

Master in Sustainable Business and Innovation, Utrecht University

**UNDERSTANDING CONSUMER PERSPECTIVE ON REUSABLE
PACKAGING: A CASE STUDY OF THE DUTCH E-COMMERCE
SECTOR**

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1. Introduction

In the 21st century world we live in, packaging is present in almost every day-to-day purchase we make. It has become such a ‘normal’ product in our lives that we rarely even question its existence. However, packaging is extremely detrimental to the environment due to the enormous quantity of energy and virgin materials used for its production, the greenhouse gas emissions (GHGs) released, and the waste it produces (Huang & Ma, 2004). Put in perspective, in Europe, 50% of paper and 40% of plastic is used for packaging, even though packaging accounts for 36% of municipal waste (Coelho et al., 2020). Furthermore, the use of plastic packaging has only risen in the past years due to novel retail developments and the rise of e-commerce (Coelho et al., 2020; Escursell et al., 2021).

E-commerce has experienced a steady growth in recent years with online purchases increasing from 32% in 2015 to 43% in 2018, and future numbers projected even higher (Escursell et al., 2021). Furthermore, the COVID 19 pandemic has contributed to an even greater rise in e-commerce due to physical stores closing and consumers being discouraged to leave their homes (Kim, 2020). The problem is that e-commerce products are mainly packaged in single-use cardboard and plastic packaging, which, as previously mentioned, has a negative impact on the environment (Zimmerman & Bliklen, 2020). To remediate this plaguing issue, the European Union wants to start transitioning towards a circular economy by means of reducing, reusing, recycling, and recovering materials used for packaging (European Commission, 2020).

Reuse is a particularly suitable strategy for packaging given that it allows for the quality of the product to be retained, unlike recycling for example (Coelho et al., 2020). Reusable packaging thus has the potential to preserve the functionality of the material while also reducing environmental impacts associated with single-use packaging (Hugill et al., 2021). The e-commerce sector could especially benefit from this type of model given that it uses a lot of single-use packaging to protect the quality of products during transport (Lu et al., 2020). Furthermore, the packaging that is currently used is often improperly disposed of or difficult to recycle (Zimmerman & Bliklen, 2020). However, with a reusable packaging system for e-commerce, consumers would simply have to return the packaging to the retailer/producer, who would then take care of the cleaning process and ensure that the packaging is ready for a new reuse cycle (Coelho et al., 2020).

Currently, a handful of reusable packaging innovations for e-commerce exist, however, they are not widely used on the market yet. Thus, it is important to assess the potential of

reusable packaging in the sector and understand the various aspects, including the consumer side. Given that reusable packaging is a novel product in e-commerce, it is vital to assess the consumer acceptance and whether there is a positive response to the product. However, academic literature addressing consumer perspective on reusable packaging is currently understudied, especially on the topic of e-commerce. To address this gap, the aim of this study is to understand the consumer perspective on reusable packing through a case study on the Dutch e-commerce sector. The research questions are thus the following:

- 1) *What is the current state of consumer perspective and behavior regarding reusable packaging?*
 - a. *What is the current literature and academic view on consumer perspective/behavior on reusable packaging?*
 - b. *How can knowledge on consumer perspective be applied/relate to a real-life pilot case?*

To answer this, research was conducted through an internship at *Enviu* on reusable packaging in the e-commerce sector. *Enviu* is a venture building company in Rotterdam that aims to build companies that address social and environment issues and drive failing markets towards a new normal. Given that the Dutch government has set goals for a circular economy in the Netherlands, *Enviu* has partnered with *Natuur & Milieu* and *Recycling Netwerk Benelux* to create 'Mission Reuse', a program centered on stimulating reuse in the Dutch market. One of the projects Mission Reuse is currently working on is setting up a pilot for reusable e-commerce packaging in the Netherlands.

The rest of this paper is structured as follows. Section 2 gives a brief background overview of the different types of reusable packaging systems and how they apply to e-commerce. Section 3 provides an overview of the current academic literature on consumer perspective on sustainable packaging and reusable packaging. Section 4 describes the data collection process and the methodology used to conduct this study. Section 5 presents the results that came forth from this research, and section 6 discusses the implications of the findings and the limitations of the research. Lastly, section 7 provides concluding remarks and avenues for future research.

2. Background

The last few years have seen a noticeable increase in the number of consumers that are concerned about the environment and aware of the negative impacts of packaging (Copraij, 2020; Boz et al., 2020). Therefore, consumers are placing pressure on companies and demanding more sustainable practices and increased transparency (Copraij, 2020). In addition to consumers, legislation in various countries is also changing and demanding companies to take more responsibility for their environmental impact (Wandosell et al., 2021). As a result, companies have started to adopt more ‘sustainable’ packaging and are placing a larger emphasis on their corporate social responsibility (CSR) strategy (Wandosell et al., 2021). For example, numerous companies advertise sustainably sourced material or the use of recycled material for their packaging (Copraij, 2020). However, a small number of companies have also resorted to reuse models to avoid single-use and reduce waste.

As explained by Coelho et al. (2020), there are four different types of reusable packaging systems: refillable by bulk dispenser, refillable parent packaging, returnable packaging, and transit packaging. In a transit packaging system, customers either receive the product in a reusable packaging which will be cleaned and refilled for future use by the retailer/producer, or, customers reuse the packaging multiple times before returning it to the producer or disposing it (Coelho et al., 2020). The former is most commonly used in the e-commerce sector (Coelho et al., 2020).

Even though reusable packaging in e-commerce is still in its infancy, a few brands are already making use of this model. As explained in the Fashion for Good (2021) report, the initial steps in a reusable packaging system are similar to a regular packaging system; the package is manufactured, sent to a distribution center, and used to deliver products to consumers. However, unlike a regular package, the reusable package is returned by the consumer via mailbox, or a drop-off point, instead of being discarded (Fashion for Good, 2021). Depending on the model used, the package is either returned to a central cleaning facility, where it is cleaned/repared before being sent back to the brand’s distribution center, or, directly cleaned/repared at the brand’s own distribution center instead of returning to a central point (Fashion for Good, 2021).

3. Literature overview

Given that academic literature on consumer perspective on reusable packaging is still relatively scarce, turning to literature on sustainable/green packaging can also provide relevant insights for this research. Therefore, the following sections provide an overview of the academic literature on consumer perspective on packaging characteristics and factors that influence their willingness to engage with reusable/sustainable packaging.

3.1. Consumer perspective on packaging characteristics

Literature has shown that the visual appearance and condition of packaging is of great importance to consumers. In a study conducted by Nguyen et al. (2020), the majority of participants agreed that product packaging should be visually appealing, regardless of whether its eco-friendly or not. Participants also revealed that they did not find eco-packaging aesthetically pleasing due to its simplicity and lack of colors (Nguyen et al., 2020). Furthermore, in their study on reusable packaging, Magnier & Gil-Pérez (2021) found that consumers are less likely to repurchase a reusable packaging when it shows signs of wear and tear, as this is considered unhygienic. This finding is also supported by the work of Greenwood et al. (2021) which states that people are more willing to reuse packaging that is resistant to change over time, easy to clean, and durable. All these factors were also perceived in a study by Zeng & Durif (2019) which showed that participants expressed doubts about eco-packaging due to: 'health safety' (79%), 'aesthetic sacrifice' (63%), 'sacrifice of hygiene' (58%), and 'protection effectiveness' (53%).

