



# Rental clothing box subscription: The importance of sustainable fashion labels

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## ABSTRACT

Renting fashion using clothing box subscription is a growing trend in the textile industry. The element of surprise varies according to the box type chosen by the customer: the self-assembled or the curated surprise box. Our study focuses on the effects of consumer characteristics, box type and other attributes on the intention to subscribe. We collected data from 364 German respondents and used choice-based conjoint analysis to estimate these effects. A between-subject design helps to compare the self-assembled versus the curated surprise box type. Price has the highest relative importance in the curated surprise box subscription model. In both subscription models, consumers preferred to rent four fashion pieces rather than two. Sustainable fashion labels increase the willingness to pay in the case of the self-assembled box model. Most consumers still prefer new fashion items over second-hand or upcycled ones, leaving considerable room for circular communication strategies.

## 1. Introduction

In the clothing industry, which is considered one of the most environmentally damaging industries worldwide (Armstrong et al., 2016; Leal Filho et al., 2022; Niinimäki et al., 2020), there is great potential to enhance sustainability economically, ecologically, and socially (Todeschini et al., 2017; Shrivastava et al., 2021). The production of textile fibres often relies on harmful chemicals and requires abundant resources of energy, water, and land (Ellen MacArthur Foundation, 2017; Niinimäki et al., 2020). While the industry has been taking action to increase production-related sustainability, these endeavours are undermined by ever-increasing mass consumption driven by the fast-fashion model in particular (Niinimäki et al., 2020). Consumers try to keep up with the ever-changing fast-fashion trends, buying in-vogue but short-lived fashion items, often cheaply produced and of low quality (Leal Filho et al., 2022). As a result, the quantity of textile waste is expected to increase to 148 million tonnes per year in 2030 (Kamble and Behera, 2021). The US (17 million tonnes) and China (20 million tonnes) were the top textile waste producers in 2022 (Ruiz, 2023). After a peak of 187 kilo-tonnes in 2020, Germany produced 173.1 kilo-tonnes of textile waste in 2022 (Statistisches Bundesamt, 2023). So far, only 1 % of post-consumer textile waste is recycled into new garments (Harmsen et al., 2021), and the overwhelming amount is landfilled or incinerated (Ellen MacArthur Foundation, 2017).

To tackle these challenges, linear and throw-away business models are increasingly being superseded by circular business models and practices (Bocken et al., 2014; Geissdoerfer et al., 2017; Jia et al., 2020). Both the 3 R principles (reduce, reuse, and recycle) and the four main business models (resale, rental, repair, remake) that circulate products and materials in the economy (Ellen MacArthur Foundation, 2021; Ranta et al., 2018) include shared clothing as a potential solution and a promising way. Current pioneers of this new business model are the German fashion rental companies Myonbelle and Modami or, in the US, Rent the Runway and Nordstrom. By 2014, Rent the Runway had already rented out clothing worth more than \$800 million (Ellen MacArthur Foundation, 2017). In 2021, the total revenue of worldwide shared clothing was \$4.7 billion, with the U.S. and Europe accounting for over three-quarters of the market. In Europe, the UK market for shared fashion is the fastest growing (2021–2026: 19.6%), with the German market expected to be the largest (\$534.8 million) (Statista, 2022). Rented clothing includes two main revenue models: rentals on a one-time basis of individual pieces for special occasions or rentals of a fixed number of everyday items by monthly subscription (Choufan, 2022). All shared clothing models have in common that the user of the products is not the owner (Kumar et al., 2022). Often the option is included to buy favorite rented items for discounts (Bodenheimer et al., 2022). Fashion subscription box services are characterized by ongoing and flexible access enabled by a digital platform (Bischof et al., 2020).

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Overall, the service can be subsumed under the term online clothing rental service (Tu and Hu, 2018) or clothing product-service system (Armstrong et al., 2015). Due to this importance as a circular business model, our focus is on the subscription to regularly receive a box with everyday clothing and to send the items back after a specified period on a rental basis. In the following, we use the abbreviation ‘(rental clothing) subscription box’ for this investigated offer.

So far, research on subscribing clothing boxes has focused on consumer intention and consumer behaviour (Baek and Oh, 2021; Lang and Armstrong, 2018; Lee and Huang, 2020; McCoy et al., 2021; Tu and Hu, 2018). For everyday clothing, Bodenheimer et al. (2022) found that sustainability is a strong motivation. However, consumer preferences concerning different subscription models and how to configure them have been less researched, particularly with regard to sustainable fashion labels and second-hand fashion. In 2022, the consumer lifetime value (LTV) of fashion and apparel subscribers worldwide was fourth at \$202 (ReCharge, 2023). Sustainability in fashion is an important issue for more than 50% of consumers (55%) worldwide (YouGov, 2023). There is an upward trend regarding expenditure on sustainable fashion including second-hand items with German (€211.8) and US (\$230.3) consumers spending the most per year (Guinebault, 2023). However, global fast-fashion shopping is expected to grow to \$136.19 billion in 2024 (Research and Markets, 2023) calling for a closer look at how subscription boxes are configured.

We use a choice-based conjoint analysis (CBCA) between-subjects experiment (Boyer et al., 2021) with a conditional design (Miller et al., 2011) to investigate the consumer preferences of German respondents and their willingness to pay for curated surprise and self-assembled fashion subscription boxes. A curated surprise fashion box contains items that are selected by a stylist based on the preferences provided by the customer, while the items included in a self-assembled fashion box are chosen by the customers themselves. We address the following three research questions: (1) *What determines the choice of a rental fashion subscription box – for example, the price, the total value of the rented clothing, the number of items, and sustainable labels?* (2) *Are there differences in the importance of the attributes concerning the box type (curated, self-assembled)?* (3) *Do socio-demographic characteristics of consumers and their sustainable consumption practices have an effect on the decision concerning a subscription box?*

Our findings provide the following novel empirical evidence.

- Price is the most relevant attribute followed by total value and sustainability, with further behind the number of items.
- The relevance of price regarding fashion subscription boxes can be mitigated by sustainable fashion labels the consumers can choose themselves.
- The surprise element does not increase the willingness to pay. Consumers do not value a stylist choosing items matching their style and taste in monetary terms.
- Higher-earning and higher-educated females between 25 and 44 years old are the most interested target group.
- Subscribing to fashion boxes is strongly related to past – but in the sample rather rare – renting behaviour.
- Subscription also stands in a positive relation to past sustainable behaviour. However, the higher number of preferably new fashion pieces that offer more combination possibilities suggests that the means of subscription boxes to reduce fashion consumption are limited.

Our findings contribute to the research on circular fashion business models (Coscieme et al., 2022; Huynh, 2022) in general, and rental fashion subscription boxes (Kang et al., 2024) in particular. The results of the study shed light and action-oriented guidance on the configuration of subscription models, and the importance of sustainable fashion labels that should be selected by the customer. We also contribute to consumer behaviour research and present findings on the relationship

between subscription or sustainable behaviour and the decision to opt for a subscription box.

To address the research questions, we employ the following procedure: First, to explain the importance of subscription models for fashion boxes, we discuss sustainable business models and practices for the circular economy with a focus on the German market. We present different box types with particular reference to the surprise effect of curated surprise versus self-assembled boxes, and we provide an overview of the current state of research. Second, we introduce the methodological concept consisting of a CBCA combined with a conditional design. Third, we focus on the empirical results, which we discuss in greater detail in relation to the research questions, action recommendations, and research limitations in the final section.

## 2. Literature review

Since the early 2000s, subscription models have experienced an upswing as a result of digitization. This can be clearly seen with providers of digital goods, such as streaming services (e.g., Netflix and Spotify) (Bischof and Rudolph, 2022). Birchbox started with beauty product samples in 2010 (Woo and Ramkumar, 2018) and, today, subscription models can be found in various physical goods and almost all industries (Andonova et al., 2021). Consumers sign up for a subscription to periodically receive a box of consumer goods – products or samples – to keep them forever (classic subscription) or for a specified period (rental subscription). Bischof et al. (2020, p. 2) highlight the important attributes of “delivery interval, items per cycle, degree of surprise, and return option offered by the subscription service”.

In the literature, different categorizations of subscription boxes can be found. According to the typology of Bischof et al. (2020), four box types can be distinguished: (1) predefined boxes, (2) curated surprise boxes, (3) access-based boxes, and (4) general surprise boxes. These four box types differ with respect to the degree of surprise and to personalization related to the controllability of products delivered (Bischof et al., 2020). The combination of the two dimensions of personalization and surprise, with low and high scores, reflects the value proposition of the box (Bischof et al., 2020). The degree of surprise dimension includes low or high control over the choice of items. For example, the individual preferences of consumers are not considered in the composition of access-based and general surprise boxes. Thus, we concentrate on subscription models according to whether the box content is a surprise for the customer or not. This means our focus is on subscription models ranging from predefined (in the following: self-assembled) subscriptions that do not have a surprise effect to curated surprise subscriptions, where the box content is unknown to customers (Bischof et al., 2020).

