User acceptance and adoption of circular offerings in the fashion sector: Insights from user-generated online reviews

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ABSTRACT

Recent research on circular offerings has indicated that the lack of consumer and user acceptance of circular offerings is one of the primary barriers for the transition to a circular economy. Available studies on this topic have used data from hypothetical scenarios, reducing their explanatory potential. Today, established circular businesses such as fashion subscription services open new research opportunities to address such limitation. In this context, this paper assesses the suitability of user-generated online reviews as a novel source of information for investigating factors and conditions of acceptance and adoption of circular offerings in the fashion sector. Based on the data analysis, it was found that user-generated online reviews were credible, contributed with new insights regarding factors and conditions of acceptance and allowed us to analyse a significant number of observations. The reviews provided significant insights into economic factors and the impacts this type of offering had on the daily life of users, an aspect that has been studied rarely, so far. Nevertheless, this type of data sources also presented some limitations. On the one hand, and because of their nature, they did not offer significant insights into other consumer and user acceptance factors identified in the literature such as demographic, psychosocial and cultural factors. On the other hand, they only provided a snapshot of the user experience in a given moment of time. To address these limitations, we suggest future research on user and consumer acceptance of circular offerings should investigate ways to integrate user-generated online reviews with more traditional tools and methods to gain insigths into cultural and psychosocial factors, explore additional sources that can help capture the dynamics of service use such as social media, online communities and customer service chats, and expand data collection to other market segments.

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1. Introduction

Compared to many other large industries, the fashion sector has a high potential for achieving resource efficiency (Gwozdz et al., 2017). While the production of clothes has been underscored as a major source of negative impacts, including greenhouse gases emissions, chemical pollution, water consumption, the usage phase (specifically the laundering of clothes) also causes substantial impact, due to the energy consumption and waterway pollution through microfibers leakage (Brooks et al., 2017). Regarding end-of-life, the Ellen MacArthur Foundation (2017) has estimated that 73% of the annual fibre and clothing production is incinerated globally and only 12% is recycled or cascaded into new products as a consequence of massive underutilisation of clothes in middle and high-income economies.

These challenges happen along the value chain, i.e. the design, sourcing, manufacturing, usage and disposal stages and thus, require actions in every stage (Caniato et al., 2012; Harris et al., 2016). The literature on fashion and sustainability has offered a number of strategies to overcome various sustainability challenges, including organic materials, modular design and business models based on services that contribute to the use intensification of clothes (Fletcher, 2012; Laitala, 2014a; Moreno et al., 2016; Niinimäki, 2013). This last category, services to intensify utilisation, includes offerings that contribute to closing material loops such as product service systems (PSS), sharing activities and collaborative consumption (Bocken et al., 2016; Lewandowski, 2016).

In recent years, fashion and clothing companies have

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implemented such types of business models under the name of fashion subscription services which offer customers the chance to access an inventory of garments in exchange for a monthly fee (Pike, 2016). Fashion subscription services can be considered as radical innovations because they disrupt traditional forms of value creation and delivery (Vezzoli et al., 2012). However, radical innovations face multiple challenges, in particular, the lack of consumer —or user acceptance (Kirchherr et al., 2017; Rizos et al., 2016; Tukker, 2015). User acceptance has been defined as the positive intention of an individual to access a service or acquire a product (Schrader, 1999).

Although there has been some research on user acceptance of circular offerings such as PSSs, the sharing economy and collaborative consumption, there is still need for further insights (Camacho-Otero et al., 2018). Moreover, and because of a shortage of real-life examples, such studies have been mostly based on hypothetical scenarios, which constrains their explanatory potential (Qu et al., 2016). Existing fashion subscription services can be used as case studies to provide further insights into user acceptance. Such companies are usually digitally enabled, meaning that they use the Internet as their selling channel. Because of this, novel sources of data such as user-generated online reviews become available for further exploring user issues (Cui et al., 2012). Existing literature on user acceptance of circular offerings in the fashion sector has yet to explore the potential such source offers to better understand factors and conditions influencing demand. Based on these observations, this paper presents the findings of an exploratory study addressing two questions:

- Are user-generated online customer reviews suitable to provide insights regarding factors influencing user acceptance?
- What factors influence the user acceptance of digital circular offerings in the fashion/clothing sector?

The paper is structured as follows. The next section offers a background regarding circular offerings and user research in the field of sustainable consumption. In section 3, the materials and methods used for collecting and analysing the data are provided. Section 4 presents and discusses the results of the literature review on user acceptance of circular offerings, the analysis of the data about factors for acceptance, and the suitability of user-generated online reviews followed by section 5, which presents some conclusions.

2. Background

2.1. Circular offerings in the fashion sector

Circular offerings in the fashion sector aim to help users satisfy their needs while complying with circular economy principles. According to the literature, Product Service Systems (PSSs), the sharing economy and collaborative consumption are examples of circular business models (Bocken et al., 2016; Lewandowski, 2016). Mont (2002) defined PSSs as bundles of products, services and infrastructure offered by a company to their customer base in order to satisfy their needs. According to Tukker (2004), PSSs can be categorized into product, use and result oriented depending on the level of servitization. From a circular perspective, use and result-oriented PSSs have the highest potential to enable recirculation of products and materials (Tukker, 2015). Following Schor (2014) the sharing economy 'activities' fall into four categories: recirculation of goods, increased utilisation of durable assets, exchange of services and sharing of productive assets. The first category refers to marketplaces for second-hand goods; the second type refers to leasing or renting of assets like cars or houses. The third category

includes time banking initiatives or platforms connecting people to complete small tasks in exchange for money. Finally, the fourth category refers to the sharing of production spaces.

Collaborative consumption refers to activities or offerings that specifically help recirculate goods and services. It was first defined as the collection of events "in which one or more persons consume economic goods or services in the process of engaging in joint activities with one or more others" (Felson and Spaeth, 1978, p. 614). In a review about collaborative consumption definitions, Ertz et al. (2016) found that collaborative consumption often has been associated with internet-mediated interactions and access-based consumption. However, they contested both characterisations by arguing that also offline initiatives exist that help recirculation and that those activities entail the transfer of ownership via reselling or swapping.

