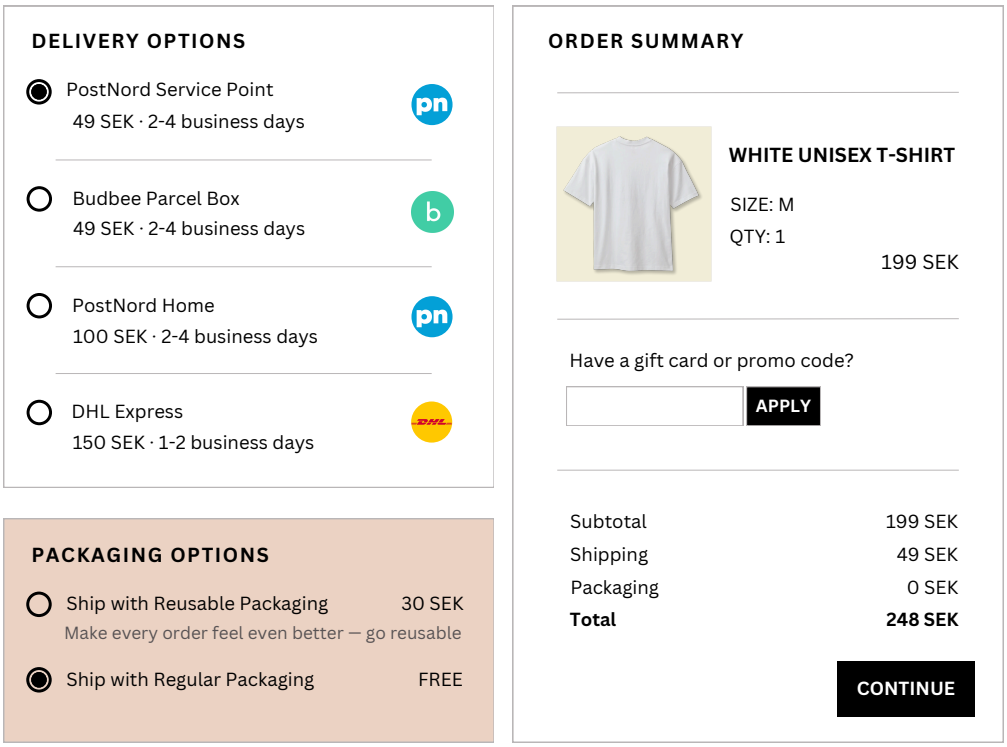
	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q7.4 Do you have any thoughts you'd like to share about Scenario 3?

.....

Q8: Hedonic condition

Please review the checkout page below and share your opinion on the following statements. *As noted before, reusable packaging is designed to be returned after delivery so it can be reused for future orders.*



To what extent do you agree or disagree with the following statements?

Q8.1 ***The message was simple and straightforward to read and understand***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q8.2 ***The message was positioned clearly on the checkout page***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q8.3 ***The message effectively conveys the idea of feeling good or enjoying the positive impact of your choice***

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

Q8.4 Do you have any thoughts you'd like to share about Scenario 4?

.....

Q9 What was the survey about?

- ○ Cars

Q10 After completing this survey, do you feel more inclined to choose reusable packaging?

- ○ Yes, I am more likely to choose reusable packaging
- ○ No, my choice remains the same
- ○ I feel indifferent

Q11 Would you care to comment on your previous answer?

.....