A study conducted by Nguyen et al. (2020) revealed that, from a consumer point of view, packaging material is the most prominent dimension of 'green' packaging. According to participants, eco-friendly packaging should be "non-toxic, easily decomposed at disposal, and best if biodegradable" (Nguyen et al., 2020). Consumers generally consider paper and cardboard as the most environmentally friendly packaging materials as they are seen as decomposable and recyclable (Nguyen et al., 2020; Boz et al., 2020; Orzan et al., 2018; Johansson et Sandolf, 2021). Similarly, Greenwood et al. (2021) found that consumers were more willing to reuse packaging made from cardboard or glass compared to packaging made from film, flexible plastic, or foil. However, if we consider the Life Cycle Assessment (LCA) of a paper packaging, we see that paper can be more detrimental to the environment than plastic because of the amount of raw materials needed for its production (Nguyen et al., 2020; Boz et al., 2020). Nonetheless, it is important to note that the environmental impact of littering is

currently not considered in LCA's, therefore, scientists do not have a full picture of the impact of single-use plastic packaging (Civancik-Uslu et al., 2019).

Interestingly, consumers' perceptions of packaging are primarily centered on end-of-life characteristics, such as recyclability, reusability, and biodegradability (Wandosell et al., 2021; Nguyen et al., 2020; Zeng & Durif, 2019). A study conducted with young consumers in Denmark showed that their perception of sustainable packaging depended on the materials used in the package and how it can be disposed (Wandosell et al., 2021). Similarly, Nguyen et al. (2020) found that 'recyclability' was a very important criterion for consumers. Participants mentioned that recyclability makes packaging less harmful to the environment as it reduces littering and packaging waste. Similarly, Zeng & Durif (2019) mentioned that study participants were highly sensitive to 'recyclable materials' (58%) and 'eco-labelling' (58%) on packaging. Even though 'reuse' is generally mentioned less often than 'recycle', consumers do believe 'reusability' of the packaging is an important criterion for eco-friendly packaging (Nguyen et al., 2020).

3.2. Factors influencing consumer willingness to engage

Research conducted by Magnier & Gil-Pérez (2021) on consumer perspective on returnable packaging for fast-moving consumer goods demonstrated that consumers show a very positive attitude towards reusable packaging and view it as a viable solution. Furthermore, numerous studies have shown that consumers with a high level of environmental concern are more likely to purchase goods in eco-packaging/reusable packaging (Magnier & Gil-Pérez, 2021; Wandosell et al., 2021; Babader et al., 2016). Similarly, Boz et al. (2020) also found that eco-friendly purchasing and disposal decisions of German consumers were related to their environmental awareness. Additionally, Babader et al. (2016) found that increasing consumers' awareness on environmental issues and the benefits of packaging reuse can significantly increase their willingness to engage in reuse behavior. In accordance with these results, research conducted by Orzan et al. (2018) showed that people want to purchase products in sustainable packaging but first want more information on this.

Even though a large percentage of consumers are positive about reusable/eco-friendly packaging, willingness to pay is still a large issue (Orzan et al., 2018). According to an investigation by Wandosell et al. (2021), most consumers agree on the importance of packaging for environmental protection, but low consumer budget is a major barrier to purchasing green-packaged products. Eco-friendly packaging is generally perceived as more expensive, and, for a large of consumers, price is still a determining factor for their purchasing decision (Wandosell

et al., 2021; Nguyen et al., 2020; Boz et al., 2020). Therefore, Nguyen et al. (2020) found that consumers were very insistent that eco-friendly packaging must be reasonably priced compared to traditional packaging. Similarly, Johansson et Sandolf (2021) mentioned that 30% of respondents in their study were interested in buying a reusable packaging if it was cheaper than a single-use packaging, and about the same percentage was interested if the prices for both products were the same. Additionally, Orzan et al. (2018) discussed how, when asked about the disadvantages of green packaging, the large majority of consumers mentioned price, followed by higher recycling effort, and inconvenience due to the need for storage space.

Convenience is another factor that has great influence on consumer behavior. According to literature, consumers view certain aspects of reusable packaging systems as convenient and others as inconvenient. For instance, in a study by Magnier et al. (2021), consumers were positive about not having to sort and recycle containers when making use of reusable packaging. Additionally, consumers mentioned the convenience that comes with the waste collection system which is offered in certain reusable packaging models (Magnier et al., 2021). On the other hand, literature has also shown that storing the empty containers and going through the process of returning them is often seen as a hindrance for consumers (Magnier et al., 2021; Babader et al., 2016). However, Babader et al. (2016) found that providing consumers with sufficient information on how to reuse packaging makes reuse less difficult and reduces the feeling of being inconvenienced (Babader et al., 2016). Furthermore, according to Orzan et al. (2018), it is imperative that packaging does not require any extra effort from consumers as their choice in terms of packaging is oftentimes a purely economic decision based on convenience, aesthetics, and price. This finding is also supported by the work of Madria & Tangsoc (2019), which states that packaging should be simple and should not necessitate too many alterations before it can be reused/returned by the consumer as convenience is key.

4. Methodology

To gain a deeper understanding of consumer perspective on reusable packaging, this paper makes use of various data sources. The following sections describe the different types of data collected and how they were obtained.

4.1. Interviews

In order to obtain first-hand data, semi-structured interviews were conducted with relevant actors to understand how reusable packaging systems for e-commerce work in practice. An overview of the 11 actors interviewed can be seen in *Table 1*, however, the names are anonymous for privacy reasons.

First, three researchers on topics related to consumer behavior were interviewed to understand how their findings can be applied/related to consumer perspective on reusable packaging in e-commerce. Second, six Dutch companies and one French company that make use of reusable e-commerce packaging were interviewed to gain insight into their incentives for adopting reusable packaging, their logistics process, barriers they face, and feedback from their consumers. These interviews are crucial to understand if consumer pressure is indeed a motivational factor for companies to adopt reusable packaging, if consumers actually opt for reusable packaging when its available, and how consumers perceive/engage with reusable packaging systems. Lastly, one company that does not make use of reusable packaging was interviewed to understand what their drivers/barriers would be to adopting reusable packaging.