Few studies have investigated the environmental impacts of such offerings. Iran and Schrader (2017) explored the environmental impacts of collaborative fashion consumption, which encompassed gifting, lending, sharing, swapping, renting, leasing, and second-hand use. The authors suggested that these offerings have positive environmental effects via gains in efficiency and encouraging sufficiency. These offerings may improve resource efficiency because they intensify the use of clothes and extend the life of products. Moreover, if a company is the owner of the stock, such offerings may incentivize eco-design and reduce the impacts during the use phase, as many of these offerings include professional care. From a sufficiency perspective, Iran and Schrader (2017) suggest that these offerings could result in users feeling satisfied with what they have, eliminating the desire for new products.

In addition to this study, Zamani et al. (2017) conducted a life-cycle analysis of clothing libraries, which is another example of collaborative consumption in the fashion sector. They defined a series of scenarios based on lifetime extension, mode of transportation and type of distribution channel. The authors highlight the risks of rebound effects and problem shifting regarding this type of offerings, i.e. environmental impact reductions in one stage can be offset in another stage. For example, Zamani et al. found quantitative evidence that environmental impact reductions in the production phase, particularly associated to global warming potential, were offset by the impacts of increased customer transportation in their offline scenario.

In this section, we illustrated how fashion subscription services are examples of circular offerings in the fashion/clothing sector. Under this model, a company offers its customers access to their collection of garments in exchange for a monthly fee which aims at extending the service life of garments. Although Park and Armstrong (2017) classified this type of business model as a form of collaborative consumption, it better fits the description of a use-oriented PSS as defined by Tukker (2004) because the company owns the inventory which is circulated among its customers. Independently of the category relevant for fashion subscription services, they are an example of a business using a circular model that aims at intensifying the use of materials via recirculation.

2.2. User acceptance of sustainable offerings

Circular offerings in the fashion/clothing sector can be considered an example of sustainable consumption, and as such, they face challenges regarding user acceptance (Ceschin, 2013; Kirchherr et al., 2017; Tukker, 2015). Gwozdz et al. (2017) found a systematic lack of user support for alternative forms of consumption of clothing such as clothing rental, leasing and swapping. In this section, we offer an overview of different theoretical approaches from the field of sustainable consumption that aim at explaining why people change the way they consume. The purpose of this

overview is to provide a theoretical basis for classifying the findings from the literature and the data.

According to different reviews on research about consumption (Halkier et al., 2017) and sustainable consumption (Jackson, 2005; Reisch and Thogersen, 2015), research on the topic has used three different approaches when explaining why people consume: the individual perspective, the social structure and social practices. Approaches using an individual perspective include explanations based on economic, psychological and cultural factors. Economic explanations assume that people are utility-maximising individuals who make decisions based on cost-benefit analyses and suggest that aspects such as price, risks and information are fundamental when making a choice. According to (Jackson, 2005) criticism against these explanations point out that people have bounded rationality; they follow emotions and are creatures of habits.

Alternatively, social psychologists such as Ajzen (1991) developed the Theory of Planned Behaviour (TPB) suggesting that behaviour depends on the attitudes of the individual, the personal or subjective norms and the perceived behavioural control. This explanation has faced some criticism, particularly regarding their lack of insight into moral, affective and habitual processes, the assumption that only attitudes form behaviours when research has illustrated how behaviours also affect attitudes, and the absence of context in explanations about what influences behaviour. Extended formulations of this model in the context of sustainability have incorporated aspects such as norms and habits (Bamberg et al., 2007; Klöckner and Blöbaum, 2010).

The final set of theories using the individual as the main unit of analysis is referred to as Consumer Culture Theory (Arnould and Thompson, 2005). Here, consumption has a symbolic value to the individual and is thus not only about satisfying physical needs but also non-materialistic (Arnould and Thompson, 2005). Examples of studies using a cultural approach to sustainable consumption include investigations about anti-consumption (Chatzidakis and Lee, 2013), voluntary simplicity (McDonald et al., 2006) and green identities (Autio et al., 2009; Hurth, 2010).

In contrast to these individual-based explanations, authors such as Schor (2008) suggested that social structures and conventions are at the heart of consumption. She investigated how working life conditions, such as work time could alter consumption patterns. Sanne (2002) discussed how societal transitions such as urbanisation had influenced user preferences for independent houses and consequently have increased demand for household appliances. Changing consumption would then require altering such social structures and their dynamics, beyond the direct influence of individuals.

A third perspective focuses on social practices, in an attempt to bridge these two approaches based on the individual and on social structures. A practice was defined by Schatzki (2001, p. 11) as the "embodied, materially mediated arrays of human activity centrally organized around shared practical understanding." Examples of practices are washing, commuting and driving. However, they are not only the result of the individual's doing; they are the result of many people performing them and reproducing their elements. Consumption patterns are the result of the intersection of multiple practices in one individual (Warde, 2005) and changing such patterns can only happen if the elements of the practice are (re) configured or new practices are adopted. In research on sustainable consumption, this approach has been used to study inconspicuous consumption, based on routines and to offer additional accounts that could address the 'intention-behaviour' gap (Welch and Warde, 2014). Within practices, the elements that constitute them (meanings, competencies and materiality as suggested by Shove et al. (2012)), the interlinkages between such elements and other practices (Mylan, 2015), and the opportunities for

embodiment (Huber, 2017), all influence the level of engagement with a certain practice.