Q12 Please indicate your age

1. Under 18
2. 18–24
3. 25–34
4. 35–44
5. 45–54
6. 55–64
7. 65+
8. Prefer not to disclose

Q13 Please indicate your gender

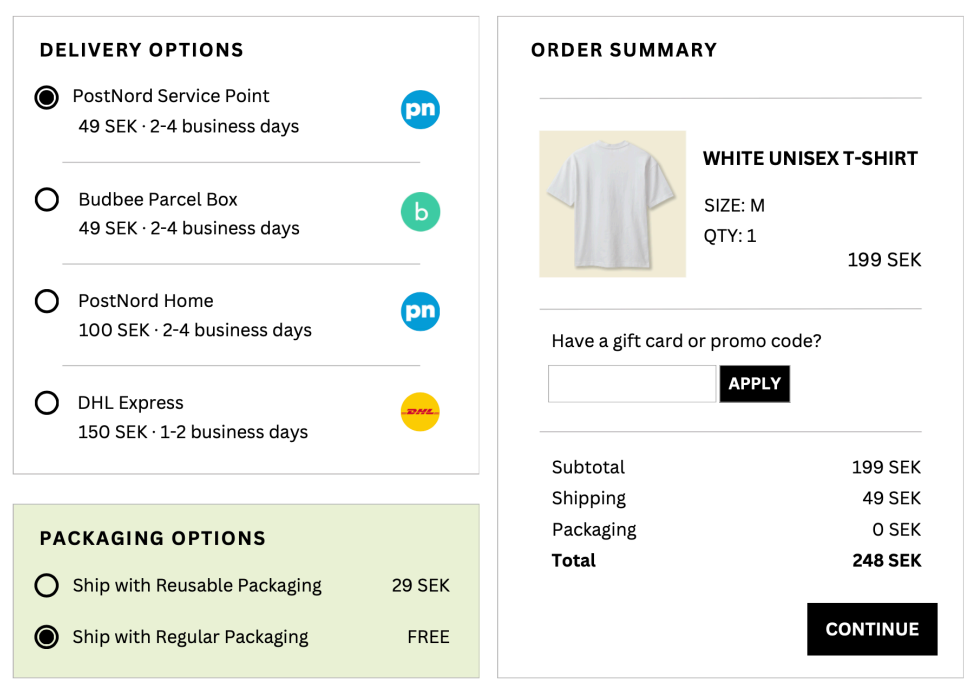
- ☐ Male
- ☐ Female
- ☐ Non-binary
- ☐ Prefer not to say
- ☐ Other

Q14 Do you have any thoughts you'd like to share about the survey?

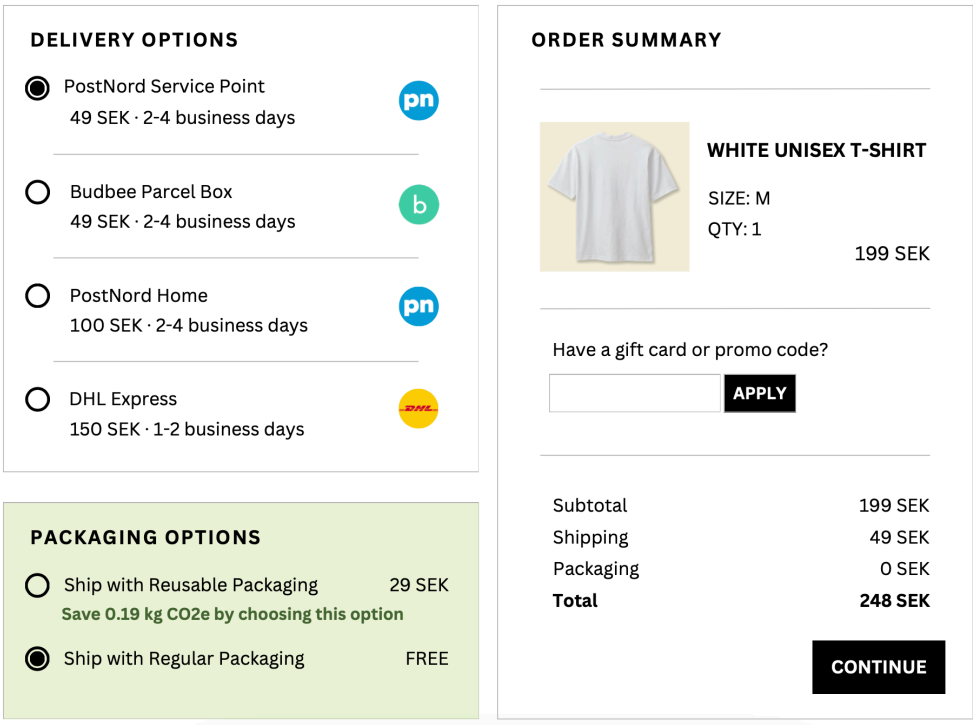
.....