### 2.1. German fashion subscription providers

In the following subsection, we describe how the cycle of subscribing to a fashion box provider works. In general, sustainability of supply chains, packaging, and products is an emerging trend for the global fashion subscription boxes/clothing subscription boxes market whose size was \$10 billion in 2023 (Virtue Market Research, 2024). Overall, in Germany, there are different platforms for shared fashion (Fashionchangers, 2023). For example, some providers are located in physical stores in large cities and offer second-hand vintage clothes, high-quality basics and fair fashion pieces for rent, but also sale (kleiderlei, Leih Dich Frei). At WeDress Collective, consumers can rent out their clothes and accessories from designer labels and younger brands. The main fashion subscription players are four German providers of subscription boxes with expensive (slow) fashion (Myonbelle), second-hand fashion (Modami), and sustainable label fashion (Fairnica, Unown) as examples (see Table 1). In 2023, sustainably produced and fairly traded fashion yielded around 196.5 million euros in Germany (Statista, 2024d). However, the four subscription providers only had a small share of this figure recently. For example, Manager Magazin

**Table 1**  
Market overview of German fashion subscription providers.

Provider	In Business	Products	Price/Month	Unsubscription/ Cancellation	Shipping and return	Selection	Replacement of box	Extras
Modami	Since 2018, family business	Fair fashion, formal and everyday wear. Established brands.	3 models: Basic: 39.90 euro, 2 pieces, 1 piece curated Prime: 59.90 euro, 3 pieces, 2 pieces curated Single lease (rent evening and cocktail dresses or seasonal clothes such as coats for 2 weeks or 1 month)	Any time/monthly	Free	Both self-assembled and curated surprise selection	Monthly	Professional cleaning (send everything back unwashed). All items are insured against damage. In case of further interest, one or all items can be kept for another 30 days. Individual items can be purchased, taking the rental price and the number of rentals into account. Offers (sale). Subscription can be paused and postponed to any date.
Myonbelle	Established in 2014; to 2016 investors got in (e.g., German television channel ProSieben)	Luxury brands (Valentino), and cheaper labels.	3 models: Flatrate S: 39 euro, 2 pieces Flatrate M: 49 euro, 2 pieces, 2 accessories Flatrate L: 59 euro, 2 pieces, 3 accessories	Any time, but latest 10 weekdays before renewal/monthly	Free	Curated surprise box (personalized choices based on a completed questionnaire)	Monthly	The entire box or parts of it can be exchanged at any time and as often as one likes. Individual items can be purchased at subscription prices with attractive discounts (70%). For a fee of 5 euros per box, damage such as lost buttons or broken zippers can be insured.
Fairnica	Since 2019	Garments exclusively from sustainable labels.	Capsule wardrobes: consisting of 5 (to 8) pieces that can be combined. 1 month: 89 euro, 3 months: 79 euro per month, 6 months: 69 euro per month, 12 months: 59 euros per month	Email reminder before renewal. Switching to a longer period is possible at any time, but not for a shorter period.	Free	Both self-assembled (mix and match capsule, 5 pieces) and curated surprise selection by experienced stylists	Different rental periods	The entire capsule or parts of it can be exchanged at any time. Professional cleaning (send everything back unwashed). Everyday stains (ketchup, red wine) are no problem. For inappropriate use (e.g., for painting, cleaning rims), a compensation fee is charged. Damage should be reported by photo.
Unown	Since 2019, stopped service May 31, 2023	Garments exclusively from sustainable and fair labels.	3 models: Entry: 39 euro (2 pieces worth 250 euro) Extended: 69 euro (4 pieces worth 1000 euro) Limitless: 109 euro (6 pieces, early access to new styles)	Any time/monthly	Free	Individual choice	Monthly	Professional cleaning (send everything back unwashed). The size can be changed free of charge. Extension of the rental period for another 30 days. Purchase option on favorite pieces. Offers (special discounts, e.g., for sample sales). Subscription can be paused. Insurance cover included.

(2020) mentions that Myonbelle has a turnover in the single-digit million range.

The providers make clothing and accessories available for a specific period. Typically, these are monthly subscriptions, but there is also the

option to subscribe to bi-monthly and semi-annual subscriptions (Modami). Customers pay a subscription fee, usually for one month and receive a fashion box with two to five items. Depending on the provider, customers can either assemble a fashion box themselves or subscribe to a

pre-curated box. For a curated surprise fashion box, preferences and measurements are collected in advance by questionnaire (Myonbelle).

After the rental period has expired, customers have several options. On the one hand, the clothing items can be returned and replaced with new ones. On the other hand, customers can extend their current fashion box rental for another month. Moreover, companies offer customers the opportunity to purchase at a lower price the items they wish to keep (Modami, Myonbelle, Unown). The service includes professional cleaning and repairing minor damages. Returned clothing is inspected for damage on arrival. If damage is found in a clothing item, such as a missing button, the provider undertakes the repair. If repair is not possible, the clothing items can be recycled or upcycled. Sometimes, insuring items against damage is included (Modami, Unown). If no damage is found, a professional cleaning process is undertaken at the warehouse or with local cleaning partners. Specific treatment is applied to stains. Preferably, the cleaning processes should be hygienic and textile friendly relying on natural-based and microplastic-free detergents and no fabric softener. However, [Esdar \(2022\)](#) has levelled the criticism that, for hygienic reasons, large quantities of clothing are cleaned with disinfectant detergents containing biocides. Another criticism from a sustainable point of view is the transportation distance from the rental service to the customer and back.

## 2.2. Differences between the self-assembled and the curated surprise fashion subscription model

The self-assembled and curated surprise fashion box types reflect differences in consumers' utilitarian and hedonistic motivations. When subscribing to a self-assembled fashion box, customers can choose their preferred products themselves and, therefore, there is no surprise element. This type of subscription offers maximum convenience, making it a particular preference by consumers with more utilitarian motivations ([Rudolph et al., 2017](#)). For these consumers, convenience is one of the most important factors in the purchase decision ([Kotzé et al., 2012](#); [Sorce et al., 2005](#); [Tao and Xu, 2020](#)). As a consequence, the subscription service ought to be easy to manage. Otherwise, it can negatively affect consumer attitudes to such services ([Lang et al., 2019](#); [Tu and Hu, 2018](#)). [Tao and Xu \(2020\)](#) found that consumers, for the most part, have clear style preferences that preclude the need for a surprise element. In particular, male buyers prefer practical subscriptions – namely, those that are self-assembled – and appreciate an automatic process that streamlines the purchase of everyday items, such as razor blades ([Bischof and Rudolph, 2022](#)). In contrast to women, men are less prone to impulse buying when purchasing ([Coley and Burgess, 2003](#)).

Curated surprise fashion boxes, unlike surprise subscriptions, are personalized and appeal to customers more inclined to value product diversity ([Bischof and Rudolph, 2022](#)). With curated surprise fashion boxes, customers receive 'shopping assistance', meaning that the content is individually curated by the provider. The compilation of products leads to a manageable surprise, with individual and personal preferences being taken into account ([Bischof and Rudolph, 2022](#)). This is intended to simplify purchasing decisions. Thus, curating creates a certain surprise effect, with consumers not knowing what clothing items they will receive. Consequently, in contrast to self-assembled fashion boxes, hedonistic factors are emphasized in curated surprise subscriptions.

[Bhatt and Kim \(2018\)](#) found that customers opting for subscriptions with surprise effects had high levels of experiential shopping motivation [Park et al. \(2010\)](#) called this type of customer "sensory innovators" who are loyal to and conscious of fashion brands and are prone to impulse buying. These consumers enjoy shopping in their respective product categories; they engage with product innovation and are generally interested in the shopping process, whether in-store or digital ([Perea y Monsuwé et al., 2004](#)). Experiential consumers are risk takers who are not afraid to try out innovations and like to find inspiration in their shopping experiences ([Sebald and Jacob, 2018](#); [Truong, 2013](#)). The desire and need for variety among consumers can be fulfilled by curated

surprise fashion boxes. Consumers are encouraged to garner new experiences and try out new styles. Furthermore, consumers are met with new and unexpected products they may not have otherwise considered or dared to buy ([Armstrong et al., 2016](#)). Thus, an experience-oriented shopping journey is ensured. Women tend to be more emotional consumers and are driven by experiential shopping motivations, such as the desire for the new and the adventurous ([Bhatt and Kim, 2018](#); [Lang, 2018](#); [Tao and Xu, 2020](#)). Additionally, shopping is seen as a distraction from everyday stress and problems ([Kotzé et al., 2012](#)). This points to female buyers having a preference for hedonistic subscriptions with an element of surprise ([Bhatt et al., 2021](#)).

