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Design strategies for consumers' continued usage of reusable packaging systems (RPSS)

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Abstract

Reusable packaging systems are emerging as a promising solution to combat the growing issue of packaging waste. While consumers generally recognise the environmental advantages of reuse, their actual reuse behaviours may result in insufficient reuse and an unintentional undermining of sustainability efforts. We conducted two creative workshops, created a large number of potential design interventions and further developed them into 16 design strategies for consumers' continued usage of RPSs through thematic analysis. These findings can inspire future research and the development of RPSs.

Keywords: design strategy, packaging, consumer behaviour, product longevity

1. Introduction

Fast-moving consumer goods (FMCGs) comprise products that are bought frequently at a relatively low cost and consumed rapidly to meet consumers' daily demands (Kuzmina et al., 2019). FMCGs usually rely on single-use packaging to ensure their protection, transportation, and communication (Beitzen-Heineke et al., 2017). However, the massive purchase and consumption of FMCGs have led to an accumulation of packaging waste that contaminates air, water and soil through littering, landfilling and incineration (Šuškevic and Kruopiene, 2021). On average, each European generates almost 180 kg of packaging waste per year, and a further 19% increase in packaging waste by 2030 is estimated if no actions are taken (EU, 2022). To tackle this constantly growing source of packaging waste, the European Commission proposed several regulations and policies. For instance, the latest packaging and packaging waste proposal (PPWR) aims to cut down on packaging waste in the EU and promote reusable alternatives (EU, 2022).

Driven by such regulations, reusable packaging systems (RPSs) are emerging as a promising solution in the FMCG sector to reduce overall consumer demand for packaging and promote sustainable consumption practices. RPSs can extend packaging lifetime through multiple uses in a closed loop, where consumers can either refill the same packaging or return the empty packaging to the system and receive a clean one to use (Muranko et al., 2021). Reusable packaging typically employs resource-intensive materials to ensure durability and longevity (Fetner and Miller, 2021). Therefore, these items are supposed to be reused frequently over a long duration to be more environmentally friendly than single-use equivalents. Recent research revealed a growing interest among consumers in embracing reusable packaging as a sustainable choice (e.g., Magnier and Gil-Pérez, 2021; Miao et al., 2023). Nevertheless, translating positive attitudes into corresponding behaviours remains a complex challenge. First, RPSs are in the exploration stage and have not yet been widely implemented on the market. Consumer actions can be constrained by a lack of availability of RPSs and the limited product range

offered in RPSs (Steinhorst and Beyerl, 2021). Next, using RPSs can be perceived as inconvenient, consuming much time and effort, due to the need to return empty packaging to retailers or refill products in-store (Jiang et al., 2020; Lofthouse et al., 2009). Meanwhile, consumers do not necessarily adopt RPSs for being sustainable and may have limited consciousness about their actual environmental impact. Previous studies revealed some unintended behaviours towards reusable packaging. For instance, consumers may acquire multiple reusable packaging for similar purposes (Bethurem et al., 2021; Tassell and Aurisicchio, 2023) while forgetting to use some packaging and end them up in drawers (Lofthouse and Prendeville, 2018). Besides, consumers may temporarily abandon reusables, switch to single-use alternatives, or use both reusable and single-use packaging in parallel (Tassell and Aurisicchio, 2023). Moreover, heavy signs of usage or growing boredom with containers can lead to premature replacement or disposal of reusable packaging (Changwichan and Gheewala, 2020). These unintended behaviours may result in insufficient reuse that undermines the positive environmental and societal impact of RPSs. Design has the potential to tackle these issues. To our knowledge, the exploration of design strategies for RPSs is lacking. Our study aims to address this gap in the literature by (1) creating a large number of design interventions that can stimulate continued use of reusable packaging, and (2) categorising them into design strategies. We investigate the following research question: What design strategies can designers utilize to ensure consumers' continued usage of reusable packaging?