Appendix C: Stimuli versions

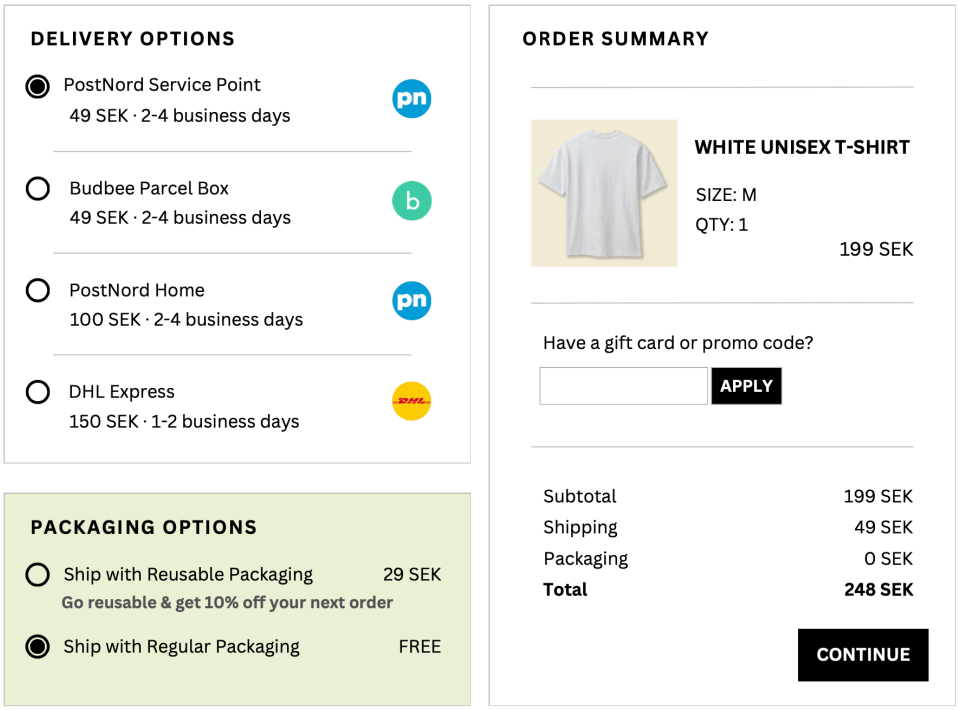
Stimulus 1: Baseline condition with no interventions



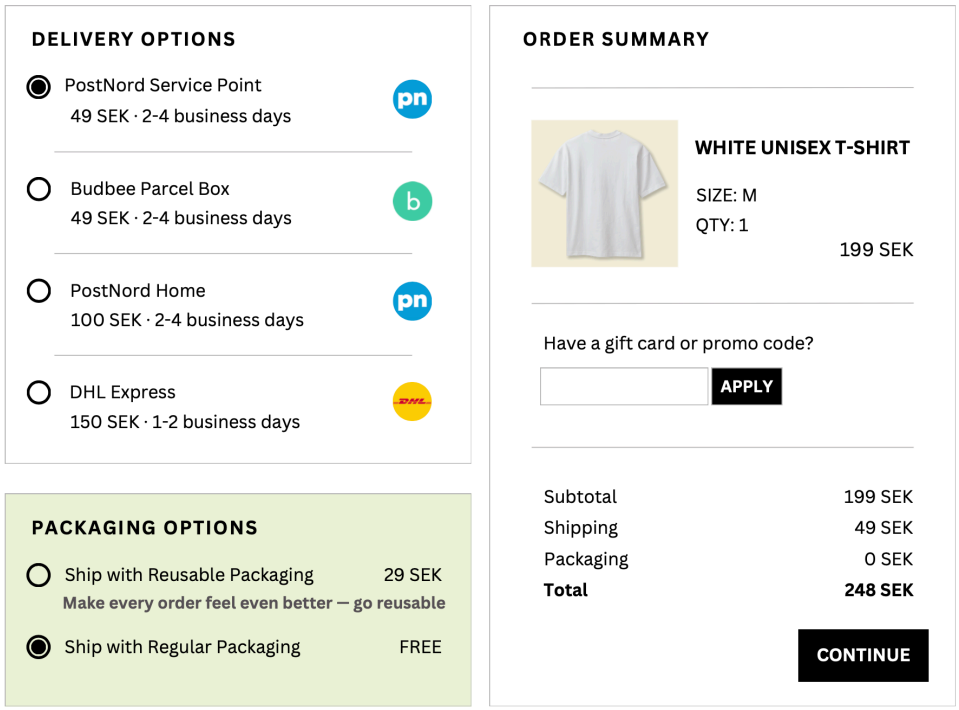
Stimulus 2: Normative condition, i.e., activation of normative goal frame through environmental information



Stimulus 3: Gain condition, i.e., activation of gain goal frame through monetary incentive



Stimulus 4: Hedonic condition, i.e., activation of hedonic goal frame through hedonic appeal



Appendix D: Main study questionnaire

Q1

Hi and welcome!

This survey is carried out by two students at the Stockholm School of Economics as part of our master thesis. Our research explores how consumers make choices at checkout and how different presentation formats may influence decision-making.

As a token of appreciation, we will randomly select **two respondents** to receive a **200 SEK gift card from ICA**. If you wish to participate in the raffle, you can enter your email at the end of the survey.

Please note that this research is independent and not conducted in collaboration with any company. The survey takes approximately 4-5 min to complete and you can choose to end your participation at any time by closing your browser window. If you have any questions, you are most welcome to contact us at 42536@student.hhs.se.