Additionally, [Sivathanu \(2018\)](#) has shown that hedonistic motivations, coupled with income considerations, have a significant influence on subscribing to cosmetics boxes. Other factors that fundamentally influence clothing rental include interest in fashion, the desire for uniqueness, and materialism ([Bhatt and Kim, 2018](#); [Lang, 2018](#); [Tao and Xu, 2020](#); [Woo and Ramkumar, 2018](#)). In the study by [Armstrong et al. \(2016\)](#), interviews revealed that clothing rental systems are particularly suitable for a younger target audience. Young professionals, specifically those aged 25 to 34 with a higher monthly gross income, are well suited to subscribing to curated surprise fashion boxes ([Bischof and Rudolph, 2022](#); [NOE and Hyun, 2020](#); [Sivathanu, 2018](#); [Woo and Ramkumar, 2018](#)).

## 2.3. Intention to use subscription models

Research distinguishes two distinct fashion subscription model types. In the case of the classic subscription type consumers are sent a box in a specific recurring period including customized curated, self-assembled, or (early/VIP) access-based items, and they can keep (buy) as many items as they want ([Spurgeon and Niehm, 2020](#); [Tao and Xu, 2018](#)). In the case of subscription-based rental services, consumers also receive customized items, but have to send them back after the rental period and receive fresh ones ([Day et al., 2020](#)). The second category also includes studies on clothing rental, upgrade, redesign, or exchange, since together with subscriptions they belong to product-based services ([Heiskanen and Jalas, 2003](#)). They all offer an alternative to ownership, and at the same time preserve natural resources ([Hunka and Habibi, 2023](#)).

For both types, research has investigated the reasons why customers sign up for which fashion subscription boxes and identified typical box subscribers (see [Table 2](#)). Studies point to females who are fashion-conscious as primary consumers ([Lang and Armstrong, 2018](#); [Woo and Ramkumar, 2018](#)). While age is often not described as a relevant variable except for [Sivathanu \(2018\)](#), other studies on fashion renting or subscription boxes indicate that interest is highest in the younger age groups ([Bischof and Rudolph, 2022](#); [NOE and Hyun, 2020](#); [Sivathanu, 2018](#)). Regarding clothing rental and classic subscription, studies primarily focus on consumer attitudes and the identification of influencing factors on usage intention (see [Table 2](#)). Theoretical models, such as the theory of reasoned action (TRA) and the theory of planned behaviour (TPB) are used in combination with the technology acceptance model (TAM) and the innovation diffusion theory (IDT) to examine consumer behaviour concerning fashion renting. Two main perspectives have evolved: consumer interest in clothing rental services is driven by the perception of sustainable benefits ([Jiyun Kang et al., 2024](#)) or by the relative advantage of fulfilling fashion-oriented self-interest ([Lee and Huang, 2020](#); [Moon et al., 2015](#)). For example, consumers might view access to clothing through renting as a way to have an infinite wardrobe ([Baek and Oh, 2021](#)).

While the literature has focused on theoretical models, the design of an "ideal" fashion box has not been the focus. We use the different studies to determine important box attributes in advance. With regard to relative advantage, [Park and Armstrong \(2019\)](#) identified factors such as saving money and time, finding the desired product assortment, utility, and the absence of ownership burden. Other reasons include

**Table 2**  
Studies on the intention to use clothing rental services (in chronological order).

Author (year)	Object of Investigation	Focus	Theory	Method	Sample	Results
<i>Rental</i>						
<b>Armstrong et al. (2015)</b>	PSS: clothing advice, rental and exchange	Consumer characteristics, customer satisfaction	Not specific	Focus group, grounded theory	n = 52 females in Finland	PSS systems that take experiential, innovative, and social approaches are seen as best suited to <b>younger consumers</b> . Services that emphasize product satisfaction (e.g., remodelling, repair/maintenance, customization, advice) are considered most appropriate for older consumers.
<b>Armstrong et al. (2016)</b>	PSS: clothing advice, rental and exchange	Adoption motivation	Not specific	Focus group, grounded theory	n = 52 females in Finland; n = 49 US students	The respondents positively evaluate the ability of some PSS concepts to satisfy their desire for change and social support or interaction, as well as for saving money and increasing product satisfaction.
<b>Lang and Armstrong (2018)</b>	Lending and swapping clothes	Consumer characteristics, adoption motivation	Not specific	SEM	n = 431 females in the US	Two personality traits (fashion leadership, need for uniqueness) positively influence the intention to borrow and swap clothes, while the effect is negative for materialism. The traits also indirectly influence the intention to rent or swap fashion through attitude, perceived behavioural control, and previous sustainable behaviour.
<b>Tu and Hu (2018)</b>	Online clothing rental service	Adoption motivation	TPB; TAM; IDT	SEM	n = 300 users in Taiwan	Compatibility, personal innovative power, subjective norm, self-efficacy, and perceived behavioural control have a significant positive impact on consumers' usage intention.
<b>Park and Armstrong (2019)</b>	Online clothing rental and loan service	Adoption motivation	Not specific	Interviews, grounded theory	n = 38 female users in the US	Five basic consumer motivations were categorized: <b>save money</b> , save time, <b>find a desirable range of products</b> , utility, and no burden of ownership.
<b>Day et al. (2020)</b>	Fashion subscription rental service	Adoption motivation	Prospect theory	Experiment	n = 524 females in the UK	<b>Saving money</b> (perceived cost benefit value) had a positive effect on purchase intention, but not environmental and variety benefits. Different perceived risks had a negative effect (wearing used items, missing shopping experiences in physical stores, damaging items).
<b>Lee and Huang (2020)</b>	Online clothing rental service	Adoption motivation	TRA; IDT	SEM	n = 300 respondents in the US	<b>Environmental awareness</b> has a significant impact on attitudes to renting fashion via online platforms. The relative advantage, reinforced by <b>personal innovation and fashion awareness</b> , influences consumer attitudes to renting fashion online. <b>Price consciousness did not contribute</b> to the relative advantage.
<b>Baek and Oh (2021)</b>	Clothing rental service	Adoption motivation	TRA	SEM	n = 270 respondents in the US	Functional, economic, and emotional values significantly increase attitudes, and indirectly impact the intention to use clothing rental services.
<b>McCoy et al. (2021)</b>	Clothing rental service	Adoption motivation	TPB	Multiple Regression	n = 362 Gen Z consumers in the US	Attitudes, subject norms, perceived consumer effectiveness, past <b>environmental behaviours</b> , and fashion leadership significantly increased Gen Z consumers' intentions to use clothing rental services.
<b>Kang et al. (2024)</b>	Fashion subscription rental services	Adoption motivation	Psychological ownership, perceived value theory	Experiments	Consumers in the US: Study 1: n = 392; Study 2: n = 525	Subscribers display higher levels of sustainable consumption behaviours. Psychological ownership mediates the perceived value of sharing (choice variety, pure enjoyment, sense of connectedness) and service adoption intentions.
<b>This study</b>	Fashion subscription rental services	Box configuration	Not specific	CBCA, conditional design	n = 364 consumers in Germany	The price of the fashion box is most important followed by total value sustainability and number of items. The willingness to pay falls below the recommended retail price but can be increased for self-assembled fashion boxes by including sustainable labels.

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Table 2 (continued)