2. Theoretical background

2.1. Design for sustainable behaviour change

Consumer behaviour does not occur in a vacuum. We are all exposed to a designed world where products and services within our surrounding environment navigate how we perceive, interpret and behave. In the past decades, researchers have applied behavioural theories developed in other disciplines (e.g., social sciences, psychology, marketing) to the field of design. There are mainly two streams of scientific research on the value of design in fostering sustainable consumer behaviour. One stream focused on high-level frameworks or models applicable to understanding behaviour and designing interventions. Examples include the Fogg model emphasises the role of motivation, ability and triggers to change behaviour (Fogg, 2009); Michie et al. (2011) developed the COM-B model for characterising interventions linked to the targeted behaviour; White et al. (2019) introduced the SHIFT framework to explain why consumers behave in certain ways, and proposed five psychological factors to be leveraged to shift behaviour. The other stream focuses on design strategies tailored to specific behaviour, such as product care (e.g., Choi et al., 2018; Ackermann et al., 2021), product repair and maintenance (e.g., van den Berge et al., 2021), and resources or energy conservation (e.g., Abrahamse et al., 2005; Bhamra et al., 2011). While these actionable strategies offer important theoretical insights and valuable considerations for designers, they predominantly address general sustainable behaviour or specific actions related to durable products. Yet, consumer decisions and behaviour in the FMCG sector are largely habitual, performed automatically and frequently to maximise immediate benefits for the self (Verplanken and Wood, 2006). Changing such behaviour requires designers to create contextually relevant and impactful design interventions (Cash et al., 2023). This study aimed to enrich the literature by uncovering design interventions that ensure continued usage of reusable packaging from consumers' perspective and provide designers with strategies for the future design of RPSs.

2.2. The SHIFT framework

In this study, we adopted the SHIFT framework (White et al., 2019) as our theoretical to cluster the design strategies generated from two workshops. The selection of the SHIFT framework was deliberate, considering its multi-disciplinary roots in marketing, psychology and behavioural economics. This framework provides a holistic perspective that encourages exploring design strategies from diverse angles and fosters a mindset open to novel solutions. The SHIFT framework introduced five psychological factors crucial for shifting consumer behaviours towards sustainability:

- **Social influence** can affect and shift consumers to be more sustainable through strengthening the presence, behaviours, and expectations of others.

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- **Habit formation** is required by sustainable behaviours that involve repeated actions to persist. Interventions that disrupt bad habits by breaking repetition, or strengthen positive habits by encouraging repetition are essential.
- **Individual self** includes factors related to individual attributes which have a powerful influence on consumption behaviours.
- **Feelings and cognition** can dominate consumers' decision-making through either an intuitive, affective route or a more deliberative route.
- **Tangibility** addresses the challenge of sustainable behaviour, which requires individuals to prioritize distant benefits over immediate, proximal interests. Moreover, pro-environmental outcomes are difficult to track and measure because changes emerge slowly over time.

By applying this framework to the design field, we establish a connection between understanding reuse behaviour and creating effective design interventions for RPSs. Design can thus contribute to the development of RPSs by strengthening social influence, fostering habit formation, satisfying individual self, improving feelings and cognition, and enhancing the tangibility of the impact. Our findings serve as inspiration for the future design of RPSs.

3. Methods

3.1. Participants

Our design workshop was part of a plenary organised by the Circular Design Forum (CDF) at Dutch Design Week 2023. CDF is a collaborative initiative where knowledge, ideas and practices in circular design are shared. Fifteen participants (10 males and 5 females) were recruited via email and voluntarily applied to our design workshop of eight workshops of this plenary. Participants were members of CDF who came from manufacturers, design firms, universities or research institutes. Most have design experience ranging from 4 to 32 years and have either interest or expertise in the circular economy.

3.2. Procedure

The workshop consisted of one offline session with ten participants and one online session with five participants. The two sessions were facilitated by two researchers in parallel. Both sessions lasted 90 minutes including 15 minutes of introduction, 45 minutes of brainstorming and ideation working on the four HMW questions, 20 minutes of idea clustering and interpretations of the rationale behind design strategies, and 10 minutes of results sharing. The purpose of the workshop was to generate ideas for design interventions that could encourage consumers' continued usage of RPSs. Brainstorming was selected as the main activity in the workshop as it allowed participants to freely express their thoughts without criticism of others. To facilitate the brainstorming, we preidentified four How Might We (HMW) questions based on barriers identified in our previous study (Miao et al., 2023) and opened new future possibilities: (1) (digital) technology, which enables the development of new materials and creates traceable systems (Kuzmina et al., 2019); (2) social values, which can increase awareness about packaging reuse and encourage participation (Babader et al., 2016); (3) packaging appearance, which can infer the reuse experience, evoke consumers' positive emotions (Chapman, 2005), as well as influence consumers' perception of packaging sustainability (Magnier and Schoormans, 2015; Steenis et al., 2017); and (4) environmental impacts, in which consumers usually have very limited understanding and even scepticism that can undermine their intention to choose sustainable packaging options (Lindh et al., 2016; Miao et al., 2023).