The literature on sustainable consumption reveals how changing consumption patterns can be explored from different ontologies, the individual, social structures and/or social practices. As a result, researchers have suggested economic (Armstrong et al., 2015; Frota Neto et al., 2016; Hazen et al., 2017), psychosocial (Harris et al., 2016; Laitala, 2014b; Pizzol et al., 2017), cultural (Akbar et al., 2016; Lang and Armstrong, 2018) and socio-material (Petersen and Riisberg, 2017; Rexfelt and Hiort af Ornäs, 2009) factors and conditions that influence acceptance and further adoption of sustainable consumption patterns. Economic factors include price, income and the provided information about the product or service. Psychosocial factors refer to the attitudes, beliefs, values, personal norms, and perceived behavioural control; it also can include emotions and habits. Furthermore, cultural factors refer to how consumption activities help individuals build a sense of identity and to communicate with others. Finally, socio-material aspects do not pertain to the individual but influence whether and how people engage with practices that contribute to sustainability.

2.3. User-generated content for consumer research

The digitalisation of business has transformed many relationships between customer and company by opening new roads for interaction. While in the era of traditional offline businesses user research was done using traditional tools such as surveys and interviews, today the Internet has become a new "lieu" for data collection (Hine, 2000). User-generated online reviews have become a new source for this type of research. Yang and Fang (2004, p.310) initially defined online reviews as "an exception-reporting mechanism for identifying weaknesses to be corrected or strengths to be reinforced." More recently and as the result of the expansion of the digital economy, online customer reviews are defined as "peer-generated product evaluations posted on the company or third party websites" (Mudambi and Schuff, 2010, p. 186). They are considered by Dholakia and Zhang (2004) as a new emerging form of qualitative data in the era of the Internet that can unveil positive and negative aspects of the offering reviewed.

User-generated online reviews are a form of electronic word of mouth, a peer-to-peer way of non-commercial communication that offers information about products and services on the internet, via different channels (Mauri and Minazzi, 2013). This type of communication is an important source for users when planning to acquire a product or a service online (Cui et al., 2012). Although the existence of product reviews and the option to access them has proven to have a positive relationship with sales, more recent research has found that content and helpfulness are more relevant features (Korfiatis et al., 2012). These authors defined helpfulness as the level at which a specific review was found useful by other users when deciding what product or service to acquire, while content refers to the quality of the insight provided by the reviewer. Content can help clarify the elements that contributed to the specific experience.

From a research perspective, Dholakia and Zhang (2004) argue that online data sources such as user-generated reviews are advantageous and provide seven characteristics to support their claim:

- Text-based: they allow people to be more articulate regarding what they want to communicate and they afford the use of traditional forms of quantitative and qualitative data analysis.
- Public: the costs of acquiring the data are rather low compared to traditional tools such as surveys.

- Anonymity: they allow participants more freedom to express what they want. However, in some cases, as in user-generated online reviews, anonymity is seen as a limitation, and personal information is seen as a sign of credibility (Korfiatis et al., 2012; Mauri and Minazzi, 2013).
- Unbiased input: reviewers usually do not expect to receive a pecuniary reward for providing the information, which usually results in the unbiased input. However, in the specific case of online reviews as a data source, there have been cases of paid reviews.
- Unsolicited data: information shared on the internet and on different sites is often unsolicited by the researcher, thus providing unfiltered data that is not limited by specific questions.
- Permanent availability: online data is constantly generated and usually remains available, allowing the researchers to come back and to perform longitudinal analysis, what the authors called temporal flexibility.
- Geographic diversity: participants are usually from different locations, offering the opportunity to get insights from diverse geographies, a common limitation with more traditional forms of data collection techniques.

Different industries, with the help of researchers, have been using user-generated online customer reviews as a source of data to understand their customer base. For example, Yang and Fang (2004) used reviews to identify relevant service dimensions explaining satisfaction and dissatisfaction in the securities sector. Mauri and Minazzi (2013) used web-based reviews to assess their influence on the purchasing decision of young customers in the accommodation sector. They explored how valence and the credibility of online comments affected the purchasing decision of their target audience. They defined valence as the positivity or negativity of the review, while credibility referred to how convincing the argument presented by the reviewer seems to the customer or its validity. Credibility depends on three aspects; first, how much personal information about the reviewer is available. Second, the description of the actual experience, and third, how much the review is in agreement with other reviews.

Although online customer reviews are increasingly used as a source for user research, they present some limitations. First, individuals that post customer reviews are not representative of the general customer base of a company; they are committed individuals that take the time to write down their experiences (Hu et al., 2009). In addition, they tend to report extreme experiences, either positive or negative, which do not necessarily account for the experiences of the average customer. As a result, conclusions resulting from their analysis might not be generalizable to a wider population. Moreover, since customers do not have objective reference points to evaluate the performance of the product or service, their reviews only reflect subjective interpretations of the offering. Finally, there is always the risk of competitors creating fake reviews which in some reports have been estimated to account for one-third of all online reviews (Mauri and Minazzi, 2013; Munzel, 2016). The advantages of user-generated online reviews as a data source to explore success factors and barriers for user acceptance strongly outweigh these shortcomings, thus justifying their potential.

3. Materials and methods

In order to answer our two research questions, an exploratory study was conducted. First, factors influencing user acceptance of circular offerings in the fashion/clothing industry were identified by means of a literature study. Then, three case studies were

analysed to explore the suitability of user-generated online reviews in identifying factors and conditions of acceptance. The study followed a qualitative research approach by analysing customers' perceptions of the service provided by the selected companies expressed through user-generated online reviews.

3.1. Literature review

As the first step in this research, we conducted a literature study to identify relevant inputs that addressed consumer and user acceptance. A structured search in two major scientific literature databases, Web of Science and Scopus was conducted using different keywords and strings: "product-service systems", "eco-efficient services" "sharing economy", "collaborative consumption". Each of these terms was combined with the keywords "user" and "user". Additional queries were applied using terms such as "clothes swapping", "clothes reselling", "second-hand clothes", "clothes leasing", "clothes renting" in combination with "user" and "user", to supplement this set of papers, resulting in five additional articles. The set of articles selected was complemented following a back and forth snowballing procedure searching for articles that either used the selected studies as references or were referenced by them. The references selected are presented in Table 1. Each article was read, and factors of acceptance were identified. The collection of factors was then organized in order to find similarities among factors. Similar factors were grouped together. Each group of factors was then analysed looking for common denominators following the theory discussed above (economic, psychological, cultural). The common denominator for each group was used as the category label.