Author (year)	Object of Investigation	Focus	Theory	Method	Sample	Results
<i>Classic</i>						Young and high-income-earning females show a high intention to use subscription boxes. Past renting behaviour significantly contributes to predicting consumers' intentions to subscribe.
Sivathanu (2018)	Online subscription to cosmetics	Adoption motivation	BRT	PLS-SEM	n = 654 females in India	The "reasons for" adoption are convenience, ubiquity, hedonistic purchase motivation, social influence, and price consciousness, and the "reasons against" are traditional barriers, relative advantages, choice/diversity, and perceived risk.
Tao and Xu (2018)	Fashion subscription service	Adoption motivation	Not specific	Focus group	n = 17 respondents in the US	Knowledge about fashion subscriptions varied, but a high adoption intention prevailed. Five consumer motivations were identified: convenience, personalization, consumer excitement, trying new styles, and better management of the apparel budget. Concerns were related to a lack of social interactions and an unclear cancellation process.
Ramkumar and Woo (2018)	Subscription-based online services	Adoption motivation	Not specific	SEM	n = 300 users in Taiwan	Utilitarian and hedonic motivations, fashion consciousness, and online transaction self-efficacy have a significant positive influence on the attitude to subscriptions. A direct positive effect on usage intention was displayed by consumer innovativeness, desire for unique products, and subjective norm.
Woo and Ramkumar (2018)	Subscription-based online services	Consumer characteristics	Not specific	Logistic regression analysis	n = 385 respondents in the US	User characteristics include female gender, high trust in e-tailer and fashion consciousness, but not age and exploratory product acquisition tendencies.
Lee et al. (2019)	Subscription to cosmetic products	Product characteristics	SOR-Model	SEM	n = 357 users in the US	The product quality, the product range, and the uniqueness of the product have a significant positive influence on the attitude to subscriptions.
Kim and Kim (2020)	Subscription services	Adoption motivation	Not specific	SEM	n = 434 users in South Korea	Hedonic, convenience, economic, and innovative motives positively influenced perceived benefits and indirectly purchase intention. Social motives (subjective norm), and also innovation motives, were regarded as risk factors.
Spurgeon and Niehm (2020)	Fashion subscription-based online services	Adoption motivation, service quality	ECT	Interviews	n = 12 female users in the US	Consumers' motivations to try fashion subscription services include convenience, obtaining new style ideas, and curiosity about the service. While e-service quality was considered to be high (good customer service, package delivery, ease of website navigation), expectations in product quality and product selection were fulfilled to a lesser degree. The resulting lower satisfaction brought about a lower purchase intention.
Tao and Xu (2020)	Fashion subscription retailing	Adoption motivation	TAM	Multiple Regression	n = 265 knowledgeable participants in the US	Convenience, economic benefits, style-related benefits, perceived ease of use, and perceived enjoyment positively affect consumers' adoption intentions. Hedonic shopping orientation and experiments with appearance act as moderators.
Bhatt et al. (2021)	Fashion subscription-based online services	Adoption motivation	Not specific	Interviews, grounded theory	n = 14 users in the US	Six major motivations were identified: stylist ensures product satisfaction; convenience and saving money; stylist supports variety and experimentation; elements of surprise (excitement, thrill); self-gratification; sharing the experience on social media platforms.

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Table 2 (continued)

Author (year)	Object of Investigation	Focus	Theory	Method	Sample	Results
Johnson et al. (2021)	Clothing subscription services	Adoption motivation, box attributes	Cognitive dissonance theory	SPSS PROCESS	n = 358 respondents in the US	There was no effect of box type (full, partial, no curation) regarding cognitive and emotional dissonance or purchase intention. Dissonance and attitude were identified as mediators. A high aesthetic perception of the consumer resulted in a preference for partially curated surprise subscription boxes and a dislike of the surprise effect.
Chen et al. (2023)	Children's book subscription boxes	Adoption (de) motivation	ECT	SEM	n = 323 users in Taiwan	A negative assessment of utilitarian and hedonic outcomes, and subscription value increases disconfirmation and, in turn, the discontinuance of subscription intention. There was no effect of self-concept clarity on discontinuance intention.
Li et al. (2023)	Subscription services in different (non-fashion) categories	Customer satisfaction	ECT	Topic extraction, sentiment analysis, OLS regression	22,551 customer reviews associated with 676 subscription boxes on <a href="https://cra.tejoy.com">cra tejoy.com</a> .	Hedonic attributes of products and services and, to a lesser extent utilitarian attributes, increase customer satisfaction. Subscription time and information disclosure act as moderators.

Note: PSS=Product Service System; IDT=Innovation Diffusion Theory; BRT=Behavioural Reasoning Theory; TPB=Theory of Planned Behaviour; TRA = Theory of Reasoned Action; ECT = Expectation-Confirmation Theory; SEM=Structural Equation Model; CBCA=Choice Based Conjoint Analysis.

convenience, discounts, value for money, access to exclusive products ahead of the mass market, and offering wider choices (Day et al., 2020; Kim and Kim, 2020; Spurgeon and Niehm, 2020). The product range of a rental service covers a variety of different quality levels and price ranges (Lee et al., 2019; Tunn et al., 2021). They allow consumers to save money (Park and Armstrong, 2019). Consumers are granted access to trendy and hard-to-reach high-end clothing items at a price level that the consumer would not normally be able to afford (Armstrong et al., 2016; Lang and Armstrong, 2018; McCoy et al., 2021). When subscribing to fashion box services, consumers have particular regard for good value in the products received. This includes receiving not only discounts and bargains (Ramkumar and Woo, 2018) but also high product quality for the money spent (Woo and Ramkumar, 2018). In other words, they expect the total value of the products to be greater than the market price or the monthly subscription amount. These influencing factors point to price and value for money as important attributes of fashion subscription boxes.

Another issue is the perception of sustainable benefits in terms of being better for the environment. Studies have found that individuals with a more positive attitude towards sustainable consumption and those who engage more with sustainable consumption practices have a stronger inclination to rent clothing in the future (Jiyun Kang et al., 2024; Lang and Armstrong, 2018; McCoy et al., 2021). In particular, consumers value the potential to reduce consumption (Armstrong et al., 2016). Consumers have also become increasingly interested in purchasing more sustainable and ethical clothing from sustainable brands or labels (Byrd and Su, 2021). Although there is an increased awareness of sustainability in all areas of life, the willingness to pay a premium is not on the same level (Rausch et al., 2021). Low prices play a significant role in the purchase of sustainable fashion (Moon et al., 2015). Consumers are strongly price conscious (Lang, 2018) and consider the price-performance ratio of greatest importance (Rausch et al., 2021). Conventional apparel attributes, such as price, quality, fit, comfort, and fashion design rank higher in consumers' clothing decisions than sustainable ones (Rausch et al., 2021). The sustainable perspective again indicates that the price or price-performance ratio but also the inclusion of sustainable fashion labels are important attributes of fashion subscription boxes.

### 3. Empirical study

#### 3.1. Concept of the study

We conducted a choice-based conjoint analysis (CBCA) between-subjects experiment with a conditional design. The CBCA depicts a real purchasing decision process, choosing between different products and services and a none option (Cohen, 1997). We included the "none" option since knowledge about fashion box subscriptions is still rather limited in Germany, and the subscription models offered can vary greatly depending on the provider (see Table 1). Overall, about 17% of German online shoppers have tried subscription models in 2022 regardless of the product category (Statista, 2023).

An extension of the CBCA is the use of a "conditional" design – for example, conditional pricing. This design allows us to link attributes with each other and to determine consumer willingness to pay by calculating surcharges on a defined basic product using a linear price function (Miller et al., 2011). In the between-subjects experiment, the focus is on the *surprise effect* using curated surprise fashion boxes and its effect on preferences for specific attributes of subscription models.

We relied on Sawtooth Software to randomly assign the respondents to evaluate subscription models for curated surprise (Scenario 1) or self-assembled (Scenario 2) fashion boxes. The aim was to investigate whether there are differences in the importance of attributes between consumers. In contrast to other studies (Baek and Oh, 2021; Lee and Huang, 2020; McCoy et al., 2021) and to portray the purchase decision in a more realistic light, the survey was limited to fashion boxes for everyday wear. We used experimental studies in a related context as a starting point to obtain insights into attributes and corresponding levels (see Table 3). Additional information from current clothing rental service providers was included.

We focused on a limited number of attributes and attribute levels to avoid information overload and too many selection options (Jacoby, 1977; Krosnick, 1991). We used the first four attributes with two to four levels to characterize fashion boxes (see Table 4). We selected the attributes due to their frequent appearance in the literature. We did not include delivery intervals and extras such as return shipping fees, cancellation periods, or professional cleaning since these issues are nearly the same for all German fashion subscription providers.

The subscription price levels were related to the total value of the fashion box. Different surcharges were used depending on the increase

**Table 3**  
Experimental studies on sustainable products and subscription boxes (in alphabetical order).

Author (year)	Methodology	Research object, sample	Measurement
Bischof et al. (2020)	3 experiments	Subscription boxes in the food industry Survey 1: n = 181 U.S. respondents Survey 2: n = 194 U.S. respondents Survey 3: n = 115 U.S. respondents	Study 1: 2 (subscription: self-assembled vs. curated surprise) X 2 (delivery interval: short vs. long) Study 2: 2 (subscription: self-assembled vs. curated surprise) X 2 (delivery interval: short vs. long) Study 3: As in Study 2, additional manipulation for free returns
Boyer et al. (2021)	CBCA (8 attributes, 2–5 levels); 4 experiments	Mobile phone and vacuum cleaner robot; n = 800 British respondents	Measuring the willingness to pay for mobile phones and vacuum cleaner robots (condition: recycled, remanufactured, second hand)
Brand and Baier (2021)	ACBC (8 attributes, 3–4 levels)	Sustainability of clothing in online shopping; n = 215 German respondents	“Summed price” approach; willingness to pay; HB method
Cocquyt et al. (2020)	Focus groups; ACBC (5 attributes, 2–3 levels)	Clothes sharing platforms; n = 1512 Belgian respondents	Preference measurement of respondents with and without experience of sharing platforms, of different age groups and gender; HB method
Toteva et al. (2021)	2 experiments	Fashion subscription models; n = 207 and 304 U.S. respondents	A factorial design with a manipulated factor at two levels (curiosity: known vs. unknown) between subjects.
Tunn et al. (2021)	CA (5 attributes, 2 levels); 4 experiments	Clothing and bicycle rental; n = 47 Dutch participants	2 (rental: short term vs. long term) X 2 (rental: clothing rental vs. bike rental)

Note: CA=Conjoint Analysis; ACBC = Adaptive Choice-Based Conjoint Analysis; CBCA=Choice-Based Conjoint Analysis; HB=Hierarchical Bayes.