The offline session was held in a spacious room, with four large tables and chairs around the edge. Four A1 fillable templates that contained the HMW questions and some tool cards were placed on the tables with markers and post-it notes. The workshop started with an introduction to designing reusable packaging that consumers desire to continue using over a long period, barriers to reuse and strategy examples. Participants were then asked to make groups of 2-3 persons and undertake the brainstorming together. Each group started from one of the four HMW questions. Every ten minutes, all groups moved to the next HMW question and repeated the brainstorming process, as well as built on the ideas of others. The random inputs from former groups can shift the next group's views and stimulate more ideas. After

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four brainstorming rounds of all HMW questions, participants went back to their initial templates. In the following 20 minutes, they clustered these ideas into interpretations of design strategies and had 10 minutes to share results with all participants in the room.
The online session was conducted via Microsoft Teams in parallel. Teams provide an encrypted, secure audio and video communication platform that can be easily accessed from home using a link provided by the researcher. It also allowed the researcher to share the screen and use Miro, an online collaborative whiteboard platform, to interact with and collect ideas from participants. The online workshop followed the same procedure as the offline one. The only difference was that online participants did silent brainwriting and reviewed others' ideas on the Miro board. The researcher selected participants to elaborate on or clarify their ideas during the brainwriting to make the session more interactive.

3.3. Data analysis

Participants' responses collected on templates were all transcribed for analysis. A total of 199 initial ideas emerged from two workshops. We conducted the thematic analysis following a mixed inductive-deductive approach. Initially, we applied inductive reasoning to refine the ideas and generate codes, aiming to capture a large number of ideas without comparative evaluation. While maintaining a design-focused perspective, irrelevant (e.g., education programs) were filtered out and overlapping ideas were combined. This process resulted in a final set of 54 codes, representing diverse design interventions. Subsequently, we applied a deductive approach to cluster conceptually similar codes into 16 coherent subthemes that represent design strategies, fitting in the five overarching themes proposed by the SHIFT framework (White et al., 2019). To ensure credibility and avoid misinterpretation of the data, the organization of the codes and subthemes was discussed and iterated amongst the research team.

4. Results: design strategies for RPSs

Table 1 shows an overview of design strategies for RPSs. Below, we elaborate on each design strategy with examples of potential design interventions that can be implemented in RPSs.

Table 1. Design strategies for RPSs within the SHIFT framework

Themes	Design strategies	Examples of design interventions
Social Influence	Making reuse socially desirable	Collective efforts; Social campaign
	Expressing social-identity	Eco-statements; Showcase of accomplishments
	Enabling social interactions	Reuse communities; Social posts
Habit Formation	Bridging daily context and reuse	Establishing associations; Traceability
	Enhancing responsibility and commitment	Loyalty programs; Break-even points
	Prompting to execute reuse behaviour	Availability; Accessibility; Reminders
	Making reusable packaging practical	Portability; Attachability; Modularity
Individual Self	Empowering individual reuse	Instant feedback, Regular reports
	Matching with self-interest	Facilitating product usage, Pay-back period
Feelings and Cognitions	Recognisability	Iconic design features; Reuse logos
	Playfulness	Anthropomorphic design; Narrative design
	Uniqueness	Personalisation; Meaningful marks
	Novelty	Digital fabrication technology; Intelligent design
	Familiarity	Iconic branding features
Tangibility	Positive appearance changes	Positive signs of usage, Reuse indication
	Proximity and concreteness of environmental impact	Relatable equivalents; Local consequences; Future scenarios; Reuse index

4.1. Social influence

Social influence has been shown to foster consumer engagement in sustainable behaviours, such as adopting reusable packaging (Dorn and Stöckli, 2018). The effect of social influence is based on the

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idea that people have an urge to align their behaviour to the words and actions of others. Using reusable packaging is a social practice as consumers have to (1) Bring the packaging to a public space (e.g., supermarkets) and (2) expose their packaging choice to others when they refill or return the packaging. The presence of others can induce a desire to manage one's impression (White and Dahl, 2006). Therefore, making reusable packaging socially approved, commonly engaged in by peers or socially desirable in some way makes it likely to be adopted. This leads to the development of three design strategies including 7 design interventions that aim at enhancing the social influence of RPSs.