3.2. Case studies

Three US-based companies (A-C) offering online fashion subscription services were selected as case studies as presented in Table 2. All companies have a subscription revenue model that offers subscribers the option to access a fixed number of clothes periodically in exchange for a monthly payment. Although each case is different, they share basic characteristics regarding the service.

Following a simple customer journey, a fashion subscription service entails four basic stages: pre-order, order, use and post-use. During the pre-order phase, subscribers are expected to browse the company's website and decide what items they wish to receive.

Table 1
Literature on user acceptance by type of circular offering.

Offering	Authors
PSS	Armstrong et al. (2015)
	Armstrong et al. (2016)
	Petersen and Riisberg (2017)
	Rexfelt and Hiort af Ornäs (2009)
Sharing economy	Akbar et al. (2016)
	Albinsson and Yasanthi Perera (2012)
	Cervellon et al. (2012)
	Gopalakrishnan and Matthews (2018)
	Gwozdz et al. (2017)
	Johnson et al. (2016)
	Laitala (2014b)
	Lang and Armstrong (2018)
	Matthews and Hodges (2016)
	Netter (2017)
	Park and Armstrong (2017)
	Pedersen and Netter (2015)
	Roux and Guiot (2008)
	Weber et al. (2017)

Table 2
Main characteristics of the companies selected as case studies ("Crunchbase, 2018").

Company	Founding date	Target audience	Service offered	Capital raised	No. of Employees
Company A	2011	Plus size women	Borrowing	100 Mill	51–100
Company B	2009	Women	Renting	176.2 Mill	251–500
Company C	2012	Women	Styling	62.5 Mill	11–50

During the order phase, the user communicates a decision to the company. In the use phase, the subscriber receives the items and uses them. All three companies offer professional care of the garments, so customers are not expected to wash the garments. Once the clothes are used, the user has to send them back to the company during the post-use phase. They are also expected to write a review of the experience. The company receives clothes and prepares them for the next customer. All companies have a purchasing option so members can keep items at a discounted price.

User-generated online reviews were collected from a third-party site, www.sitejabber.com, which has received public funding to develop adequate measures to avoid biased and fake reviews (National Science Foundation, 2011). This website requires reviewers to log in to the site and provide at least their name and email address. They also have the option to register via Facebook, which gives the review site access to their public profile, list of friends and email, but only their first name is publicly available on the site. By doing this, the site aims at reducing the risk of fake reviews. According to their Terms of Use, fake reviews are strictly forbidden, and people engaging in such practices risk being prosecuted. The site offers a comprehensive description of how to write a review and what to avoid to assist reviewers in creating useful content. It also requires that the review is at least 100 characters long.

The reviews on this site range from one to five stars. One-star reviews express an extremely negative experience (the website has pop-up aids that provide hints on what each rating means, in this case, they stated 'Doesn't get any worse than this, and stay away'). Five-stars reviews reflect extremely positive experiences (the company provided the following aid to explain what a five-star review means: 'So you love it so much you want to tell the entire world'). A mid-rating is suggested to reflect an average experience.

The company uses a combination of automated processes with human audits to assure the authenticity of the input. The objectivity of reviews as a source for product or service quality assessment is beyond the scope of this study, as we focus on the user's perception of the experience. Therefore, it is less relevant here. For the above reasons, it is clear that our findings have limited potential to be generalizable. Nonetheless, they are considered useful in our exploration of success factors and barriers to user acceptance.

In total, 123 reviews were mined from the customer review site using R studio software. Only the comment section of the review was extracted from the website for analysis. The Website's Terms of Service data mining and extraction requires expressed authorisation. We got such authorisation via email on September 15th, 2017 by their Customer Support Department. Individual consent was not sought because personal data was not collected and because the information used in this study falls under the category of public data as defined by the Norwegian Centre for Research Data. According to the website's Terms of Reference, when a person makes a post on this website, they agree to give permission to the site to use the content to their discretion. Also, the Terms of Service indicate that users should be aware that the data they share will be publicly accessible. Nonetheless, users' personal information was purposely not collected.

We collected all reviews written between January 2016 and August 2017. According to the site guidelines, reviewers are expected to write an entry on actual experience, so here we assumed that the reviews used as data were the result of using the service. Table 3 presents a summary of the reviews collected for this study regarding companies and rating.

An initial inspection of the data using NVIVO query tools was conducted in order to identify the topics mentioned in the data. The findings were then compared with the list of factors from the literature study to find alignments and misalignments. This initial approach was then followed by qualitative content analysis. The qualitative analysis followed a double-cycle coding strategy (Saldaña, 2009). A member of the research team conducted the first coding cycle, and then the other researchers in the study supervised the results to assure consistency. During the first cycle, a descriptive coding strategy was used to look for topics and issues frequently mentioned in the data that had the potential to become themes. A values coding technique was applied in parallel examining the data for attitudes, beliefs and values. Additionally, we looked for actions and activities that affected the perception of the users regarding the service using process coding. The second-cycle coding combined structural coding and hypotheses coding for finding patterns among the results of the first cycle (Saldaña, 2009). The Constant Comparison Method was used as the reviewing technique. Following the steps suggested by Boeije (2002), we analysed each review to find the topics and issues, then each review from a given company was compared to the other reviews in the same company looking for similarities and differences in the themes and topics. Finally, the findings for each company were compared to decide on a set of issues and factors.

3.3. Suitability of user-generated online reviews

In order to assess the suitability of user-generated online reviews to provide insights regarding user acceptance of fashion subscription services, we first considered the aspects that authors such as Korfiatis et al. (2012) and Mauri and Minazzi (2013) offered to evaluate the credibility of user-generated online reviews for purchase decision-making:

- To what extent the comment provides personal information that allows the reader to assess if the content is based on real experience or not.
- The description of the experience and how balanced it is in terms of positive and negative aspects.