**Table 4**  
Study’s attributes and their levels.

Attribute	References	Level
Subscription price	Bischof et al. (2020); Lee et al. (2019); Park and Armstrong (2019)	Low price, medium price, high price
Total value of the fashion box	Lang and Armstrong (2018); McCoy et al. (2021); Park and Armstrong (2019)	€250, €500, €750, €1000
Sustainability	Hamari et al. (2016), Lang and Armstrong (2018)	Sustainable labels, non-sustainable labels
Number of items	Bischof et al. (2020)	2 items, 4 items
Not included;		
Delivery intervals	Bischof et al. (2020)	Monthly, quarterly, semi-annually, yearly
Return of (unwanted) items	Bischof et al. (2020); Park and Armstrong (2019); Tao and Xu (2018)	Free of charge, fee-based

in the fashion box’s total value (Cunningham et al., 2010; Sablotny-Wackershauser et al., 2024). The cheapest subscription is 29 euros per month and the most expensive is 79 euros per month (see Table 5). First, we defined the medium prices for the four total values of the fashion box. The pricing is based on practical examples from providers and fashion rentals such as Unown fashion. When determining the prices and total values, we ensured that the distances between the attribute levels

**Table 5**  
Overview of the subscription levels depending on total value of the fashion box.

Total value per fashion box	Low price	Medium price	High price
€250	€29/month	€39/month	€49/month
€500	€39/month	€49/month	€59/month
€750	€49/month	€59/month	€69/month
€1000	€59/month	€69/month	€79/month

were the same. Depending on the total value of the subscription box, a price surcharge of 10 euros is applied. The same principle applies to medium and high prices.

The third attribute takes sustainability into account by including or not including items with sustainable labels. The last attribute is the number of items in a fashion box. Similar to Unown fashion, the fashion box can consist of two or four items of clothing. However, the different attribute combinations include subscription fashion boxes that do not yet exist.

With regard to the attribute levels, we used a *Balanced Overlap* design because it best represents real market decisions (Orme, 2015). The CBCA consisted of a total of fifteen choice tasks per respondent. There were eleven random choice tasks and four fixed hold-out choice tasks. Each choice task included three box configurations and the “none” option. The 33 configurations shown in the random choice tasks covered almost 70% of the configurations of a complete experimental design (48 combinations). The four hold-out tasks were distributed over the random choice tasks. Hold-out tasks 1 and 3 were identical to check for inconsistent answers as proposed by Orme (2015). This was not the case, indicating that the respondents answered in a concentrated manner.

Following Orme (2015) to evaluate reliability and validity, we used the answers to the random choice tasks to estimate partworth utilities at the individual level and to predict the answers of the hold-out choice tasks from hit rates, which were high at 74.66% (Scenario 1: 76.09% and Scenario 2: 73.53%). We checked reliability by comparing the two scenario groups regarding the mean values of the partworth utilities of the attributes. We found that the mean differences were small and the Levene test revealed that the variances were the same except for sustainability.

### 3.2. Questionnaire design and measurement items

The questionnaire included a total of four sections. Starting with familiarizing the respondents with the concept of fashion box subscription to create a uniform understanding, the first part asked for general information regarding clothes shopping behaviour and properties of the clothes purchased. In the second section, the CBCA took place with the respondents being randomly assigned to the two scenario groups and having to choose a box across 15 choice tasks. We described the purchase situation and highlighted the type of fashion box - curated surprise or self-assembled. Apart from the choice attributes other factors were the same for both groups, such as monthly subscription, free return shipping, monthly cancellation, fixed monthly fee per fashion box and professional cleaning. The third part dealt with past and current subscription behaviour, the intention to subscribe to a fashion box or rent fashion and past sustainable behaviour. For the latter two, we used a five-point Likert scale from 1 (completely disagree) to 5 (completely agree). We used items from research on fashion subscription and rental as well as on sustainable clothing consumption behaviour and adapted them if necessary (see Table 6). In the last part, we collected information on the socio-demographics of the respondents. The questionnaire was pre-tested by 10 persons from a young age range such as in the targeted population.

We tested the constructs for unidimensionality and reliability (see Table 6). For past sustainable behaviour the values are below the thresholds of 50.0 (variance explained) and 0.7 (Cronbach alpha). They could be improved by omitting the second item (variance explained:



**Table 6**  
Measurement scales.

Constructs/ items	Mean (std.) <sup>a</sup>	Factor loading	Variance explained	Cronbach alpha	References
<b>Intention to subscribe to a fashion box</b>	2.11 (0.778)		85.428	0.818	
I would be willing to take up subscription boxes for fashion.	2.89 (1.201)	0.924			Baek and Oh (2021)
I intend to use fashion subscription box platforms in the next 12 months.	2.05 (0.965)	0.924			Lang and Armstrong (2018)
<b>Intention to rent fashion:</b>	2.47 (1.000)		75.234	0.835	Tu and Hu (2018)
I prefer to rent clothes instead of buying them.	2.11 (0.885)	0.859			
I am trying to replace buying clothes with renting clothes.	2.04 (0.904)	0.867			
In the future, I will rent clothes instead of buying them.	2.17 (0.903)	0.877			
<b>Past sustainable behaviour</b>	3.152 (0.725)		47.484	0.620	
When buying my clothes, I pay attention to the sustainability of the item.	3.57 (0.961)	0.754			Rausch and Kopplin (2021)
I rent clothes.	1.59 (0.873)	0.468			Added as past behaviour Diddi et al. (2019)
I make sure to buy fewer clothes.	3.96 (0.999)	0.745			
I exchange clothes, e.g., with friends and relatives.	3.49 (1.349)	0.746			Lang and Armstrong (2018)

<sup>a</sup> Scale: 1 (completely disagree) to 5 (completely agree).

59.446, Cronbach alpha: 0.641, mean: 3.674, std.: 0.852). We use the improved score for further analysis.

### 3.3. Description of the sample

A total of 364 persons participated in the online survey between February 9 and March 20, 2022, after removing drop-outs, speeders, and respondents under 18 due to a limited contractual capability. We distributed the questionnaire on relevant fashion forums and social media platforms. Our main target population was Millennials and Gen Zs with an above-average income who are the ones primarily interested in subscription boxes as a convenient and novel service (Bischof and Rudolph, 2022; NOE and Hyun, 2020; Sivathanu, 2018). Our sample reflects the targeted audience in that most respondents (89.0 %) were aged between 25 and 34 years and either students or employees. This explains why the (netto) income of almost half of the respondents was below 1000 euros. Approximately one third (37%) had an income between 1000 and 3000 euros and 11% over 3000 euros. Therefore, the

above-average income (in Germany: about 2100 euros for singles) was met only by a part of the sample. Females (71.2%) were the major constituent in the survey. The high proportion of women can be explained by their interest in fashion and shopping (Workman and Cho, 2012). Furthermore, the sample is highly educated compared to the German population (Blaeschke and Freitag, 2021) with 67% of the respondents holding at least a bachelor's degree (see Table 7).

Regarding the two scenarios, 161 respondents (44.2%) were asked to express their preferences for different curated surprise fashion box subscription alternatives and 203 respondents (55.8%) for self-assembled fashion box subscriptions.

## 4. Results

### 4.1. Consumer fashion shopping and sustainable behaviour

Most respondents buy clothes every one to three months (64.6%). Only 6.6% are frequent shoppers of fashion every two weeks or more often. On average, a purchase includes two to three new items of clothing (62.3%). About a sixth of the respondents buy either more (17.9%) or less (16.2%). While most of the respondents (40.4%) spend between 51 and 100 euros per purchase, this holds for females (80.3%) but is more for males (48.5%). As points of sale, the respondents choose the Internet (46.1%) more frequently than retail stores (36.8%) (see Table 8).