Thank you for your participation!
Jessica Mugavero & Elis Reitalu

By continuing to the following pages, you agree that we will use your answers in our research. Your responses are completely anonymous, and no personally identifiable information will be collected. In accordance with the General Data Protection Regulation (GDPR), your personal data will be treated confidentially. The paper will not contain any information that can identify you as a participant in the survey. The data will be permanently deleted in June 2025.

You are welcome to visit https://www.hhs.se/gdpr/ to read more and get information about your rights related to personal data.

Q2

Scenario Description

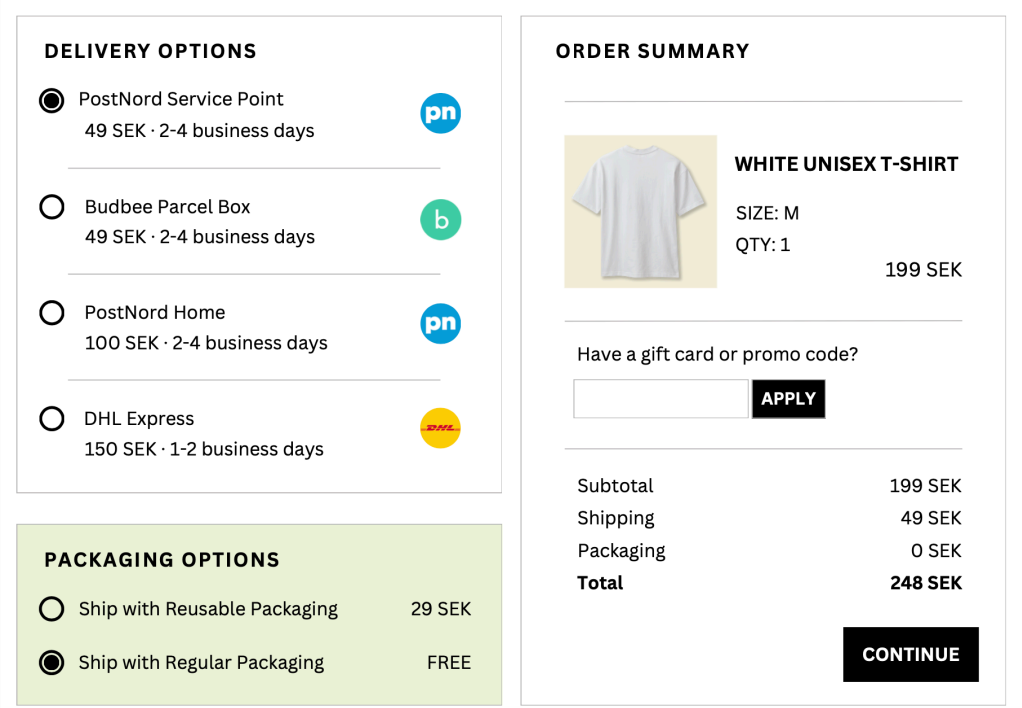
Imagine you are shopping for a clothing item online and have reached the checkout stage of your purchase. At this point, you are presented with different shipping options that include both the delivery method and the type of packaging available.

One of the options is **reusable packaging**, which is made from durable, recycled materials and is designed to be returned after delivery. After receiving your order, the empty packaging can be dropped off at your nearest mailbox, where it will be collected, cleaned, and put back into circulation.

Please take a moment to read this description carefully and observe the checkout page in the next section before answering the following questions.

Q3.1: Baseline condition

Please review the checkout page below and answer the following questions.
As noted before, reusable packaging is designed to be returned after delivery so it can be reused for future orders.



Q3.2

It is important that you observe the image carefully in order to answer the following questions. Have you observed the picture carefully?

- ◯ Yes
- ◯ No

Q3.3

Based on the information provided in the check-out page, which packaging option do you choose?