Table 1: Actors interviewed

Actor/Organization Type	Actor/Organization Name	Description	Interview Label	Date
Researcher	Giulia Granato	PhD candidate: 'Marketing and Consumer Behavior', Wageningen University	Granato, 2021	28/10/21
Researcher	Lise Magnier	Assistant professor: 'Sustainable Consumer Behavior', TU Delft	Magnier, 2021	28/10/21
Researcher	Ellen van der Werff	Professor: 'Faculty of Behavioral and Social Sciences',	Van der Werff, 2021	09/11/21

		Wageningen University		
E-commerce player (reusable packaging user)	NA	NL based sustainable fashion brand	EPR 1, 2021	23/09/21
E-commerce player (reusable packaging user)	NA	NL based sustainable fashion brand	EPR 2, 2021	28/10/21
E-commerce player (reusable packaging user)	NA	NL based sustainable fashion brand	EPR 3, 2021	03/11/21
E-commerce player (reusable packaging user)	NA	NL based sustainable fashion brand	EPR 4, 2021	28/10/21
E-commerce player (reusable packaging user)	NA	FR based sustainable fashion brand	EPR 5, 2021	12/11/21
E-commerce player (reusable packaging user)	NA	NL based sustainable fashion brand	EPR 6, 2021	02/11/21
E-commerce player (reusable packaging user)	NA	NL based sustainable home products brand	EPR 7, 2021	25/10/21
E-commerce player (traditional packaging user)	NA	NL based sustainable home products brand	EPT 1, 2021	14/10/21

4.2. Company survey

To reach a higher number of companies, a survey was designed together with *Enviu* and shared through the network of *Thuiswinkel*, a Dutch certification organization for E-retailers. The survey was created using ‘Google Survey’ and the questions were formulated in Dutch. The survey consisted of two parts with a mix of multiple choice and open-ended questions.

In the first part of the survey, general questions were asked about the type of sector the company operates in, their top three sustainability priorities for the coming three years, how satisfied their consumers are with their current packaging, and what types of complaints consumers have about the current packaging

At the beginning of the second section, a short description of reusable packaging was provided. Thereafter, companies that use/have used reusable packaging were asked to answer questions 7 to 9, while companies that had never used reusable packaging were asked to answer questions 10 to 12. Companies that made use of reusable packaging were asked what their motivation was to do this, their largest drivers/barriers regarding the implementation process, and positive/negative feedback from their consumers. Companies that had never used reusable

packaging were asked what would motivate them to try, what their largest barriers are to trying it, and what their consumers would think.

4.3. *Consumer survey*

To gain direct insight into the perspective of consumers, an anonymous survey was designed and shared via *Enviu*'s large network and numerous social media platforms. The survey was created using 'Google Survey' and the questions were formulated in Dutch, as the target population is Dutch consumers. The survey consisted of three different parts and contained a mix of multiple choice and open-ended questions.

The first part of the survey addressed general questions about consumers' experience with online shopping. For example, questions were asked about their preferred method of shopping, how frequently they order products online, the types of products they typically purchase online, the pros/cons of online shopping, and their opinion on the packaging of products purchased online. The first section intentionally did not mention reusable packaging to avoid influencing consumers' responses and to obtain an unbiased account of consumers' experiences with e-commerce. This allowed us to understand if packaging was truly an issue in the eyes of consumers.

The second part of the survey was designed to understand if consumers are interested in reusable packaging and to what extent they would be willing to adopt it. For example, one question asked if consumers would be interested in having reusable packaging as an option during checkout at an online store. Additionally, consumers were asked about the criteria they find important in a reusable package, the business model they find the most appealing, and their willingness to pay for a reusable package.

In the third part of the survey, questions were asked to gain information on consumers' preferred return methods. Four different scenarios were presented, and, in each scenario, consumers had to choose if they would opt for the 'current packaging' or the 'reusable packaging' and explain why. For instance, in one scenario, consumers were asked which option they would choose if the reusable packaging could be returned at a local return point, such as a supermarket.

5. Results

5.1. *Perspective of academic researchers*

According to academic researchers specialized in the field of consumer behavior, consumers are increasingly concerned about sustainability and dissatisfied about the current product packaging. Additionally, research conducted by Magnier (2021) has shown that consumers are extremely positive about reusable packaging and see it as the ultimate solution to reduce our environmental footprint. Van der Werff (2021) also found that consumers care about the environment and are willing to put in effort to do the right thing, however, the degree to which people are willing to make an effort differs. Similarly, Magnier (2021) explained that even though consumers are concerned about the sustainability of packaging, convenience is always ranked first because that's what consumers are accustomed to, and it's not something they are willing to sacrifice. All three researchers also mentioned that most consumers lack the information to make well-informed decisions about what options are the most sustainable (Van der Werff, 2021; Magnier, 2021; Granato, 2021). For example, consumers are generally annoyed about the amount of 'unnecessary' plastic packaging around products, however, in certain cases this is necessary, for instance, to avoid the environmental impact of food waste (Van der Werff, 2021).

Even though packaging design is generally important for consumers, researchers speculate that this criterion is less important for reusable packaging in e-commerce. In her study on consumer perspective on reusable packaging for fast moving consumer goods (FMCG), Magnier (2021) found that if a product is intended to stay at a consumer's home for a longer period, then the design of the product is important for consumers. However, given that reusable e-commerce packaging is used as 'transit' packaging and does not stay at a consumers' home for a long time, Magnier (2021) believes that design and branding might be less important for consumers. Similarly, Granato (2021) found that consumers were willing to sacrifice 'preservation' and 'attractiveness' of the packaging for higher sustainability. In her opinion, it is likely that in e-commerce consumers will also be more willing to sacrifice 'attractiveness' of packaging when it comes to reusable packaging, but never 'convenience'. Additionally, when it comes to packaging materials, Magnier (2021) mentioned that in an experiment they conducted, the types of materials used in reusable packaging for FMCG were not an important factor for consumers. What mattered the most to consumers was a reusable packaging that is practical, in good condition (no signs of usage), and that protects the product. According to

Magnier (2021), even if consumers generally do not like plastic packaging, it is usually not a deciding factor when they purchase a product.

Research conducted by Van der Werff (2021) showed that values and identity are important factors that impact consumer behavior. For instance, consumers who have strong environmental values are more likely to engage in sustainable behavior even if it requires more effort (Magnier, 2021; Van der Werff, 2021). Given that a large majority of consumers are concerned about the environment, one way to motivate and nudge them towards more sustainable behavior is by providing them with information on how their actions can have a positive impact on the environment (Van der Werff, 2021). In e-commerce, for instance, placing a message at checkout about the number of trees saved by one reusable package can be effective in nudging consumers towards opting for reusable packaging as it targets their environmental values. However, for most consumers, information alone is not enough and an extra incentive to engage in sustainable behavior is needed (Van der Werff, 2021).

One way to facilitate the adoption of reusable packaging in e-commerce is by making the system as convenient as possible. According to Magnier (2021) the first step is already made, people think reusable packaging is the right solution, the only issue now is that consumers do not want to compromise on other criteria, such as convenience and quality. Therefore, Magnier (2021) emphasizes how crucial it is that reusable packaging maintain a constant quality (protect the product, untarnished appearance) as this is the reason packaging was introduced in the first place. Furthermore, to ensure convenience, the product should be easy to use and to return. Granato (2021) mentioned that the reusable package should be designed so that it is simple to use and instructions need to be provided to facilitate the process for consumers. Furthermore, Van der Werff (2021) suggested that reusable packaging be made a default option at checkout to make sure consumers engage with the system. Additionally, given that consumers each have different needs, it is vital that multiple return options are offered to reduce the return barrier for consumers (Van der Werff, 2021). According to Magnier (2021), the ideal option for e-commerce would be for deliverers to take back the packaging from consumers immediately. However, this option is likely not profitable for delivery providers as it would cost them a lot of time (Magnier, 2021).