Most respondents frequently buy new clothes (82.7%). In contrast, second-hand clothes (63.7%) and, to an even greater extent, upcycled clothes (85.7%) are rarely to never put in the shopping basket. Less than half of the respondents (42.9%) wear most of their items (>80%), while a smaller percentage (18.4%) has more than 40% of unworn clothes in their wardrobe. Nevertheless, sustainability is in second place

**Table 7**  
Socio-demographics.

Demographics	Specifications	n	%
Gender	Female	259	71.2
	Male	99	27.2
	Diverse	2	0.5
	No answer	4	1.1
Age	18–24 years	138	37.9
	25–34 years	186	51.1
	35–44 years	14	3.8
	45–54 years	16	4.4
	55–64 years	9	2.5
	65 years and older	1	0.3
Monthly income	<500 euros	56	15.4
	500–999 euros	114	31.3
	1000–2000 euros	66	18.1
	2001–3000 euros	70	19.2
	3001–4000 euros	24	6.6
	>4000 euros	15	4.1
	No answer	19	5.2
Employment status	Pupil	1	0.3
	Apprentice	5	1.4
	Student	217	59.6
	Employed	116	31.9
	Self-employed	10	2.7
	Retired	2	0.5
	Other	10	2.7
	No answer	3	0.8
	Intermediate school certificate	6	1.6
Education	University of Applied Sciences entrance level	5	1.4
	“Abitur” or equivalent level	67	18.4
	Completed vocational training	36	9.9
	Bachelor's degree	176	48.4
	Master's degree	56	15.4
	Diploma	9	2.5
	PhD	6	1.6
	Other	1	0.3
	No answer	2	0.5

n = 364.

**Table 8**  
Clothes shopping behaviour.

Characteristics	Specifications	n (%)	
Purchase frequency of clothes	Weekly or more often	3 (0.8)	
	Every two weeks	21 (5.8)	
	Once a month	115 (31.6)	
	Every three months	120 (33.0)	
	Less than every three months	95 (26.1)	
	Other	10 (2.7)	
	Number of items per purchase	1 item	59 (16.2)
	2 items	141 (38.7)	
	3 items	86 (23.6)	
	More than 3 items	65 (17.9)	
	Other	13 (3.6)	
Money spent on average for a single purchase of clothes	<€25	25 (6.9)	
	€26-50	91 (25.0)	
	€51-100	147 (40.4)	
	€101-200	78 (21.4)	
	€201-300	15 (4.1)	
	€301-500	5 (1.4)	
	€501+	0 (0.0)	
	No answer	3 (0.8)	
Point of sale (usage frequency)	Online		Physical store
	Never	38 (10.4)	9 (2.5)
	Rarely	67 (18.4)	79 (21.7)
	Sometimes	91 (25.0)	142 (39.0)
	Often	146 (40.1)	100 (27.5)
	Always	22 (6.0)	34 (9.3)

n = 364.

(12.9%) on ranking product attributes, with quality being ranked the most important by a significant margin (67.3%). While the respondents largely agree on paying attention to the sustainability of fashion items when shopping, they are much less in agreement on renting clothes (n = 16, 4.4%) but prefer to make sure they buy fewer clothes or exchange them with others (see Table 9). The latter is particularly the case with females (3.85 vs. 2.61). Past sustainable behaviour is negatively related to buying new clothes (-0.456, p < 0.001), - for example, when paying attention to their sustainability (-0.352, p < 0.001) but it is positively related to second-hand (0.481, p < 0.001) and upcycled clothes (0.339, p < 0.001). Due to non-normally distributed variables, we relied on Spearman rank correlation coefficient with a two-tailed test.

Only 22 respondents (6.0%) had subscribed to a fashion box in the past whereas, currently, four respondents (1.1%) still have subscriptions to a fashion box. About three-quarters of previous (n = 17, 77.3%) and current subscribers (n = 3, 75%) and more than in the sample population (71.2%) are females. While previous subscribers could be mostly found in the age group 25 to 34 (n = 13, 59.1%) followed by 18-24 year-olds (n = 5, 22.7%) and 35 to 44 year-olds (n = 4, 18.2%), the latter age group in particular (n = 3, 75.0%) has continued to subscribe. Not surprisingly, previous and current subscribers have a higher income than non-subscribers. Previous subscribers often earned between 2001 and 3000 euros (n = 7, 31.8%) or 3001 euros and more (n = 6, 27.3%). High earners with 3001 euros and more comprised three-quarters of current subscribers (n = 3, 75.0%). In general, 38.7% of respondents (n = 141) contemplated using subscription boxes, but only 8.5% (n = 31)

**Table 9**  
Properties of clothes purchased.

Characteristics	Specifications	n (%)	n (%)	n (%)
State of clothes purchased		<b>New</b>	<b>Second hand</b>	<b>Upcycled</b>
	Never	4 (1.1)	122 (33.5)	234 (64.3)
	Rarely	26 (7.1)	110 (30.2)	78 (21.4)
	Sometimes	33 (9.1)	60 (16.5)	38 (10.4)
	Often	131 (36.0)	61 (18.6)	14 (3.8)
Unworn items per year	Always	170 (46.7)	11 (3.0)	0 (0.0)
	<20%	156 (42.9)		
	20-40%	141 (38.7)		
	41-60%	48 (13.2)		
Ranking of product attributes	61-80%	16 (4.4)		
	>80%	3 (0.8)		
		<b>Position one out of six (%)</b>	<b>Mean (std.)</b>	
	Quality	245 (67.3)	1.44 (0.738)	
	Sustainability	47 (12.9)	3.09 (1.494)	
	Product Description	30 (8.2)	3.82 (1.534)	
	Brands	26 (7.9)	4.09 (1.686)	
After-sales service	11 (3.0)	4.13 (1.340)		
	Shipping costs	5 (1.4)	4.45 (1.264)	

n = 364.

in the next 12 months. Again, more females agreed with the two questions (in general: n = 105, 74.5%, next 12 months: n = 25, 80.6%). Those willing to subscribe to fashion boxes in the next 12 months tended to be older respondents (18-25: n = 7, 22.6%; 25-34: n = 18, 58.1%; 35-44: n = 3, 9.7%, 45-54: n = 3, 9.7%). Correspondingly, the group includes fewer students (n = 10, 32.3%) but more employees (n = 17, 54.8%) and self-employed (n = 4, 12.9%).

The intention to rent clothes is low with only between 6% and 7% of the respondents agreeing to do so in the future. However, the items concerning the intention to rent clothes and the intention to subscribe to fashion boxes are closely related (Cronbach's Alpha: 0.860, variance extracted: 64.94%). In addition, there is a high correlation between past renting behaviour and the intention to subscribe to fashion boxes in general (0.416, p < 0.001) and in the next 12 months (0.549, p < 0.001).

#### 4.2. Results of the choice-based conjoint analysis

Using the Hierarchical Bayes (HB) analysis, partworth utilities and relative importance scores were calculated (see Table 10). Accordingly, no major differences in preferences were found in the partworth distributions of the two scenarios. Regarding the relative importance of the attributes, the price of the fashion box has a major influence on the purchase decision, followed by total value and sustainability. For self-assembled fashion boxes (Scenario 2), sustainability is in the top position and price and total value are close by. The number of items in a fashion box has the lowest relative importance (Scenario 1: 14.89 %; Scenario 2: 12.64 %).

Regarding the attribute levels, the lowest price has the highest preference (curated surprise box: 54.93; self-assembled box: 52.60). In contrast, the highest total value of the fashion box and the highest price of the box are preferred the least. This result is supported by the literature and, thus, confirms that a low price is preferred (Armstrong et al., 2016; Hustvedt and Dickson, 2009; Joergens, 2006; Lang, 2018). The lowest price is closely followed by sustainable labels. The respondents prefer sustainably produced items in fashion boxes than not. In purchase

**Table 10**  
Relative importance of the attributes and partworth utilities of the attribute levels depending on the scenarios.

Attribute	Sample		Curated surprise fashion box (Scenario 1)		Self-assembled fashion box (Scenario 2)	
	Relative importance	Partworth utilities (std.)	Relative importance	Partworth utilities (std.)	Relative importance	Partworth utilities (std.)
<b>Price</b>	<b>29.18</b>		<b>29.54</b>		<b>28.90</b>	
Low		53.02 (19.95)		54.02 (19.28)		52.23 (20.49)
Medium		-2.68 (11.32)		-3.11 (12.52)		-2.34 (10.30)
High		-50.34 (20.08)		-50.91 (19.63)		-49.89 (20.48)
<b>Total value</b>	<b>28.57</b>		<b>28.68</b>		<b>28.48</b>	
250 euros		44.61 (56.70)		44.02 (55.80)		45.07 (57.55)
500 euros		26.10 (14.94)		26.68 (13.39)		25.63 (16.08)
750 euros		-14.13 (21.93)		-12.84 (22.42)		-15.15 (21.55)
1000 euros		-56.57 (40.91)		-57.86 (38.55)		-55.55 (42.76)
<b>Sustainability</b>	<b>27.87</b>		<b>26.52</b>		<b>28.95</b>	
Sustainable labels		49.35 (33.07)		47.10 (32.99)		51.14 (33.12)
Non-sustainable labels		-49.35 (33.07)		-47.10 (32.99)		-51.14 (33.12)
<b>Number of items</b>	<b>14.38</b>		<b>15.26</b>		<b>13.67</b>	
2		-25.46 (21.17)		-27.11 (21.97)		-24.16 (20.49)
4		25.46 (21.17)		27.11 (21.97)		24.16 (20.49)
<b>None option</b>		68.48 (143.58)		69.34 (141.89)		67.80 (145.27)

Note: HB method: zero-centred; std. = standard deviation, Scenario 1 (n = 161) and Scenario 2 (n = 203).

decisions, price and sustainability are often considered together (Armstrong et al., 2016; Rausch et al., 2021). Consumers pay considerable attention to the value they get for their money (Mont, 2002; Rexfelt and Hiort af Ornäs, 2009). Regarding box size, four items are preferred to two items.