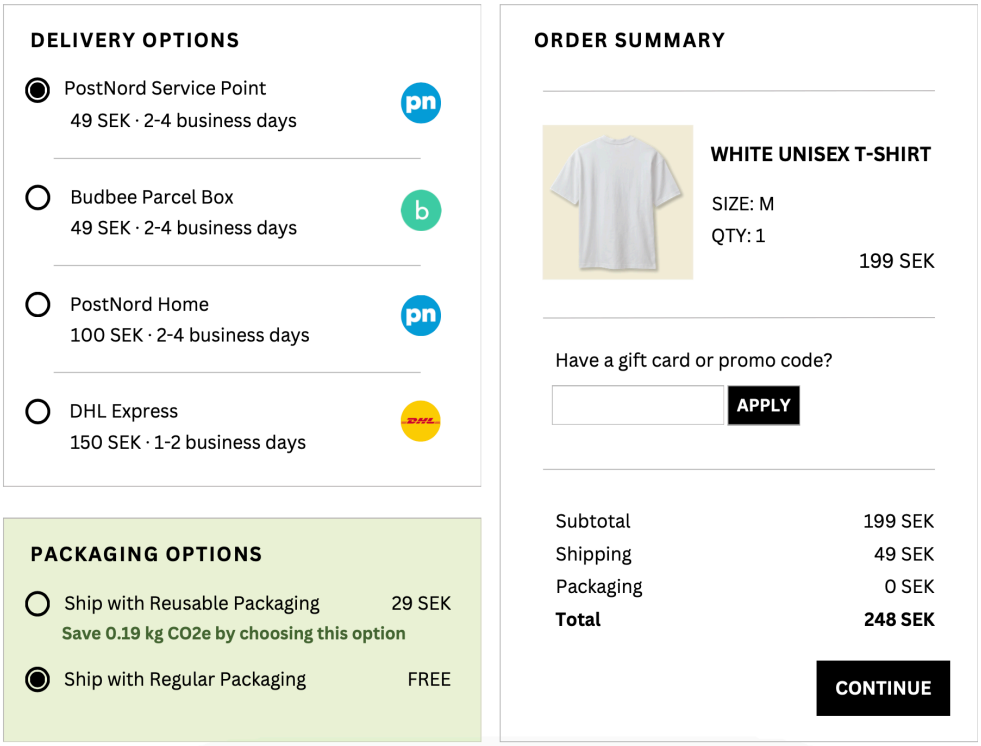
- ◯ Regular packaging
- ◯ Reusable packaging

Q3.4

We'd like to hear your perspective, please tell us your thoughts.

Q4.1: Normative condition

Please review the checkout page below and answer the following questions.
As noted before, reusable packaging is designed to be returned after delivery so it can be reused for future orders.



Q4.2

It is important that you observe the image carefully in order to answer the following questions. Have you observed the picture carefully?

- ○ Yes
- ○ No

Q4.3

Based on the information provided in the check-out page, which packaging option do you choose?

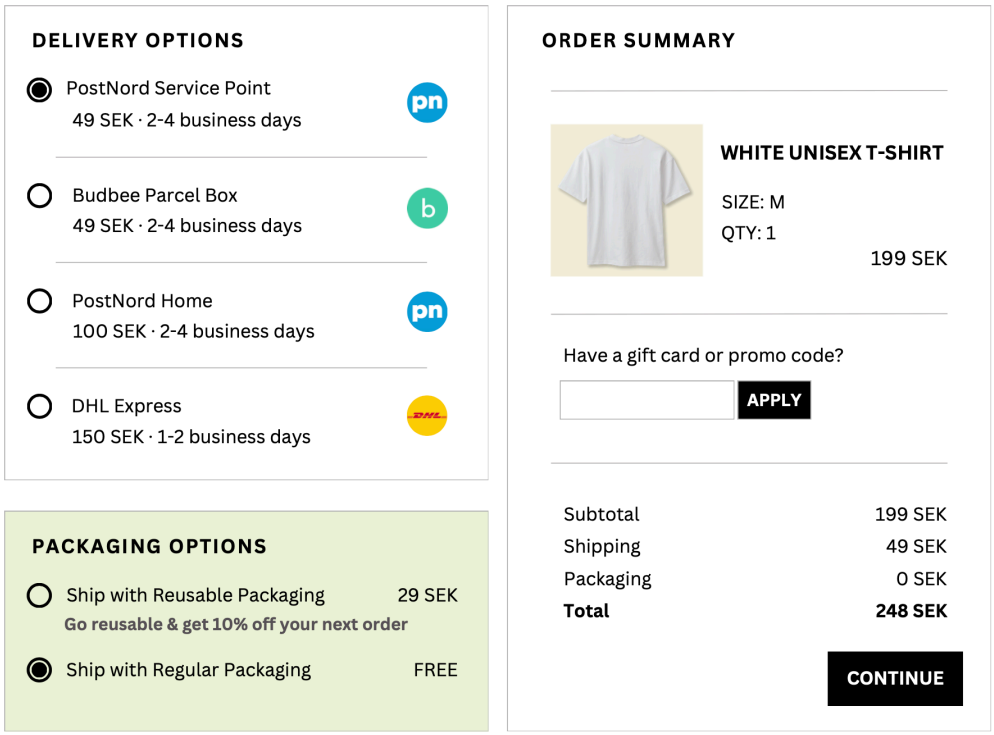
- ○ Regular packaging
- ○ Reusable packaging

Q4.4

We'd like to hear your perspective, please tell us your thoughts.