Even though people increasingly want 'green-packaging', consumers are still very price-oriented and few are willing to pay for it (Magnier, 2021; Granato, 2021). Furthermore, Granato (2021) explained that there is often a gap between what consumers say and what they do. Therefore, she believes consumer willingness-to-pay should be tested through experiments to determine the true intentions of consumers rather than relying on surveys. According to all

three researchers, a deposit system would work best for reusable packaging as most consumers are already accustomed to this system for glass bottles (Magnier, 2021; Van der Werff, 2021; Granato, 2021). Additionally, a deposit system is an effective monetary incentive to return the packaging given that people dislike losing money (Magnier, 2021).

According to Van der Werff (2021), another way to ensure consumers return the packaging is through indirect queues from the packaging itself. An experiment conducted by Van der Werff showed that when cups were designed to look more ‘sustainable’, their recycling rate more than doubled. Van der Werff (2021) and Granato (2021) both suggest that reusable packaging in e-commerce should have a ‘sustainable’ design with natural colors and a natural feel so that consumers are implicitly reminded of the reuse behavior associated with the package. Furthermore, according to Granato (2021), combining implicit with explicit queues has the largest impact on consumers. For example, this is done by explaining to consumers that the packaging feels or looks a certain way because it is made from recycled material (Granato, 2021).

5.2. *Companies*

5.2.1. *Perspective of E-commerce players (using reusable packaging)*

From the seven companies interviewed, five mentioned that their main motivation to implement reusable packaging in their business was to reduce their environmental impact (EPR 2, 2021; EPR 3, 2021; EPR 5, 2021; EPR 6, 2021; EPR 7, 2021). Given that all five companies have sustainability in their DNA, they mentioned the importance of integrating sustainability in all parts of their business, not just the product itself. One interviewee mentioned that if you want to start a business in this day and age, you have to integrate sustainability from the start to ensure your survival (EPR 7, 2021). Another two interviewees were extremely concerned about the amount of packaging waste generated in e-commerce and strongly believed reusable packaging was a logical solution to this problem (EPR 3, 2021; EPR 6, 2021).

The companies interviewed were overall very satisfied with the reusable packaging system. Numerous companies mentioned that the shape and size of the packaging is convenient, sturdy enough to keep products protected, and easy to use and clean (EPR 3, 2021; EPR 5, 2021; EPR 7, 2021). Furthermore, a major advantage for companies is that the packaging provider takes care of all the logistics around the packaging (EPR 3, 2021; EPR 6, 2021; EPR 7, 2021). This is especially convenient for smaller companies that don’t have the

resources to take care of the logistics themselves (EPR 6, 2021). On the other hand, one barrier that was repeatedly mentioned is the relatively high cost of reusable packaging (EPR 3, 2021; EPR 6, 2021; EPR 7, 2021). The price was considered reasonable compared to the services offered, however, for companies that sell less expensive products, it is impossible to include 2-3 euros packaging costs in the price as this comes off their margin (EPR 3, 2021). Another barrier is the lack of an efficient system for companies to track the return rate of the reusable packaging, which would help them determine if more actions need to be taken to motivate consumers to return the packaging (EPR 3, 2021; EPR 7, 2021). Lastly, certain companies feel like they must make a trade-off between esthetics and sustainability (EPR 2, 2021; EPR 4, 2021; EPR 7, 2021). For example, two companies explained that the unboxing experience is less appealing because the reusable packaging cannot be branded/customized, which is important on social media (EPR 2, 2021; EPR 4, 2021). However, another interviewee remarked that sustainability is more important than esthetics and that the reason we have so much waste is because brands focus too much on their branding (EPR 6, 2021). In his opinion we need to keep packaging sustainable and simple (without logos etc.) to facilitate reuse and recycling (EPR 6, 2021).

Interestingly, from the companies interviewed, there appears to be differing views on consumer interest in sustainability. For example, one company explained that their consumers are not very aware of sustainability, but that this is slowly starting to change (EPR 3, 2021). Another company mentioned that their consumers do not seem to be concerned about packaging waste and are not asking for more sustainable packaging (EPR 4, 2021). In contrast, one interviewee explained that consumers are increasingly asking for more sustainability and transparency from companies which is why they found it important to offer reusable packaging as an option (EPR 5, 2021). Another interviewee mentioned that if sustainable consumers are your target group, reusable packaging is a major advantage because as a company you hope that the consumer will buy from you again and that they will spread the word on the sustainability initiative of your company (EPR 6, 2021).

The majority of companies interviewed said they receive very little feedback from consumers about the reusable packaging. However, the feedback they do receive is generally positive. A number of companies mentioned that their consumers are very happy that the sustainability of the packaging is also addressed, not only of the product (EPR 1, 2021; EPR 5, 2021; EPR 7, 2021). Consumers are generally also glad to see their pile of waste diminishing at home and perceive this as an incentive to continue ordering products with reusable packaging (EPR 2, 2021). Furthermore, two companies mentioned that consumers

are enthusiastic about receiving their products in a reusable packaging because they are unfamiliar with the system and enjoy the new unboxing experience (EPR 5, 2021; EPR 3, 2021). An interviewee explained that offering reusable packaging has also triggered the interest of their consumers and incentivized them to research the environmental impact of packaging (EPR 3, 2021). In general, consumers also find the reusable packaging easy to use and return. One company said that their consumers really enjoyed the option of sending back the packages via mailbox (EPR 2, 2021). Consumers also never complain about damaged products, meaning the reusable packaging is sturdy enough to protect the goods (EPR 4, 2021; EPR 4, 2021). However, the only point of critique from consumers is that the reusable packaging sometimes needs to be shipped to another country for cleaning, which is perceived as paradoxical (EPR 2, 2021; EPR 3, 2021).

From the companies interviewed, three have made reusable packaging their standard delivery method while two have made it optional for clients during checkout. Companies that offer reusable packaging as an option argue that consumers who actively choose/pay for reusable packaging are more likely to return it, while consumers who receive a reusable packaging without asking for it might not have the motivation to return it (EPR 5, 2021). One of these companies mentioned that 20% of their clients opt for reusable packaging while the other company had an 80-90% opt-in rate (EPR 4, 2021; EPR 5, 2021). The company with the higher opt-in rate explained that they share the cost of the packaging with the consumer instead of making the consumer pay for everything. In their opinion, splitting the costs reduces the financial barrier for consumers and gives them just enough incentive to return the packaging (EPR 5, 2021). On the other hand, a company that offers reusable packaging as a standard delivery method explained that if consumers believe in their products, they should also believe in reusable packaging because it's part of the company's vision (EPR 3, 2021). Companies that offer it as a standard option either take on the price of the packaging themselves because they don't believe consumers should pay for it, or make the consumer indirectly pay for it by integrating the costs in the product price (EPR 3, 2021; EPR 6, 2021; EPR 7, 2021). However, two of these companies are struggling with incentivizing consumers to return the packaging (EPR 3, 2021; EPR 6, 2021). One of them has a 50% return rate and explained that this is probably because certain consumers cannot be bothered to return the packaging since they didn't choose for it themselves (EPR 6, 2021). Other companies have tried to incentivize consumers to return the packaging by offering a 10% discount on their next purchase or sending automated emails to remind consumers to return the packaging (EPR 4, 2021; EPR 7, 2021).