Making reuse socially desirable. Consumers often seek to align their actions with social desirability in a public context to create a positive impression on others (Green and Peloza, 2004). Creating a social atmosphere where reusable packaging is the preferred option over others may stimulate consumers to pursue it. For instance, displaying real-time collective efforts of consumers' reuse actions or packaging reductions can not only guide socially desirable behaviour but also capture consumers' attention, making them more aware of reuse options.

Expressing social-identity. Consumers often express their social identity through their consumption choices. Adopting reusable packaging can serve as a symbolic expression of a sustainable lifestyle against the waste of single-use packaging. For instance, packaging with an eco-statement, such as "I Choose Reuse" acts as a visual representation of consumers' environmental social identity and can evoke a sense of pride.

Enabling social interactions. Perceiving oneself as part of a pro-environmental community significantly influences individuals to make environmentally friendly choices and engage in corresponding actions (Van der Werff, Steg, and Keizer, 2014). An online platform or reuse communities can connect consumers and enable them to showcase reuse achievements in social posts, interact with other users and inspire their online networks to embrace sustainable practices. Besides, public reward mechanisms could be embedded in social interactions, such as collecting points, upgrading levels and ranking reuse achievement, motivating consumers to stick to reuse behaviour with their peers.

4.2. Habit formation

Consumers' purchase of FMCG is largely habitual but not in line with notions of sustainable behaviour and consumption. Habits form slowly over time through repeated action and are likely to recur automatically without much conscious controlled process or effort in stable contexts, such as the same location or time of day (White et al., 2019). To use RPSs, consumers need to alter existing routines of buying products in single-use packaging and develop new shopping patterns with reusable packaging. Making the new habit effortless requires a stable and effective context that allows unobstructed and fast performance, as well as encourages repetition over time, rather than being a one-time action. This leads to the development of four design strategies including 12 design interventions that aim at fostering habit formation.

Bridging daily context and reuse seeks to establish a seamless connection between everyday context and the reuse behaviour. Therefore, consumers will easily review their behaviours and form new mental connections between this context and new behaviour. One example involves quantifying the reuse behaviour on the packaging, such as showcasing the cumulative amount of water consumed from a specific reusable bottle or indicating the number of shopping trips accomplished with a particular reusable bag. This visual representation serves as a persistent and tangible reminder, strengthening the mental association between the specific context and the corresponding reuse behaviour. Consequently, when consumers encounter situations to drink water, their reusable bottle becomes an intuitive choice as it shows past behaviour which usually affects future behaviour intentions.

Enhancing responsibility and commitment aims to bridge the intention-behaviour gap in reuse practice. The theory of cognitive dissonance (Festinger, 1957) suggests that individuals strive for internal consistency in their beliefs and behaviours. Therefore, it is likely that when consumers sign up for a commitment to reuse packaging or associate strong responsibility towards reuse, the cognitive alignment will steer them to perform responding behaviour. One intervention example is loyalty programs that allow consumers to manage current possessions and receive rewards after reaching certain times of reuse. Another example is to communicate break-even points, where consumers are informed about the number of times a reusable item should be utilised to surpass its environmental 'break-even point'

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compared to single-use packaging. This information may help consumers make conscious choices and develop a commitment to their reuse behaviour.

Prompting to execute reuse behaviour refers to providing messages or signals that remind consumers to take action in the different stages with RPSs. First, the availability of products offered in RPSs can be accessible through apps or brochures in the supermarket, prompting consumers to consider reuse options during their decision-making process. Second, the accessibility of reuse infrastructures should be enhanced by offering diverse and convenient methods and notable locations for refills and returns. Communicating this information can reduce consumers' confusion and mental effort in searching for solutions. Third, reminders can prompt reuse actions through technology, such as running-out signals, automatic replenishment notifications, or be integrated into a shopping list. These prompts serve as cues to consumers, encouraging them to actively engage in reuse and prevent forgetfulness when they intend to execute reuse behaviour.

Making reusable packaging practical. To establish the repetition of reuse behaviour and turn it into a new habit, enhancing the functionality and convenience of reusable packaging is crucial. This strategy proposes several design features for reusable packaging. Examples encompass portability, making packaging foldable or stackable for efficient space utilisation during transportation; adaptability, addressing versatility by allowing certain components (e.g., caps) to be changed for different product uses, or expanding packaging volume to suit individual needs; attachability, enabling the packaging to be conveniently attached to clothing or accessories for on-the-go use; modularity, allowing consumers to replace or customise parts of the packaging when they cannot satisfy consumers' demand anymore.