Table 3
Distribution of user-generated online reviews collected and analysed.

Rankings	Company A		Company B		Company C		Total	
Positive reviews	37	46%	**8**	25%	**3**	27%	**48**	100%
5	19	24%	7	22%	2	18%	28	58%
4	9	11%	0	0%	0	0%	9	19%
3	9	11%	1	3%	1	9%	11	23%
Negative reviews	43	54%	**24**	75%	**8**	73%	**75**	100%
2	11	14%	2	6%	2	18%	15	20%
1	32	40%	22	69%	6	55%	60	80%
Total reviews	80	100%	**32**	100%	**11**	100%	**123**	100%

- How aligned the comment is with the rest of the reviews.

Then we used the seven characteristics of online data provided by Dholakia and Zhang (2004) and introduced in section 2.3 to discuss the advantages and disadvantages of user-generated online reviews for researching user acceptance: text-based data, public, anonymity, unbiased, unsolicited, permanently available, geographic diversity.

4. Results

This section reports the findings from the analysis of the user-generated online reviews for the companies offering fashion subscription services and discusses them in the context of the existing literature. It also argues in favour of the suitability of user-generated online reviews to explore this question in terms of the general aspects presented in the literature review section.

4.1. Factors and conditions influencing the acceptance and adoption

According to the literature review, acceptance of and participation in different types of circular offerings is influenced by several factors and conditions as illustrated in Table 4. A first category refers to economic factors. Within this category, most studies have investigated the role of risk and costs associated with circular offerings, followed by the characteristics of the offering and the price. Gratification defined as the level of satisfaction derived from the offering was investigated in three studies. Only two studies included income as a variable influencing acceptance.

Regarding costs, authors found that people value the potential savings resulting from engaging with circular offerings. However, in one case it was indicated that such savings could be offset by high transaction costs. Risks were also an important aspect considered in the literature. They refer to concerns about hygiene and health, personal liability, and the ability of the provider to deliver on their promise. In one case, researchers found that the nature of the solution improved trust because the user knew the provider. More formalised forms of offerings were also perceived as less risky. The second category encompasses demographic aspects. Authors have explored four aspects, age, gender, level of education and geographical location.

Thirdly, research has also focused on psychosocial factors including attitudes regarding collaborative consumption and circular offerings, and the level of attachment towards products. Under this category, authors also explored behaviours such as use, disposal and acquisition. Several studies investigated personality characteristics such as materialism and nostalgia. Environmental values were another important factor in the literature. A person that holds this type of values cares about other species and habitats and are more likely to have an ecological worldview. Authors also considered factors such as subjective norms, past experiences, integrity and perceived behavioural control. The fourth set of aspects addressed in the literature are cultural factors. This group includes aspects such as experience and experimentation, interaction with other users, fashion involvement, the desire for change and uniqueness, political consumerism, identity, and status.

The last category refers to the socio-material conditions that can foster or hinder participation. It includes aspects such as everyday

Table 4
Factors and conditions influencing acceptance and adoption of circular offerings in the literature.

Category	Factor	Literature
Economic	Costs	(Armstrong et al., 2015; Cervellon et al., 2012; Laitala, 2014b; Matthews and Hodges, 2016; Pedersen and Netter, 2015; Petersen and Riisberg, 2017; Rexfelt and Hiort af Ornäs, 2009; Roux and Guiot, 2008)
	Gratification	(Gopalakrishnan and Matthews, 2018; Matthews and Hodges, 2016; Pedersen and Netter, 2015)
	Offering	(Akbar et al., 2016; Armstrong et al., 2016; Laitala, 2014b; Park and Armstrong, 2017; Roux and Guiot, 2008)
	Income	(Gwozdz et al., 2017; Weber et al., 2017)
	Information	(Matthews and Hodges, 2016; Petersen and Riisberg, 2017)
	Price	(Armstrong et al., 2016; Gopalakrishnan and Matthews, 2018; Park and Armstrong, 2017; Roux and Guiot, 2008)
	Risks	(Armstrong et al., 2016, 2015; Laitala, 2014b; Matthews and Hodges, 2016; Park and Armstrong, 2017; Rexfelt and Hiort af Ornäs, 2009)
Demographic	Age	(Armstrong et al., 2016; Gopalakrishnan and Matthews, 2018; Weber et al., 2017)
	Gender	(Gopalakrishnan and Matthews, 2018; Gwozdz et al., 2017; Pedersen and Netter, 2015; Weber et al., 2017)
	Level of education	Cervellon et al. (2012)
	Geographical location	Gwozdz et al. (2017)
Psychosocial	Attitude	(Akbar et al., 2016; Johnson et al., 2016; Lang and Armstrong, 2018; Park and Armstrong, 2017)
	Behaviours	(Gopalakrishnan and Matthews, 2018; Gwozdz et al., 2017)
	Environmental values	(Armstrong et al., 2015; Cervellon et al., 2012; Gopalakrishnan and Matthews, 2018; Gwozdz et al., 2017; Laitala, 2014b; Pedersen and Netter, 2015; Petersen and Riisberg, 2017; Roux and Guiot, 2008)
	Materialism	(Akbar et al., 2016; Johnson et al., 2016; Lang and Armstrong, 2018; Roux and Guiot, 2008)]
	Subjective norms	(Johnson et al., 2016; Lang and Armstrong, 2018)
	Other	(Cervellon et al., 2012; Johnson et al., 2016; Lang and Armstrong, 2018; Roux and Guiot, 2008)
Cultural	Desire for change	(Armstrong et al., 2016, 2015)
	Experience	(Gopalakrishnan and Matthews, 2018; Laitala, 2014b; Roux and Guiot, 2008)
	Experiment	(Armstrong et al., 2016, 2015; Pedersen and Netter, 2015)
	Fashion involvement	(Cervellon et al., 2012; Laitala, 2014b; Lang and Armstrong, 2018; Pedersen and Netter, 2015; Weber et al., 2017)
	Interaction	(Matthews and Hodges, 2016; Park and Armstrong, 2017; Pedersen and Netter, 2015; Petersen and Riisberg, 2017; Rexfelt and Hiort af Ornäs, 2009; Roux and Guiot, 2008)
	Uniqueness	(Akbar et al., 2016; Cervellon et al., 2012; Lang and Armstrong, 2018; Roux and Guiot, 2008)
	Political position	(Park and Armstrong, 2017; Roux and Guiot, 2008)
	Identity and status	(Cervellon et al., 2012; Laitala, 2014a)
Socio-material	Daily life	(Matthews and Hodges, 2016; Rexfelt and Hiort af Ornäs, 2009)
	Ease of use	(Armstrong et al., 2016, 2015; Pedersen and Netter, 2015)
	Legal	(Park and Armstrong, 2017; Petersen and Riisberg, 2017)
	Location	(Gwozdz et al., 2017; Pedersen and Netter, 2015)
	Technology	Netter (2017)