5.2.2. Perspective of E-commerce players (not using reusable packaging)

From the four companies that filled in the company survey, three operate in the ‘home’ sector and one in the ‘electronics’ sector. Their top priorities regarding the implementation of their sustainability strategy for the coming years included: transport, product returns, environmental footprint, and packaging. Furthermore, when asked about how satisfied consumers are with the current packaging on a scale of 1 (very satisfied) to 5 (not satisfied at all), 50% voted 3 and 50% voted 4. As is visible from *Figure 1*, the most common complaints consumers have about the current packaging offered by these companies are: ‘too much filling material’, ‘packaging damaged/product damaged’, followed by ‘too much packaging’ and ‘not sustainable’.

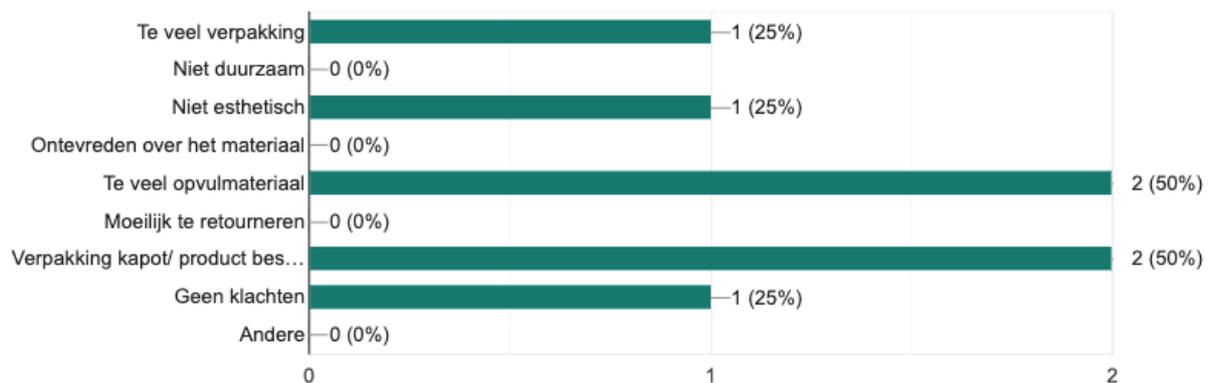


Figure 1. Complaints companies receive about their packaging

In the second part of the survey, questions differed for companies using reusable packaging and not using reusable packaging. However, none of the four companies that filled out the survey had used reusable packaging in the past. After giving a brief description of reusable packaging, 50% of respondents said they saw it as a promising solution to make the deliveries in e-commerce more sustainable, while the other 50% did not. One company explained that reusable packaging is not suitable for delivering furniture, while another company said they only saw it as a promising solution for the B2B market but not B2C. Second, a question was asked about what would motivate these companies to implement reusable packaging in their business. As depicted in *Figure 2*, the most recurring answers included: ‘demand from consumers’, ‘proof of a good business case’, followed by ‘proof that it has a real environmental impact’ and ‘if it’s mandatory by law’. One company added that they would be motivated if there was a well-functioning collection system. Third, companies were asked what they perceived as barriers to implementing reusable packaging. 75% of respondents mentioned ‘complexity of return logistics’, 75% also said ‘complexity for consumers (less convenience)’

and 50% mentioned ‘extra costs’. Lastly, when asked about what their consumers would think of reusable packaging, one respondent said that consumers would feel like there’s another thing they ‘have to do’, another respondent thought consumers would welcome the idea, while another one had no idea what consumers would think.

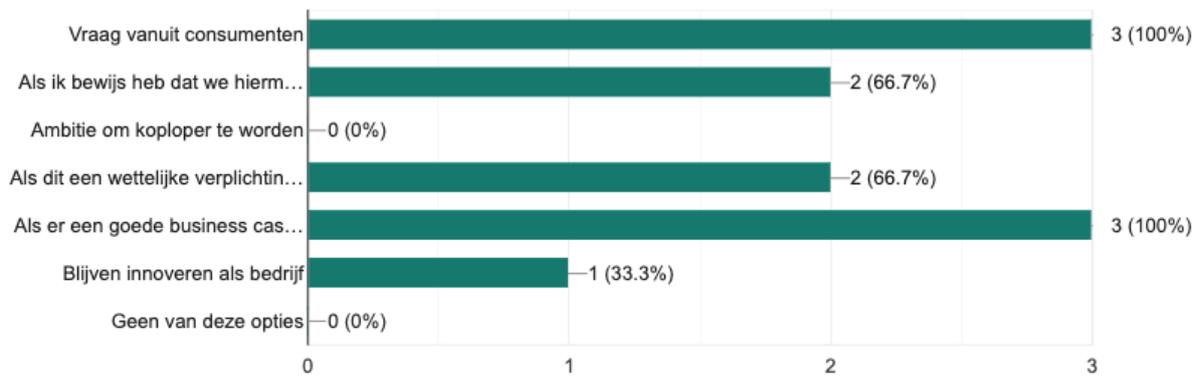


Figure 2. Motivating factors to implement reusable packaging in business

In addition to the survey, one Dutch company in the ‘bedding’ sector was interviewed. This company is very aware of their environmental impact and was starting to look into reusable packaging options to contribute to a reduction in plastic waste. First, one major complaint they received from consumers is the amount of plastic packaging around their products (EPT 1, 2021). However, the company considered this a necessary step to ensure the products would not get dirty or damaged by the rain (which in their opinion was more likely with cardboard packaging) (EPT 1, 2021). Second, the company mentioned that if they were to implement a reusable packaging system, the consumer should not have to pay for it, the packaging should preferably not be made from plastic, and the packaging should be very convenient and easy to use for consumers (EPT 1, 2021). The interviewee explained that most consumers buy their products because they are esthetically pleasing, therefore, she was not willing to compromise design/esthetics for sustainability (EPT 1, 2021). Lastly, one problem that worried her was the long-term state of the reusable packaging and how to ensure it always arrives at the consumer in a good condition with no signs of usage (EPT 1, 2021).

5.3. Perspective of consumers

The consumer survey was closed approximately a month after being sent out and 257 responses were amassed. From the total number of respondents, 160 identified as female and 89 as male. Additionally, as is visible from *Figure 3*, the largest percentage of respondents fell in the age group of 25-34 (37%) and 35-44 (27.6%). Furthermore, when asked about how sustainable their lifestyle is on a scale of 1 (not sustainable) to 5 (extremely sustainable), 41.2% of consumers gave themselves a 3 and 47.5% gave themselves a 4. This shows that the majority of respondents consider themselves relatively sustainable.