4.3. Individual self

Individual efforts are sometimes viewed as powerless to make a big impact on the environment. Consumers may not be willing to sacrifice existing individual benefits of using single-use packaging (e.g. affordable, convenience and cleanliness) when there are no additional benefits involved in using RPSs. This leads to the development of two design strategies including 9 design interventions that aim at satisfying the individual self.

Empowering individual reuse focuses on enhancing individuals' confidence in their ability to contribute significantly to addressing packaging concerns through RPSs. Previous studies indicated that consumers are more inclined to adopt sustainable behaviour when they believe their actions can yield positive outcomes (Kim and Choi, 2005), yet consumers lack confidence in their ability to solve packaging waste through RPSs. Within RPSs, effective interventions include providing consumers with instant feedback on the short-term environmental impact upon refilling or returning packaging and regular reports detailing the cumulative packaging saved over an extended period. These interventions are designed to instil a sense of accomplishment, convincing consumers that their consistent actions have a meaningful impact.

Matching with self-interest aligns reusable packaging choices with additional personal gains beyond environmental benefits. For instance, products offered by RPSs are usually deemed costly in terms of time and money (Miao et al., 2023; Lofthouse et al., 2009). Shedding light on convenience (e.g., home delivery, customised quantity) and economic benefits (e.g., lower product price or higher product quality) can help consumer recognise more personal gains and make purchase decisions on products aligning with their self-interest. Besides, the upfront investment in personal reusable containers might result in a reluctance to choose reuse. Demonstrating a pay-back period of investment in reusables in comparison to buying pre-packaged products that include the price of packaging may persuade consumers that they can gain benefits in the long term. Through these interventions, RPSs can demonstrate that reuse not only contributes to the environment but also offers personal benefits, thereby making it more attractive to consumers.

4.4. Feelings and cognitions

Consumers' adoption of reusable packaging can be either driven by feelings, which are more intuitive or by cognitions, which are more deliberate. To trigger consumers' reuse actions, it is important to understand consumers' perceptions and appraisals of different aspects of reusable packaging design. This leads to the development of five design strategies including 18 design interventions that aim at improving feelings and cognitions.

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Recognisability suggests that reusable packaging should have a recognisable appearance both on supermarket shelves and in consumers' homes, thereby guiding appropriate handling and use. This can not only make reusable packaging stand out from other options but also prevent the misplacing of reusable packaging. For instance, integrating iconic design features or adding official reuse logos to packaging can indicate its reusability and guide consumers to continually reuse it.

Playfulness aims at stimulating curiosity and engaging emotional interactions with reusable packaging. One example is anthropomorphic design, which involves giving packaging a personality and self-expression (e.g., a smiley face). One classic product that applied this strategy is the Henry vacuum cleaner, which has a tub-shaped body with a printed smiling face, a hose as a nose and a shiny black hat as its dome with a printed name, "Henry". In this way, consumers not only use it as a tool but also gain enjoyment through playful usage and develop an emotional bond with it. Similarly, giving packaging a personality or self-expression may create a playful reuse experience and encourage consumers to continue engaging in RPSs.

Uniqueness enhances the distinctiveness of reusable packaging, making it unique or fit the consumers regarding aesthetics and functions. The more consumers liked the packaging, the more they were willing to keep reusing it. For example, personalisation can engage consumers in the design process and create a unique item through personal creativity. The participatory effort put into the design process enhances the emotional attachment to packaging and makes it a scarce resource that is less likely to be abandoned. Besides altering the product appearance, simply adding a mark of meaningful memories, such as location or event markers on the packaging, can create a tangible record of experiences associated with the item and trigger consumers to keep it for a longer period.

Novelty can infuse a sense of design newness and innovation into reusable packaging over time to sustain consumer interest. Some technologies were suggested to assist packaging innovation. For instance, digital fabrication technology (e.g., 3D printing) enables multiple customizations to alter the appearance and functionality of reusable packaging that fit consumers' changing tastes and preferences; Built-in sensors (e.g., radio frequency identification (RFID) chips) allow for remote reading and automated handling (Coelho et al., 2020), as well as accessing interactive information of product and packaging (Ellsworth-Krebs et al., 2022). Previous studies suggested that such data also has the potential to reflect consumer use behaviour of the products and offer tailored service to individual needs to maximise the effective use of resources (Kuzmina et al., 2019).