lives, convenience, legal issues, technology and location. Everyday lives refer to the new activities people need to engage in or the ones they stop performing because of the service, e.g. laundering. Convenience addresses the competencies, skills and capabilities users require for acquiring and using the service. Legal aspects refer to the characteristics of the contract and other terms and conditions of the service. Technological aspects address the usability of the digital platform. Location refers to the online or offline character of the offering from where companies operate.

4.2. Acceptance and adoption of fashion subscription services

Based on this categorisation, we grouped the codes derived from the empirical data. Fig. 1 presents the distribution of codes among categories of factors. In general, economic factors were mentioned more frequently (55% of the items coded) followed by socio-material conditions (23%), psychosocial factors (18%) and cultural factors (4%).

Fig. 2 illustrates the distribution within each category. For cultural factors, the desire for change (47% of the items coded), and identity and status (27%) were recurrently mentioned by reviewers. For the economic factors, reviewers commented most on the offering (49%), followed by information aspects (22%), costs (11%), risks (8%), price (7%) and gratification (2%). Attitudes (83%) were the psychological factor most mentioned in the data. Finally, within socio-material conditions, reviewers provided more input regarding how using the service influenced their everyday life (71%).

As Table 5 illustrates, reviewers considered most of the economic factors mentioned in the literature except for income. Users mentioned the offering most repeatedly, along with information. Costs and benefits, both monetary and non-monetary appeared in the comments but not as often.

Reviewers mentioned socio-material conditions very frequently as well. User-generated reviews provided a level of detail regarding the activities people get involved in or avoided as a result of their participation in such offerings that allows to better understand the impacts the solution had on the user's daily life as presented in Table 6. These activities were organized following Rexfelt and Hiort af Ornäs (2009) framework of required, avoided and resulting activities. Moreover, we loosely classified them according to the stages of the service. Pre-order refers to the process of deciding what to order. Order is the stage when a client asks for a certain set of garments. The use phase refers to the enjoyment of the items, and post-use refers to the return of the clothes.

Beyond impacts on daily life, online reviews also offered insights into aspects such as ease of use, the legal implications of the services, the role of location and technology, occasionally identified in the literature. Technological and legal aspects have been explored only by one study each, for example. Although the frequency of these topics in the data is not high, it does point to relevant areas for future work. Quotes illustrating these aspects are presented in Table 7.

Psychosocial factors come in third place regarding frequency. Within this category, attitudes were the most popular aspect (83% of items coded), followed by materialism (9%) and behaviour (8%). In comparison with the previous two sets, users mentioned this type of factors less often. Factors that were prominent in existing literature such as values (in particular environmental values) were not observable in the data. We speculate that this is due, in part, to the nature of the data as users are expected to comment in their reviews on their experience with the service and the way companies communicate their offering rather than their own personality. Other aspects such as nostalgia, previous experiences, perceived behavioural control and integrity that were explored by academics were not mentioned in the reviews either (Table 8). This can also be a result of the nature of the data source. Thus, online reviews may not be sufficient to provide insights about the user internal characteristics, such as values, beliefs or norms.

Cultural factors were the least mentioned in the empirical data. The reviews that addressed this issue focused on how the service helped them satisfy their desire for change (47% of the items coded), identity and status (27%), experimentation (13%), uniqueness (3%) and fashion involvement (3%). Other aspects brought up in the literature such as interaction, experience and political positions did not appear in the reviews (Table 9). We suggest this could be the result of several reasons. First, the digital nature of the reviewed businesses may reduce the user's interaction with the company as compared to other forms of collaborative consumption, e.g. swap parties or fashion libraries. Second, they offer a form of PSS, where the transaction happens between a company and a user and not among peers. Third, and regarding political consumerism these companies are not marketed as defying the current economic model, on the contrary, they are presented as an evolution of traditional retail channels. Thus, users may not perceive the business offering as a form to address these aspects.

Finally, we were not able to retrieve any demographic data; however, our three case studies only offered women's clothing. Thus, it is safe to suggest all reviewers were women. Regarding other demographic variables, we did not have access to them via the reviews.

4.3. User-generated online reviews as a data source

This study had a two-fold purpose, to explore the factors and conditions that support participation in circular offerings in the clothing sector, and to assess the suitability of user-generated online reviews as a data source for exploring such question. In the previous section, we presented the findings regarding the first question. In this section, we offer insights regarding the convenience of using online reviews. To assess the suitability of user-generated online reviews as a data source to explore the main research question, we considered two dimensions, the credibility of the reviews and their suitability compared to other sources of data as elaborated in section 3.3.