The partworth utility of the “none” option is the highest. This option was selected on average 43.77 % of the time in all (random and fixed) choice tasks. This is a rather high value and may be due to respondents being sceptical and resistant to such subscriptions, despite the information (Armstrong et al., 2015). While 14.0% (n = 51) of the respondents chose no box configuration in every 15 choice tasks, 19.5% (n = 71) always selected one. In particular, males had difficulties deciding for or against a subscription box and often chose either the “none” option (n = 18, 18.2%; females: n = 32, 12.4%) or a box (n = 25, 25.3%; females: n = 44, 17.0%). Older respondents more often opted for the “none” option (45–54: 37.5%, 55–64: 44.4%) while, young respondents opted for a box configuration in every 15 choice tasks (18–24: 19.6%, 25–34: 21.0%, 35–44: 28.6%). Not surprisingly, those respondents always choosing the “none” option had a significantly lower usage intention concerning subscription boxes in the future (mean value: 1.49 vs. 3.12) and in the next 12 months (mean value 1.29 vs. 2.18). Renting clothes as past sustainable behaviour correlated with the number of box configurations in the choice tasks (0.188, p < 0.001). In contrast, other sustainable behaviour displayed an inverse U-shaped distribution – for example, exchange of clothes (mean values: none option: 3.06, 1–14 boxes: 3.67, 15 boxes: 3.20).

We used conditional pricing to calculate price willingness. Conditional pricing takes into account the fact that higher total values of a fashion box come with higher prices. Besides information on consumer preferences regarding the total value or other attributes of a fashion box, information on the average price levels at which a box can be offered can be collected. The cumulated utilities of a baseline box (BB) that excludes the price utility – for example, a box with a total value of 250 euros, no sustainable labels, and a total of two items (-30.21) – is compared with the utility of the “none” option (68.48). The two utility values and a linear price function were used to calculate the intended retail price of the box per month (Miller et al., 2011). Subsequently, the BB was varied based on other attributes (see Table 11).

Overall, the intended retail price for the BB is lower than the lowest price defined, depending on the total value of the fashion box for the CBCA. For example, the price of 29 euros per month for a fashion box with a total value of 250 euros, no sustainable labels, and two items would be too high because the BP is preferred to the “none” option at an intended retail price of 20.16 euros per month. For scenario 1 and scenario 2, the prices should be 20.33 euros and 20.03 euros per month,

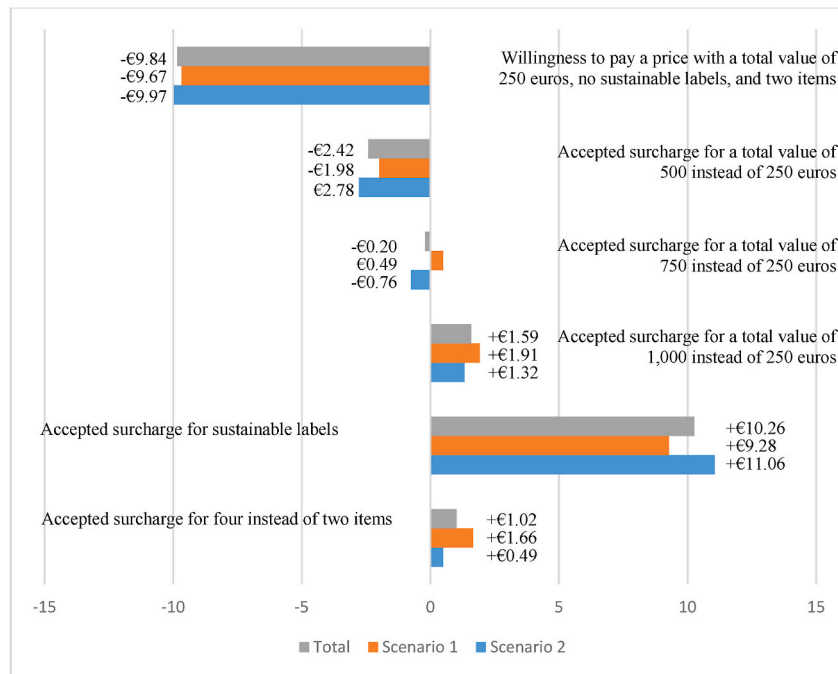
**Table 11**  
Intended retail price in euros per month for the baseline box and its variations.

Subscription box	Sample	Curated surprise fashion box	Self-assembled fashion box
	<b>Intended retail price in euros per month</b>		
Baseline box (BB)	20.16	20.33	20.03
BB with a total value of 500 euros	26.58	27.02	26.22
BB with a total value of 750 euros	28.80	29.49	28.24
BB with a total value of 1000 euros	30.59	30.91	30.32
BB with sustainable labels	39.26	38.28	40.06
BB with four items	30.02	30.66	29.49

Note: BB=Baseline box; curated surprise fashion box with n = 161 and self-assembled fashion box with n = 203.

respectively. Whereas, for an increase of 250 euros in value, a surcharge of 10 euros is applied in three steps, the intended retail price only marginally increases to 30.59 euros per month for a BB with a total value of 1000 euros. In contrast, for a BB with a total value of 250 euros and sustainable labels, the respondents are prepared to pay 39.26 euros per month. In the self-assembled scenario 2, the price is even higher at 40.06 euros per month. The price for a BB with four items corresponds to the low-price level (29 euros per month). Willingness to pay for this type of box is higher for the curated surprise fashion box. Fig. 1 shows the surcharges for both scenarios.

In particular, when considering the BB with various value increases (500, 750 or 1000 euros), only a surcharge of up to 1.91 euros per month is acceptable for subscription to the fashion box. This explains the high percentage of respondents selecting the “none” option. In general, there is a willingness to pay a surcharge of about 10 euros for the BB with sustainable labels and two garments or a small surcharge for the BB without sustainable labels and four items. The willingness to pay for an “ideal” fashion box (250 euros, 4 items, sustainable labels) is 49.12 euros for the sample as a whole. For scenario 1 and scenario 2, the “utility maximal” prices are 48.62 euros and 49.53 euros per month, respectively. For 80.5% of the respondents, the “ideal” fashion box is attractive with cumulated utilities being higher than the “none” option. For the self-assembled fashion box the percentage is slightly higher (82.5%) than for the curated surprise fashion box (77.6%).



Note: curated surprise fashion boxes (Scenario 1) with n=161 and self-assembled fashion boxes (Scenario 2) with n=203

Fig. 1. Average willingness to pay for selected subscriptions

Note: curated surprise fashion boxes (Scenario 1) with n = 161 and self-assembled fashion boxes (Scenario 2) with n = 203.

5. Discussion

5.1. The need to investigate the configuration of fashion subscription boxes

This study aimed to investigate the extent to which two different subscription models for fashion boxes – curated surprise or self-assembled – are preferred and which attributes influence their selection. In addition, we were interested in the effect of past sustainable behaviour and socio-demographic characteristics of consumers on their subscription preferences.

Taking previous studies in other countries into account, the subscription rate was low. 94% of the respondents had no experience with fashion subscription services compared to 45%–76% (Lee and Huang, 2020; Tu and Hu, 2018). Most of the respondents had very limited knowledge of a subscription model for fashion boxes and were largely unfamiliar with this shopping concept. Past subscribers reflect only a very small percentage of the sample. This represents a major challenge for preference evaluation given the lack of customer experience, and it results in a high percentage of respondents selecting the “none” option.

5.2. Relevant attributes and differences in box types (research questions 1 and 2)

The price had a major influence on the evaluation of the two fashion box types, with the relative importance being higher for curated surprise fashion boxes than for self-assembled ones. For curated surprise fashion boxes, the price is a decisive factor because they are associated with the risk of receiving items that do not appeal. Overall, curated surprise subscriptions are not very attractive. Respondents would accept a small surcharge if four items are supplied in the box. Consumers can then try out more combinations and have a wider choice of alternative items. The appeal of curated surprise subscriptions can be increased by reassuring consumers that the curation can be adapted to their style preferences and reflected in future boxes (Armstrong et al., 2015). However, the surcharge will not cover the costs of the service because consumers are

only willing to pay slightly more than for self-assembled fashion boxes.