Q5.1: Gain condition

Please review the checkout page below and answer the following questions.
As noted before, reusable packaging is designed to be returned after delivery so it can be reused for future orders.



Q5.2

It is important that you observe the image carefully in order to answer the following questions. Have you observed the picture carefully?

- ◯ Yes
- ◯ No

Q5.3

Based on the information provided in the check-out page, which packaging option do you choose?

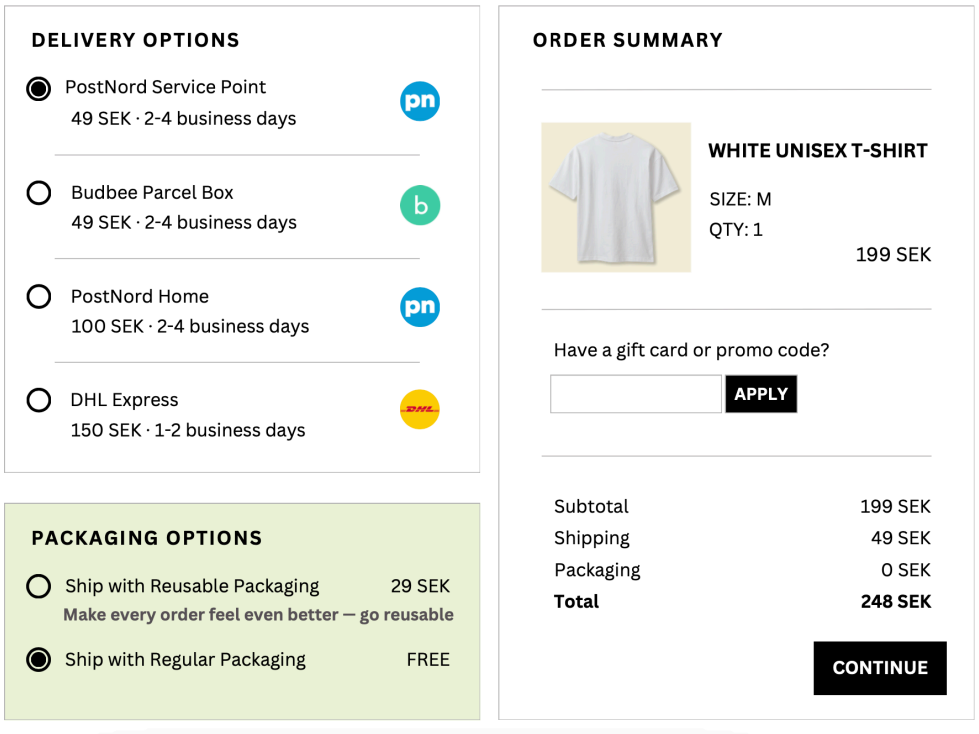
- ◯ Regular packaging
- ◯ Reusable packaging

Q5.4

We'd like to hear your perspective, please tell us your thoughts.

Q6.1: Hedonic condition

Please review the checkout page below and answer the following questions.
As noted before, reusable packaging is designed to be returned after delivery so it can be reused for future orders.



Q6.2

It is important that you observe the image carefully in order to answer the following questions. Have you observed the picture carefully?

- ◯ Yes
- ◯ No

Q6.3

Based on the information provided in the check-out page, which packaging option do you choose?

- ◯ Regular packaging
- ◯ Reusable packaging

Q6.4

We'd like to hear your perspective, please tell us your thoughts.

Q7

In this section, we are interested in understanding your perspective on various statements. Please indicate how much you agree with the following statements, considering what is important to you in life.

There are no right or wrong answers – simply select the option that feels most accurate for you.

Q8: Biospheric values

To what extent do you relate to the following statements?

		Totally not like me	Mostly not like me	Somewhat not like me	Neutral	Somewhat like me	Mostly like me	Totally like me
Q8.1	It is important to me to prevent environmental pollution	○	○	○	○	○	○	○
Q8.2	It is important to me to protect the environment	○	○	○	○	○	○	○
Q8.3	It is important to me to respect nature	○	○	○	○	○	○	○
Q8.4	It is important to me to be in unity with nature	○	○	○	○	○	○	○

Q9: Egoistic values

To what extent do you relate to the following statements?