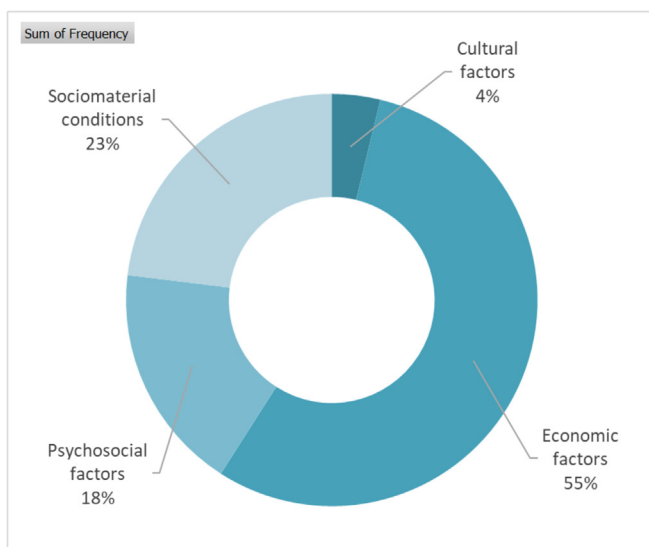Regarding the credibility of the reviews, three aspects were

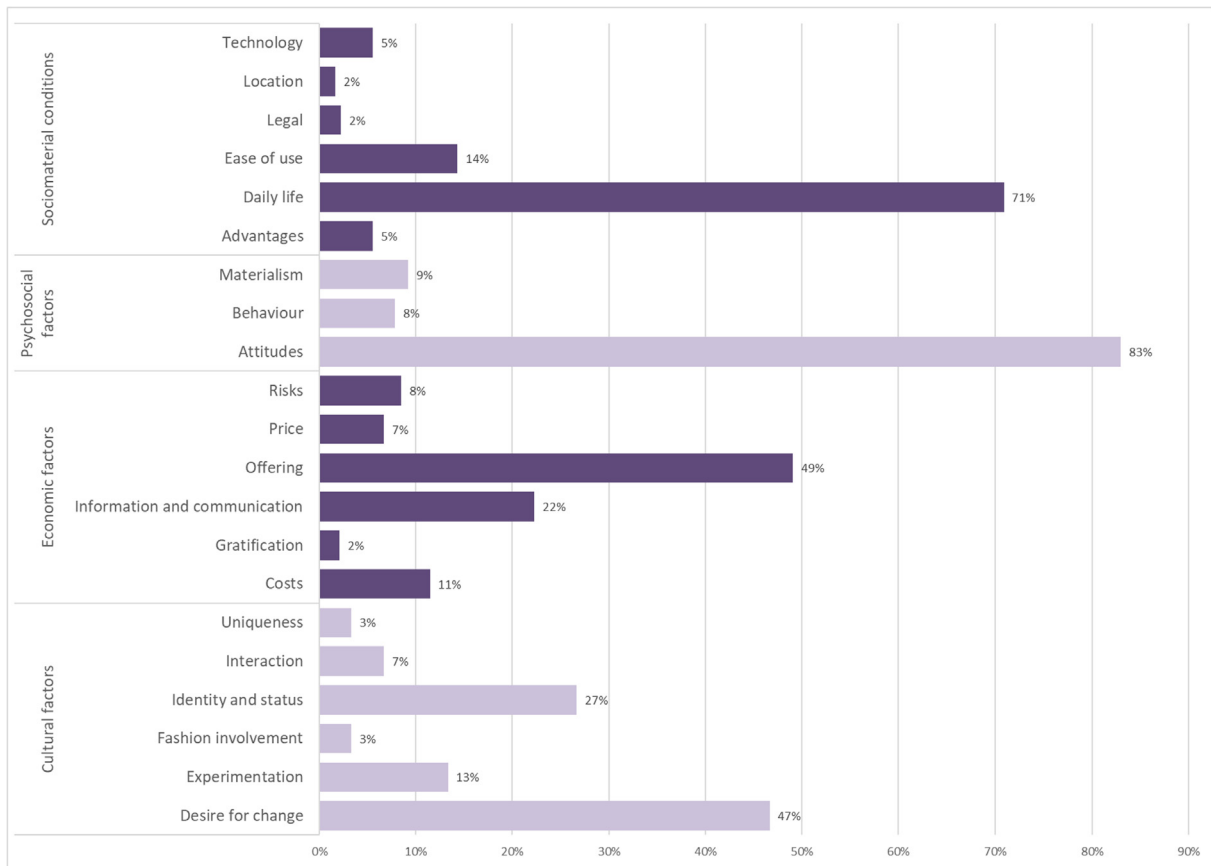**Fig. 1.** Distribution of factors by category.

Fig. 2. Frequency of codes by factors.

considered, the availability of personal information, the description of the first-hand experience and the balance between the positive and negative aspects of the review. As detailed in section 3.2 the selected site for collecting the empirical data used in this study requires reviewers to provide basic personal data such as name, last name and email. It also provides guidelines for reviewers to provide relevant information and requires reviews to be at least 100 characters long. Although they cannot guarantee that users will follow their guidelines, they have developed a tool for other users to mark a review as useful or not. In this sense, using online reviews from a third-party site can help improve credibility.

To assess the suitability of user-generated online reviews in comparison to other sources, seven aspects were considered: the type of input, e.g. if it is text-based as opposed to audio-visual, public availability, anonymity, unbiased, unsolicited, reliability and geographic diversity. Online reviews are readily available in digital text form as opposed to oral forms of collecting qualitative data such as interviews, which need to be transcribed. Accessing reviews requires basic data mining skills for web scraping the data and organising it in a format easy to process. Most online reviews are publicly available; however, there might be restrictions for third parties that need explicit authorisation from the site as in this case. Stricter privacy regulations might pose challenges to using this type of source in the near future. Nowadays, and in an effort to prevent fake reviews, users are expected to provide some type of personal information eliminating the advantage of anonymity. Although there have been cases of paid user-generated reviews on other sites, on the site used for this research this practice is forbidden in order to guarantee unbiased content. Because the reviews were mined and not requested by users, the content has not been influenced by

the interest of the research. The data is still available, and new information is being added that could be used to further the present analysis. Finally, although the case studies were all based in the U.S., the online reviews used to come from a variety of locations within the country, which could be difficult to achieve if traditional data sources had been used.