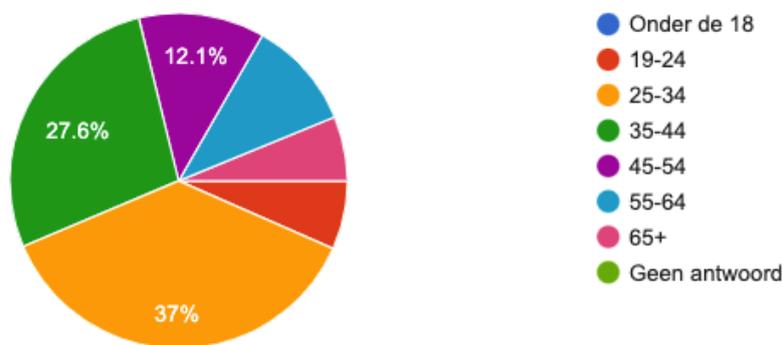


Figure 3. Age group of respondents

When looking at the first part of the survey, which addresses general questions on E-commerce, we see that 58.4% of respondents prefer shopping in a physical/brick-and-mortar shop while 41.6% prefer shopping online. Furthermore, 55.6% of consumers order products online on a monthly basis, 28% weekly, and 16.3% yearly. The products that consumers purchase most frequently online are fashion items (54.9%) and electronic devices (49.4%).

When asked about the main advantages of online shopping, the top three answers included convenience (e.g. home delivery, saves time, no travelling), larger product assortment, and rapid delivery. When asked about the largest disadvantages of online shopping, numerous answers were given. First, the disadvantage that was mentioned the most by consumers was not being able to see and try on the products. Second, the amount of packaging used & waste generated, and the environmental impact of the transport/return of products were mentioned equally often as a problem with e-commerce. Third, consumers complained about the long delivery time for certain packages and the hassle of returning products (e.g. re-packing product, printing new label, finding a return location).

The last question in the first part of the survey asked participants what they thought of the current packaging their products are delivered in. As depicted in *Figure 4*, 63.8% of participants are dissatisfied with the current packaging, 26.8% are satisfied, and 9.3% don't have an opinion. When asked to provide an explanation for their choice, the majority of dissatisfied participants mentioned the large amount of waste generated from the packaging and the unnecessarily large size of the packaging. For example, some customers complained about receiving extremely large boxes, or even multiple boxes, for small products. Additionally, a smaller, but significant, number of customers also discussed the lack of reusable and recyclable packaging. It is also important to note that numerous participants expressed great dissatisfaction regarding the amount of plastic used in the packaging and filling material. According to the consumers, plastic is seen as an undesirable material which harms the environment and should be used as little as possible in packaging.

On the other hand, consumers that are satisfied with the current packaging had two major reasons for this. First, consumers mentioned that their products are always well packaged in sturdy boxes, which protects the content well. For example, one participant explained that his products are usually delivered in a lot of packaging but that this is necessary to ensure the goods are not damaged. Second, numerous consumers were satisfied with the packaging because they believe it has become more sustainable in recent years. More specifically, consumers are delighted to see that a lot of companies have started to make use of cardboard and paper to replace the plastic used in packaging and filling material.

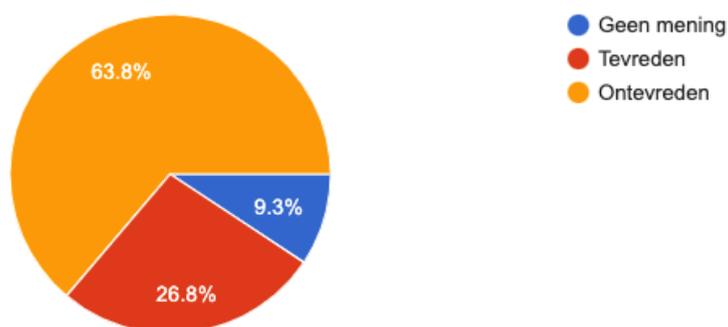


Figure 4. Consumer opinion on current packaging in e-commerce

In the second part of the survey, a description of reusable packaging for e-commerce was provided and questions were asked more specifically on this topic. First, when asked if they would want reusable packaging as an option during checkout, 95.3% of consumers said yes, while only 2.3% said 'no' and another 2.3% had no opinion on the question. Next, participants

were asked what requirements the reusable packaging must meet. The results show that the most important requirement for a reusable package is that it's sturdy and protects the products well. The second most important requirements include 'easy to use/return' and 'sustainable/environmentally friendly'. For example, consumers explained that it should be easy to understand how to fold and send back the packaging and that it shouldn't require too much time. Furthermore, numerous consumers were adamant about the fact that the reusable packaging should use the least amount of plastic possible and preferably make use of recycled/biodegradable cardboard. The other two elements that are important for consumers are 'cleanliness/hygiene' and 'pliability' of the packaging. Consumers find it important that the reusable packaging is easily foldable so that it doesn't take up too much space when stored in-house.

The last two questions in the second part of the survey focused on willingness-to-pay. Participants were presented with four options and could choose for which option(s) they would choose reusable packaging. Looking at the results, we see that 77% of respondents would choose for reusable packaging if it was offered for free at checkout, 73.5% of respondents would choose for it if they had to pay a small deposit, 48.6% if they had to pay a small fee at checkout, and 1.6% would not choose reusable packaging in any of the three cases. Lastly, when asked how much extra they would be willing to pay for a reusable package (including return costs), 46.3% said 1-2 euros, 26.1% said less than a euro, 15.2% chose for 0 euros, 11.7% chose for 2-5 euros, and 0.8% said more than 5 euros (see *Figure 5* below).

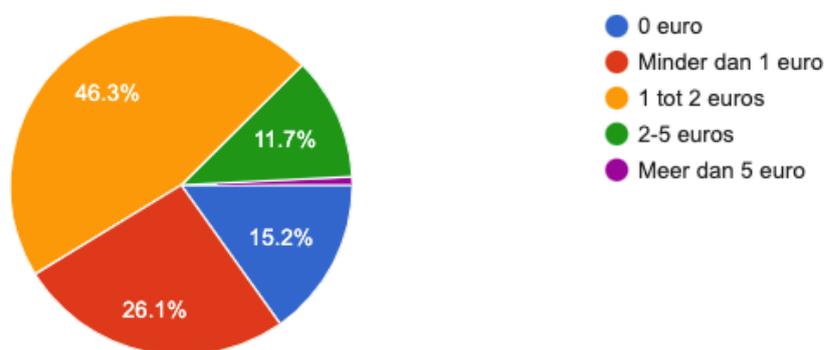


Figure 5. Consumer willingness-to-pay

In the final section of the survey, we wanted to test which return method(s) participants found the most appealing. Four return scenarios were presented and for each scenario participants had to decide if they would opt for the 'traditional packaging' or 'reusable packaging'. In the first scenario (*Figure 6*), where consumers could directly return the reusable packaging to the

delivery man, 91.4% of participants chose the reusable packaging and 8.6% the traditional packaging. In this scenario, the main reasons for choosing reusable packaging were 'sustainability' and 'convenience' (saves time, saves storage place at home, no complicated return process). However, many participants from both categories also mentioned drawbacks to this option. The most common drawbacks included: having to be at home for the delivery, insufficient time to check/try-on the product, impractical for the delivery man, and difficult to return products without the packaging.