The partworth utilities were the highest for a total value of 250 euros per box for both box types. Together with the slow increase of a surcharge in conditional pricing, on average, the respondents believe that a fashion box with a higher total value is not worth the additional cost. Therefore, consumers prefer a low price related to a low total value over using such fashion boxes for sustainable reasons. However, the pricing of many fashion rental services focuses on a higher-earning target group (Armstrong et al., 2015). The results confirm the findings of Baek and Oh (2021) that the interest of consumers in renting fashion is not necessarily driven by the perception of the sustainable benefits of fashion rental. The picture is different for self-assembled fashion boxes, where sustainable labels are relatively important and the willingness to pay is high when consumers can select the items themselves.

5.3. Consumer characteristics (research question 3)

The results show that past renting behaviour –although appearing little in the sample - contributes significantly to describing consumer behaviour and intention to subscribe to fashion boxes. People who have already subscribed or continue to have a subscription are highly interested in different box alternatives and show negative partworth utilities for the “none” option (past subscription: 38.06, std. 104.97; current subscription: 118.17, std. 100.61). However, for past subscribers the subscription intention in general (mean values 2.36 vs. 3.16, p < 0.04) and in the next 12 months (mean values 3.18 vs. 4.00, p < 0.01) is significantly lower, pointing to some dissatisfaction with the subscription offers. For current subscribers, the intention to subscribe to (additional) fashion subscription boxes was equally low (mean values in general: 1.50 vs. 3.13, p < 0.11, in the next 12 months: 1.75 vs. 3.97, 0 < 0.06). Due to the non-normality of the variable distributions, we used a Mann-Whitney-U-test.

We found positive relationships between subscription intention and giving thought to the sustainability of fashion items when shopping (in general:  $\rho = 0.177$ , p < 0.001, in the next 12 months:  $\rho = 0.155$ , p < 0.001) and swapping clothes (in general:  $\rho = 0.121$ , p < 0.001, in the

next 12 months:  $\rho = 0.109$ ,  $p < 0.001$ ). Again due to the variables not normally distributed and we relied on Spearman rank correlation coefficient with a two-tailed test. There was no relationship between consumer minimalism (Pangarkar et al., 2021) – for example, buying fewer clothes – which suggests that subscription boxes are not a means to reduce fashion consumption. People who have a more positive attitude towards sustainable consumption or have more confidence in their sustainable behaviour have a stronger intention to opt for renting or swapping clothes in the future. In addition, people who have more experience with sustainable consumption practices are more likely to behave sustainably again and again (Boyer et al., 2021).

The results of this study are in line with previous studies that higher-earning and higher-educated females between 25 and 44 years old are more likely to take up fashion subscription boxes (Bodenheimer et al., 2022). While fashion subscriptions have a financial benefit, an important reason for non-adoption might be the limited income of students and university graduates as the target group (Tao and Xu, 2020). For the majority, income is low and sustainability is not an issue – sustainably produced clothing is more expensive on average (Connell, 2010; Goworek et al., 2012). Consumers might regard sustainable items as (too) expensive for their lifestyle and prefer self-selection of clothing to make sure they get the right products.

#### 5.4. Implications

Clothing subscription providers have one of the highest churn rates worldwide, with 8.7% in 2022 (Statista, 2024b). Correspondingly, the retention rate was 29% in 2022 (Statista, 2024a). Customer expectations that have not been met are an important reason for the cancellation of subscriptions (Bischof et al., 2020). In general, consumers preferred four items instead of two. Consumers can try out more combinations, and they have a greater selection available to choose from. The higher number of items can help to reduce the return rate for unwanted items in fashion subscription boxes which is on average 25% (Virtue Market Research, 2024). Price plays a major role in subscribing to fashion boxes and should be carefully selected. The reference price for the baseline model was about 20 euros and much lower than the basic prices of current German subscription providers. The value of the box did not have a corresponding increase in the willingness to pay. Therefore, providers should opt for a low-priced baseline model. In contrast, customers are willing to pay the highest surcharge for sustainable labels, which should be included in the product range of the provider.

Different recommendations emerge according to the type of subscription model. The results confirm that curated surprise subscriptions are affected by fear on the part of consumers receiving unattractive items (Bischof et al., 2020). However, if a curated surprise subscription provider manages to cater to the taste of consumers, there is the prospect of gaining their loyalty. Knowledge of customers in terms of their habits, likes, and dislikes combined with a suitable product selection are part of the value proposition of curated surprise subscriptions. The longer the subscription period, the more the provider can learn about the customer's preferences and the better the curated surprise offer. Price plays the most important role in curated surprise fashion boxes. In comparison, the low price for self-assembled fashion boxes was less important. Choosing clothing items oneself delivers greater assurance; low price is not always a priority but sustainable labels are.

To reduce concerns and increase awareness while, at the same time, recognizing that consumers have very little or no experience, providers can launch a wide-reaching promotional campaign on the concept of fashion subscription boxes. The benefits of non-ownership should be emphasized, with customers having the opportunity to experience a greater variety of items without the need for maintenance, repair, or storage over time. In particular, the focus should be on sustainable labels and minimalist consumption, since paying attention to the sustainability of fashion items (0.657,  $p < 0.001$ ) and buying fewer clothes (0.391,  $p < 0.001$ ) are highly correlated to sustainability as a product attribute. The

relationship between sustainability and renting (0.195,  $p < 0.001$ ) or swapping clothes (0.231,  $p < 0.001$ ) is less prevalent and seems to require greater explanation given the consumer preference for new clothes. Finally, concepts need to be developed to help the consumer compare the cost of a subscription model with buying new items because customers pay particular attention to the price–performance ratio.

#### 5.5. Research limitations and future research

There are certain limitations apparent in our results that, nevertheless, provide scope for future research. The first limitation is the composition of the sample, where the target group is constituted principally of females (71.2%) and young persons under 35 years (89.0%). Women are more interested in fashion and, therefore, more positive on the topic than men. In addition, the sample is comprised largely of respondents with a similar level of education and income – 59.6% being students and 46.7% earning less than 1000 euros per month. Overall, most respondents did not use subscription services (past subscription: 6%, actual subscription: 1.1%). We found that older respondents at work with a higher income are more prone to subscribe to fashion boxes. To assess future usage intentions, we relied on self-estimated items but not actual subscription behaviour, which makes prediction difficult. In summary, the results may not be representative of the general target group addressed by the subscription providers but, nevertheless, they offer preliminary insights into a young age group in Germany. In North America, fashion subscription boxes are much more common and, as early as 2017, the share of millennials with an active fashion subscription box was 28% (Statista, 2024c). The results may vary due to cultural differences.

In this study, a CBCA with an experimental design was chosen, which reflects the preferences of consumers concerning subscriptions to curated surprise or self-assembled fashion boxes. Respondent preferences are reflected in the choice of subscription alternatives, which may not reflect actual subscription behaviour (Tunn et al., 2021). The success of the study depends heavily on the selection of attributes and their levels that determine preferences. We based our study on existing offers from German providers. However, we did not include other cues from consumers such as contamination concerns and providers (return policy, potential damage), which might influence customer preferences for different fashion subscription models (Armstrong et al., 2015; NOE and Hyun, 2020; Tunn et al., 2021). Accordingly, more research on relevant attributes – for example, using focus groups and other interview techniques would be of interest. Regarding the different subscription types available for fashion boxes, other existing concepts from business practice could be considered. For example, a Modami fashion box includes self-assembled and, to some extent, curated items. The customers can engage with the brand and select some items themselves but still experience the surprise effect.

Conducting the study with a larger sample of subscribers could provide interesting results and allow a comparison between subscribers and non-subscribers. A cluster analysis to identify different consumer groups could provide more targeted recommendations for action (Wallner et al., 2022). Furthermore, a focus on other sectors – for example, sportswear – is recommended. In addition, second-hand subscription boxes relying exclusively on vintage clothing could shift the focus to an alternative business model in the circular economy.

## 6. Conclusion

In our research, we focused on how subscription models are configured for fashion boxes as a sustainable business model in the circular economy. Our results confirmed the importance of sustainable labels, supporting the view that consumers pay attention to the sustainability of fashion items. However, a sustainable transformation of the clothing and textile industry requires an interplay of different factors and players from different areas and levels. In particular, customers still

seem to focus more on new fashion items and less on renting or swapping clothes when it comes to sustainability. Companies from the clothing and textile industry could play a pioneering role in this respect because they already have a customer base that has confidence in their businesses. Developing the clothing industry in the direction of the circular economy could inspire other companies from different industries to implement sustainability measures.

### CRedit authorship contribution statement

**Alexandra Rese:** Writing – original draft, Investigation, Formal analysis, Data curation. **Daniel Baier:** Methodology, Investigation, Conceptualization.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data availability

Data will be made available on request.

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