Familiarity refers to integrating familiar features from initial disposable packaging into reusable packaging design to reduce uncertainty and learning costs for consumers. A previous study revealed that consumers looked for familiar aspects to ease perceived complexity when they adopted a novel reuse offering (Miao et al., 2023). It is crucial to make a good balance between novelty and familiarity since novelty can sometimes trigger a higher learning cost. One intervention could be retaining iconic branding features in packaging design while adding reuse-specific features (e.g., resealable caps), making it easier for consumers to continue their habitual product choices with a reuse purpose.

4.5. Tangibility

Sustainable consumer behaviours usually involve putting aside more proximal, immediate, individual interests in place of actions that confer benefits that are more remote, future-focused and other-oriented. Therefore, sustainable outcomes usually seem psychologically distant, abstract and difficult for consumers to grasp and measure. Thus, making the packaging pollution crisis and solutions very clear and tangible is important for encouraging consumers' continued usage of reusable packaging. This leads to the development of two design strategies including 8 design interventions that aim at enhancing the tangibility of reuse.

Positive appearance changes focus on creating positive visual responses on packaging to encourage consumers' proper reuse behaviour. Yet, current reusable packaging only generates negative signs of usage that can trigger hygienic concerns (Baxter et al., 2016). One product example with positive signs of usage is Bethan Laura Wood's teacups, where the reusing process enhances the visual appeal of the pattern, making the cup more charming over time. This positive response on packaging appearance improves the aesthetics and quality of packaging through multiple uses (Bridgens et al., 2015). Applying

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such intervention to reusable packaging may also evoke hedonic pleasure and encourage consumers' continued reuse behaviour.

Proximity and concreteness of environmental impact aim to enhance the tangibility of environmental impact by making it more proximal and concrete to consumers' context. Drawing from the construal level theory (Trope and Liberman, 2010), positive environmental impacts are often distant in time and space from when and where the consumption takes place, which makes it difficult to assess the actual impact. This results in a vague environmental perception of reusable packaging (Miao et al., 2023). To address this issue, we can either shorten temporal or spatial distance to make environmental impact more relatable to consumers' context. This can be implemented by for example communicating local consequences of packaging waste; or stimulating consumers to envision a worse future scenario if reusable packages are not used, addressing present-focused biases and enhancing the urgency to take action.

5. Discussion and conclusion

This paper introduces the development of 16 design strategies within the SHIFT framework, tailored for RPSs in the FMCG sector. These design strategies offer inspiration to practitioners and insights for future research to build upon. Below, we elaborate on several reflections on our findings.

First, in this explorative phase, we did not focus on specific product categories but tried to make these strategies widely applicable across reusable packaging. It's crucial to align design strategies with the habitual use of target products. For example, responsibility and commitment may be more effective for daily-use products (e.g. milk) compared to slowly consumed products (e.g., detergent) since consumers are more engaged if they need to reuse this packaging frequently.

Second, to effectively encourage reuse, it may be reasonable to integrate various strategies that cater to multiple behaviours. For instance, combining prompts and social interactions through an app could enhance engagement by providing RPS product availability, reminders for reusable packaging, and a platform for sharing experiences within an online community.

Third, the impact of design strategies may vary across different stages of reuse. For instance, playfulness or novelty may motivate consumers to reuse at the early adoption but decline after consumers get used to it (Miao et al., 2023). Positive packaging appearance changes only occur after consumers constantly reuse the packaging over a long period, so the anticipated effect should be communicated in advance. Future research should investigate these strategies' effectiveness in both experimental and real-world settings, considering the wide consequences and potential rebound effects of adopting each strategy.

The use of workshops and thematic analysis in this study was crucial in capturing a broad spectrum of perspectives, enriching our understanding of consumer engagement with RPSs. Nevertheless, it is worth noting that this study was limited to only two workshops and may not cover the full spectrum of potential strategies. To address this limitation, our upcoming studies include collecting more data through additional workshops and desk research to diversify our findings. After reaching data saturation, we aimed to develop a design toolkit for RPSs in collaboration with designers and design students. This toolkit will include different strategy cards and templates, envisioning it as a resource to stimulate discussion and inspire future innovations in RPSs.

In conclusion, our study takes an initial step towards identifying actionable design strategies for reusable packaging. We will expand our exploration and invite future research to investigate the effectiveness of these design strategies built on our insights to increase consumers' continued usage of RPSs and contribute to a sustainable society.

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