		Totally not like me	Mostly not like me	Somewhat not like me	Neutral	Somewhat like me	Mostly like me	Totally like me
Q9.1	It is important to me to have control over others' actions	○	○	○	○	○	○	○
Q9.2	It is important to me to have authority over others	○	○	○	○	○	○	○
Q9.3	It is important to me to be influential	○	○	○	○	○	○	○
Q9.4	It is important to me to have money and possessions	○	○	○	○	○	○	○
Q9.5	It is important to me to work hard and be ambitious	○	○	○	○	○	○	○

Q10: Hedonic values

To what extent do you relate to the following statements?

		Totally not like me	Mostly not like me	Somewhat not like me	Neutral	Somewhat like me	Mostly like me	Totally like me
Q10.1	It is important to me to have fun	○	○	○	○	○	○	○
Q10.2	It is important to me to enjoy life's pleasures	○	○	○	○	○	○	○
Q10.3	It is important to me to do things I enjoy	○	○	○	○	○	○	○

Q11

Before today, have you ever noticed an option for reusable packaging when shopping online?

- ○ Yes
- ○ No

Q11.1: *if Yes in Q11*

Have you ever picked the sustainable packaging option?

- ○ Yes
- ○ No

Q12

To what extent do you agree with the following statements?

		Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Q12.1	I find the process of using reusable packaging to be straightforward and easy	○	○	○	○	○	○	○
Q12.2	I feel that choosing reusable packaging is completely within my control	○	○	○	○	○	○	○
Q12.3	I believe that the price of the reusable packaging is reasonable	○	○	○	○	○	○	○
Q12.4	I believe that reusable packaging is more sustainable than regular single-use packaging	○	○	○	○	○	○	○

Q13

How often do you shop for clothing online?

- ◯ Less than once a month
- ◯ Once a month
- ◯ Once a week
- ◯ Multiple times a week

Q14

What was the survey about?

- ◯ Cars
- ◯ Check-out
- ◯ Groceries

Q15

Please indicate your age

Q16

Please indicate your gender

- ◯ Male
- ◯ Female
- ◯ Non-binary
- ◯ Other
- ◯ Prefer not to say

Q17

If you would like to participate in the raffle for a 200 SEK ICA gift card, please enter your email below. *Your email will only be used for the raffle and will be deleted after the winners have been contacted.*

Appendix E: Themes from Thought Protocol

Theme	Description	Quotes
Price sensitivity	*Concern about the additional cost of reusable packaging*	*"Reusable should be free or same price.";* *"If reusable would be free I would choose it every time.";* *"I'm picking the regular packaging because it's free.";* *"Unfortunately I'm very cost conscious, so I will always choose the cheapest shipping option available." ;* *"If reusable was free, I would consider it."*
Perceived effort	*Inconvenience and burden associated with the reusable packaging*	*"Just seems like a hassle to use the reusable.";* *"It feels odd that I would have to pay more for something that I need to put effort into doing." ;* *"I wont pay to do something that requires more effort.";* *"I'd never pay to do the 'right thing' when it comes fo shopping. The re-usable feature should be incentivized as it decreases cost for the seller.";* *"It would be easier to throw away the regular package than return it."*
Unfair burden	*Belief that other stakeholders should cover sustainability costs*	*"Since the packaging goes back to the company that can reuse it, I would imagine that they should cover the cost, or part of it.";* *"Free over non-free, let governments save the world.";* *"I think (big) companies have funds to ship reusable packages by default without asking people to pay more.";* *"It should not be at my expense to pay more to be sustainable.";* *"As a consumer, I would rarely want to bear the cost of sustainability."*
Environmental responsibility	*Willingness to pay more to support sustainable practices*	*"I would choose the reusable packaging option to reduce waste and support sustainable practices. It's a small effort to minimize environmental impact, and the nominal cost seems worth the change.";* *"It's a small cost to pay a small cost for the environment.";* *"Feels a bit expensive but I like to contribute to sustainability when I can."*
Doubt about environmental benefit	*Skepticism about the sustainability of reusable packaging*	*"Is it really more sustainable to send it back?";* *"I do not believe reusable packing is more sustainable if you need to ship it back to the warehouse?";* *"I don't trust the reusable packaging actually saves 0,19 kg CO2. What about all the CO2 involved in returning the package?"*

Table E1. *Summary of themes from thought protocol responses.*

Appendix F: Logistic model assumptions

Contrary to multiple regression and discriminant analysis, logistic regression does not require the assumption of normality and homoscedasticity (Hair et al., 2019). Yet, there are many assumptions to the model that need to be tested in order to assure validity and reliability of results.