In the second scenario (*Figure 7*), where participants could return the reusable packaging with the next delivery of an online-purchased product, 86% of participants chose for the reusable packaging and 14% for the traditional packaging. From the respondents that chose reusable packaging, some said it was a very practical return method because it gives sufficient time to check the product, and, if needed, allows the consumer to return the product in the same packaging. However, others mentioned they would only use the reusable packaging if they shopped at the same store on a regular basis, if they could return the packaging to multiple delivery services, or if the packaging itself didn't take up a lot of space at home. Participants who chose for the traditional packaging either did not shop online often and therefore would have had to store the reusable packaging for a long time or did not regularly shop at the same store.

In the third scenario (*Figure 8*), participants could return the reusable packaging at a return point such as a local supermarket. Here, we see that 89.1% of consumers chose for the reusable packaging option and 10.9% chose for the traditional packaging. Consumers that chose for the reusable packaging mentioned that this return option is very convenient for people who cannot be at home for their deliveries and because the supermarket is a place that everyone goes to on a weekly basis. However, some consumers did note that the reusable packaging should be light and easy to transport, and that there should be sufficient return points to minimize travel time. The consumers that opted for traditional packaging said that returning the reusable packaging at a return point demanded too much effort/time and that it was 'another thing' they needed to remember to bring back in addition to glass, cardboard etc.

In the last scenario (*Figure 9*), where participants could return the reusable packaging via a mailbox, 74.3% chose the reusable packaging and 25.7% chose the traditional packaging. Even for the consumers who chose reusable packaging, this return option appeared to be the least attractive. Some consumers mentioned that it was handy because mailboxes can be found everywhere, however, many consumers were unsure if it would fit in the mailbox, skeptical of the environmental benefit due to the additional transport, and believed it was less

convenient/required more effort. Furthermore, consumers who chose for the traditional packaging said it would cost them too much effort to find a mailbox, did not want to pay additional costs to send back the reusable package, and were afraid this option would contribute to higher GHG emissions.

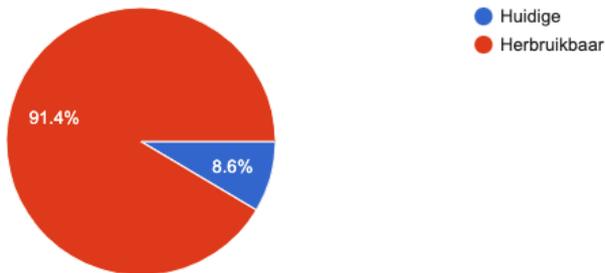


Figure 6. Return option: direct return to deliveryman

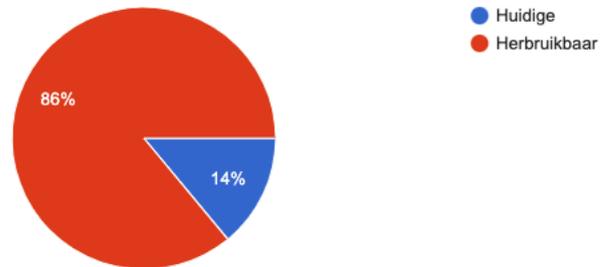


Figure 7. Return option: return with next online purchase

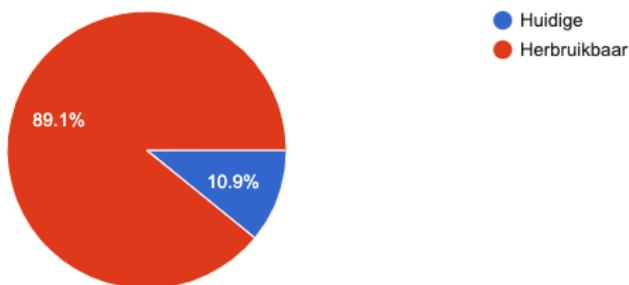


Figure 8. Return option: return at return point

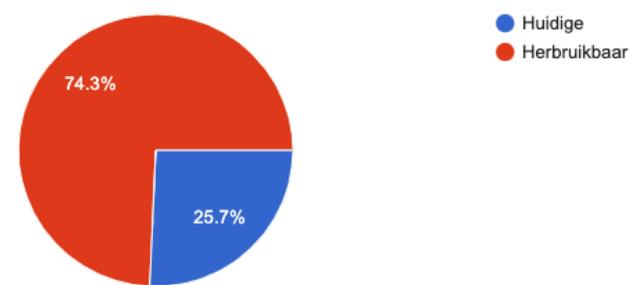


Figure 9. Return option: return via mailbox

6. Discussion

6.1. Comparison of findings to the wider academic literature

Similarly to Magnier & Gil-Pérez (2021), our results show that consumers are dissatisfied about the current packaging and are generally very positive about reusable packaging. For instance, in our consumer survey, 95.3% of consumers said they would want reusable packaging as an option during checkout. However, contrary to the findings of Nguyen et al. (2020), we found that the esthetics and design of reusable packaging was not important to consumers. This is most likely because packaging in e-commerce does not stay at a consumers' home for a long time, therefore there is less need for it to look visually appealing. Additionally, consumers that purchase products online are accustomed to receiving their orders in simple cardboard boxes and plastic envelopes. Furthermore, like Boz et al. (2020), Nguyen et al. (2020), and Orzan et al. (2018), we found that consumers have a very negative image of plastic packaging and consider cardboard and paper as sustainable alternatives. Just like Wandosell et al. (2021), our findings also suggest that consumers believe reusable packaging should use the least amount of packaging possible and preferably be recyclable/biodegradable.

Research conducted by Orzan et al. (2018) and Wandosell et al. (2021) showed that even though consumers are positive about reusable packaging, few are willing to pay for it. In contrast, even though some consumers in our study were concerned about the price of reusable packaging, the majority showed a relatively high willingness-to-pay. For example, 73.5% of respondents said they would choose reusable packaging if they had to pay a small deposit and 48.6% if they had to pay a small fee at checkout. Furthermore, 46.3% were willing to pay 1-2 euros, 26.1% less than 1 euro and 11.7% 2-5 euros, while only 15.2% said they would pay 0 euros. However, this is probably also because we asked consumers via a survey and there is generally a gap between the intentions and actions of people.

In accordance with academic literature on sustainable/reusable packaging, we found that convenience has a large impact on consumer behavior. For example, Madria & Tangsoc (2020) and Babader et al. (2016) found that packaging should be easy to use for consumers and should not require too much effort. This was also reflected in our results given that 'easy to use/return' was the second most important criteria for consumers regarding reusable packaging. Furthermore, in our consumer survey we found that certain return options were unfavorable for consumers because they required more time, effort, or travelling.

6.2. *Significance of findings for implementing a pilot project*

The results from the consumer survey show that consumers all have different needs and reasons why they prefer a certain return method. For example, certain consumers prefer returning the packaging to the deliveryman because it saves them storage space and time, while others prefer returning the packaging at a return point, such as a supermarket, because then they do not have to be home for their delivery. As Magnier (2021) had predicted in her interview, the majority of consumers in our survey did prefer to return the packaging directly to the deliveryman (91.4%), however, the other options were also very popular. Given that convenience is rudimentary for consumers, it is important that packaging providers and companies consider offering consumers multiple return options to incentivize consumers to engage with reusable systems. Knowing this, it could be inciteful to test various return methods during a pilot and ask consumers how they experience them in real life, given that a survey is only based on hypothetical scenarios and consumers cannot factor in all the elements at play.

Interviews revealed that e-commerce companies are very concerned about the esthetics of the packaging and the unboxing experience for consumers. However, as mentioned by Magnier (2021) and Granato (2021), and as shown in the consumer survey, the design of the packaging in e-commerce is not a priority or an issue for consumers. Nonetheless, consumers did express concerns regarding the hygiene/cleanliness, sturdiness, and foldability of the reusable packaging. Thus, when implementing a pilot project, it is not crucial to invest in the esthetics of the packaging, however, the packaging should be in good condition with no/little signs of usage, protect the products, and require little storage space when empty. Furthermore, to get companies on board, it is important to share the results of the consumer survey to show them that consumers care about the sustainability of packaging, that they are interested in reusable alternatives, and that the practical aspects of the packaging are more important than the esthetics.

For a reusable packaging pilot project to be successful, it is crucial to achieve a high return rate. If the packages are not returned by consumers, the whole concept of reuse falls apart. Therefore, Granato (2021), Magnier (2021) and Van der Werff (2021) suggest a deposit system would work best to incentivize consumers to return the packaging because people hate losing money. Additionally, consumers are already accustomed to deposit systems in the Netherlands because they already do it with glass. Interestingly, none of the companies interviewed that use reusable packaging make use of a deposit system. One of the companies that offers reusable packaging as a paid opt-in option mentioned achieving an 80-90% return rate because consumers actively choose for the packaging and thus are generally

willing to return it. However, the companies that offer reusable packaging as a default option mentioned struggling with a low return rate because certain consumers might get the packaging even though they never asked for it and thus will not bother to return it. Given that deposit systems and ‘opt-in’ options appear to be the most promising systems at achieving a high return rate, it could be interesting to test them both during a pilot to see which method yields the best results.

Lastly, providing clear communication/information to consumers during a pilot is crucial to motivate them to use reusable packaging and to facilitate their engagement with the system. First, as explained by Van der Werff (2021) and Granato (2021), the majority of consumers care about the environment, therefore, explaining to them the environmental importance of reuse will speak to their values and incentivize them to choose reusable packaging. Second, providing clear use and return instructions on the packaging will reduce the inconvenience barrier for consumers and require them less effort to return the packaging. Third, consumers currently have a very negative view of plastic packaging due to the framing of plastic in media. However, it is important to explain to consumers that cardboard is not per se a more sustainable option because it has a large environment footprint and requires a lot of raw materials. Furthermore, plastic is a more durable material than cardboard and can endure multiple reuse cycles. This information is important to share with consumers because numerous reusable packaging options in e-commerce are made from recycled plastic and we do not want consumers to have a negative image of them just because of the plastic used.

6.3. Limitations of study

The first limitation of this study is that the respondents from the consumer survey are likely not a very accurate representation of the average Dutch consumer. Given that the survey was shared via the network of Enviu and its employees, it is likely that the respondents are more concerned about sustainability than the average Dutch consumer and that they have a higher level of education. This is also visible in the survey statistics given that 88.7% of respondents gave themselves a 3 or higher (out of 5) when asked how sustainable they live.

Second, as mentioned by Granato (2021), there is often a value-action gap between what consumers say in a survey and what they do in practice. Therefore, the results obtained on the willingness-to-pay of consumers most likely does not reflect a real-life scenario. To gain more accurate results on willingness-to-pay for reusable packaging, an experiment could have been carried out in which consumers have to physically give something for the packaging.

Unfortunately, this was not possible in the time frame of this research, however, this could be done in a pilot project to gain a deeper understanding on willingness-to-pay.

Third, we did not provide a detailed explanation of how reusable systems work in the consumer survey to ensure it wasn't too lengthy for consumers. However, in hindsight, some information was missing, and certain questions were not formulated well enough, which could have affected consumers' responses. For example, when consumers were asked their opinion on returning the packaging via mailbox, some said they didn't want to spend extra money on purchasing stamps, for instance. However, in practice, sending a reusable packaging back via mailbox is free of charge for the consumer. Therefore, more information could have been included for certain questions to ensure that the consumer fully understood how the system works.

Lastly, we did not achieve a high response rate from companies via the survey and interview invitations. Interviewing companies that make use of reusable packaging was challenging because there are few of them on the market and they are usually start-ups, meaning they are very occupied with other tasks. Furthermore, given that the company survey was sent out via another organization, we had to wait a long time before it was internally approved for release. Therefore, only four responses were amassed during the time this report was written.

7. Conclusion

This research has demonstrated that understanding consumer perspective is crucial when testing a novel system because it sheds light on issues/blockades that would not have been discovered without consumer input. With this information, we can find ways to relieve consumer 'pains' and make the system as convenient as possible to reduce participation barriers. More specifically, our research on consumer perspective has shed light on several factors that need to be tested/considered when implementing a pilot for reusable e-commerce packaging in the Netherlands. First, given that consumers have different preferred return methods, it is important to offer them the choice between various options and test how they experience them in real life. Second, many companies are worried about the esthetics of reusable packaging, however, our consumer survey has shown that consumers care less about the design/branding and more about the condition of the package, if it protects the products, and if it can easily be stored at home. Therefore, to get companies on board for a pilot, it is important to share with them the consumer perspective on reusable packaging and the criteria consumers find most important. Third, achieving a high return rate is crucial, therefore, our interviews with

researchers and companies show that a deposit system or ‘opt-in’ method yield the highest return rates. This should be tested in a pilot to see which option consumers in the Netherlands respond to the best. Lastly, we found that providing consumers with sufficient information is crucial to motivate them to engage with reusable packaging and to facilitate the process. For a pilot project, information should be given to consumers about the positive environmental impact of choosing reusable packaging, how to use/return the reusable packaging, and why using plastic for reusable packaging is a better alternative than cardboard in this scenario.

Linking our findings to the wider academic literature, we also found that consumers are dissatisfied with the current e-commerce packaging and that they are interested in reusable packaging if it’s easy and convenient to use. Furthermore, our findings also show that consumers have a negative view of plastic packaging and perceive it as an environmental threat. However, unlike other research, we found that the design/esthetics of reusable e-commerce packaging is not an important criterion for consumers and that there was a generally high willingness-to-pay amongst Dutch consumers.

The perspective of consumers is currently under-researched for reusable packaging, therefore, these findings on e-commerce can help understand the overall perception of consumers on reusable packaging in other sectors. This is important because consumers are increasingly aware of the amount of packaging waste generated and companies are starting to look into more sustainable options, one of them being reuse. However, it is important to consider that this study was conducted in the Netherlands and consumers in other countries might have other preferences due to cultural/environmental differences. Nonetheless, all reuse systems rely on a high return rate, therefore, it is crucial to understand consumers and how we can incentivize them to return their reusable packaging to achieve a relatively closed-loop solution. Thus, we urge for more academic research on the return process for reusable packaging and how we can best incentivize consumers to return their packaging to achieve a high return rate.

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