The primary assumption lies in the independence of observations, which in a simple manner means that there are no duplicate answers and respondents answered the questionnaire independently (Hair et al., 2019). Given the nature of the research design, a violation of this assumption is unlikely. This assumption was validated by plotting the residuals against the order of observations for each of the regression models used in analysis. As suggested by Stoltzfus (2011), the random distribution of residuals supports that the assumption of independence holds.

The second assumption is the "linearity of the logit", as described by Hair et al. (2019). This means that for any continuous independent variable, such as age, a linear relationship should exist between the variable and the respective logit-transformed outcome (Stoltzfus, 2011). The most direct approach to test this is the Box Tidwell test. The continuous variables in this study are age, values, PBC, and PPF. The insignificant interaction terms as seen in Table F1, indicate the assumption is valid.

Box Tidwell test

Variable	Interaction term	p-value
Age	I(Age * log(Age))	(0.135)
Biospheric	I(Biospheric_c * log(Biospheric))	(0.176)
Egoistic	I(Egoistic * log(Egoistic))	(0.110)
Hedonic	I(Hedonic * log(Hedonic))	(0.740)
PBC	I(PBC * log(PBC))	(0.450)
PPF	I(PPF * log(PPF))	(0.751)

Table F1. *Box Tidwell test.*

Another issue that may arise in statistical analysis is multicollinearity, which occurs when independent variables are highly correlated, potentially distorting the estimates of regression coefficients and making them inefficient. A common way to measure multicollinearity is using the variance inflation faction (VIF) (Hair et al., 2019) – the higher the VIF score, the

higher the level of multicollinearity. The recommended conservative cut-off point is 5 (S&P Global, 2022). Across the models, VIF values ranged from 1.01 to 3.24, indicating no issues with multicollinearity.

A final aspect to consider is strongly influential outliers, which could compromise the model's accuracy (Stoltzfus, 2011). A method to detect the outliers is by looking at the residuals and calculating Cook's distance (D_i) to detect observations that significantly impact the model's predictions. A rule of thumb threshold of $D_i >= 1$ indicates an influential observation (Hair et al., 2019). Having a high influence does not automatically mean that observation ought to be excluded and rather it is important to compare how the model fit and estimated coefficients change as a result of excluding the variables. Thus, if the outlier has an insignificant impact on the model's performance metrics, it is not necessary to remove it (Stoltzfus, 2011). Running the test on all of the estimated models, all observations fall below the threshold of $D_i < 1$, indicating a lack of strongly influential outliers.

To assess the model fit and significance, Nagelkerke R-Square and Hosmer-Lemeshow goodness-of-fit tests are used. The Nagelkerke R-Square ranges between 0 to 1, with values closer to 1 indicating a better fit (Hair et al., 2019). The Hosmer-Lemeshow test assesses the predictive accuracy of the model, where insignificant *p*-values indicate a good predictive model. As seen in Table F2, all models reached acceptable levels of fit and significance.

Model fit and significance

Model	Equation	Nagelkerke R-Square	Hosmer-Lemeshow goodness-of-fit test
Condition and choice	Eq. (1)	0.200	$\chi^2 = 5.77$, $p = 0.674$
Biospheric values in Normative condition	Eq. (2)	0.136	$\chi^2 = 10.02$, $p = 0.264$
Egoistic values in Gain condition	Eq. (2)	0.165	$\chi^2 = 7.32$, $p = 0.503$
Hedonic values in Hedonic condition	Eq. (2)	0.139	$\chi^2 = 10.51$, $p = 0.231$
Perceived behavioural control	Eq. (3)	0.315	$\chi^2 = 9.48$, $p = 0.303$
Perceived price fairness	Eq. (3)	0.430	$\chi^2 = 10.87$, $p = 0.209$

Table F2. *Overview of logistic regression models, including Nagelkerke R-Square and Hosmer-Lemeshow goodness-of-fit test.*

Appendix G: AI disclosure

Throughout this paper, AI has been used selectively and where responsibly, respecting the works of other authors and academic integrity. Main uses of AI have been:

- Portions of the text have been edited with the assistance of ChatGPT to improve clarity and flow.
- The suggestions of ChatGPT have been considered and partly used for creating interview questions and study questionnaires.
- ChatGPT has been used to validate authors' understanding of key concepts and research papers and has helped with troubleshooting code in R Studio.
- Reference list has been generated with the help of MyBib, an online bibliography and citation tool.

Overall, AI has contributed to enhancing the overall quality of paper in terms of flow and consistency. While AI carries the risk of potential misinterpretation or giving false information, it was never the sole tool used to write this paper. Authors relied on their own thinking and interpretation of information, and final decisions regarding content, interpretation and structure were made by the authors.