User-generated online reviews used in this study proved to be credible and suitable for analysis. They complied with most of the conditions set in the literature as defined in section 3.3. Moreover, they helped gain detailed insights regarding the offering's features that were more relevant for real users. They also provided insights about how the offering influenced their daily lives, an area lacking information from real-life experiences. Besides, via online reviews, we were able to access a significant number of subjects (123) and gather information about their experiences, which would have been more difficult using traditional data collection techniques such as interviews or focus groups. Nonetheless, the information provided in the reviews did not offer much understanding regarding more personal or unconscious factors gathered under the psychosocial and cultural categories.

5. Discussion and conclusions

Exploring user acceptance and adoption of solutions that contribute to environmental sustainability is a topic that has occupied researchers for at least two decades. Some contributions have been made regarding the factors that influence such intention and behaviour. However, and according to Qu et al. (2016), most research addressing acceptance of circular offerings such as Product Service Systems has been done using scenarios describing potential

Table 5
Economic factors influencing the acceptance and adoption of fashion subscription services.

Factor	Description	Quotes from online reviews
Costs	Authors found that people value the potential savings resulting from this type of offerings. However, potential transaction costs are also a concern. Some personal characteristics related to economic aspects such as frugality and thriftiness have been highlighted by the literature	*After adding up my yearly cost I have saved hundreds if not thousands of dollars in purchase and dry cleaning cost.* *I called to cancel my membership in September of last year and they have been drafting money out of my account every month since then.*
Gratification	The potential of the solution to offer a benefit that is not only financial has been also identified by the literature as influencing the decision of a person to participate. Particularly, the probability of extracting high user surplus from the offerings.	*I got so many compliments on my jacket, love the colors.* *Everyone raves about my beautiful dresses, and my coworkers and students look forward to what I'll wear next.*
Offering	The type of product, the quality, the materials of what it is made, how does it match the style of the user and in more practical terms, if it fits, are aspects considered by the user regarding these offerings. Also the service that allows customer access the function of the product is included here.	*I signed up for the service in December and received 2 garments. One was decent, the other was eh. I agree with a previous review that they were smelly.*
Income	Only two papers explored the relationship between income and the likelihood to participate in circular offerings and the evidence is not conclusive, in some cases it helps but in others there was no significant relationship	Not mentioned
Information	Economic agents need perfect information (complete and symmetrical) to maximize utility. Some studies indicated that information was valued by users in two senses, one regarding how the service works, and the other, how the service is narrated, what stories are told around it.	*I couldn't find anywhere that really explained how the process works. It was very confusing. It was after reading some reviews that I figured you have to fill your "closet" before anything will ship out.* *While I appreciate their prompt response on customer service inquiries, I don't feel like anything is being done to rectify the slowness.* *Customer service is unresponsive and inadequate.*
Price	The fundamental factor influencing decisions from an economic perspective is price. Not all the studies explored it as a factor. Fair and low prices were two aspects regarded by users as positive. High prices were not appreciated.	*I enjoyed my rentals, but $150 a month is too much. $100 a month makes sense to me.* *If I were to have any complaints, it would be that it's a bit expensive … I pay about $72/month for two clothing articles at a time, though that ends up being around four-six new outfits/month and shipping is always free, so it's really not so bad. I would recommend this service to anyone who works in an office and likes to try new styles and clothes, but at an affordable price.*
Risks	Making decisions under uncertainties entails risk, which is problematic for maximising agents. In these types of offerings risk is considered as high particularly regarding hygiene and health issue, which depends on the image and reputation of the provider. Another risk suggested in the literature is the potential personal liability regarding the products since users are not the owners. However, in one case, it was mentioned that these offerings helped reduce risks because the origin of the product is known, a peer.	*I feel like they are going to keep my money by saying they never received the items back* *The clothes weren't worth it, they smelled and selection sucked.* *The clothes appeared to be worn for the past twenty decades.* *I never got anything smelly or really bad looking. the clothes were in amazing condition when arrived,*

Table 6
Impact on everyday life: changes in activities.

Type of activity	Pre-order	Order	Use	Post-use
Required	Planning/waiting for the dress/ordering in advance	Trying the free month	Keeping the closet full/choosing what to wear	Purchasing/keeping items
	Read items reviews/writing reviews	Checking new things/unsubscribing from emails	Returning the dress	N.A.
	Figuring out size/fitting perfectly	Using the priority button	Marked items as returned	N.A.
	Shopping online	Putting items on hold	Recording proof of return	N.A.
Avoided	N.A.	Choosing what to wear	Wearing clothes rarely	N.A.
	N.A.	Going out	Not laundry	N.A.
	N.A.	Having to purchase/not spending lots of money		N.A.
Resulting	N.A.	Changing wardrobe	Trying new things	Returning customer/keeping the service/upgrading service
	N.A.	Try it before you buy it		Referral

solutions due to the lack of real-life examples. This characteristic limits the studies' explanation power. Today, and thanks to the implementation of digital businesses and the popularisation of ideas related to the circular economy, entrepreneurs have set businesses that offer a unique opportunity to overcome this limitation. Additionally, existing studies on acceptance and adoption of circular offerings has used mainly data from traditional sources such as interviews and surveys and only few have used novel data sources recently available due to digitalisation (Camacho-Otero et al., 2018). An example of such novel sources of information are user-generated online reviews which offer important advantages for exploring digital businesses (Mauri and Minazzi, 2013). To address these issues and contribute to the literature on the topic, this study used user-generated online reviews of real businesses to explore the question of acceptance and adoption, and compared its results with previous findings in the literature.

In line with previous studies, we found that economic factors such as the type of offering, costs and benefits, both monetary and non-monetary, are relevant for users. Also supporting previous findings, we found that the implications of the offering on daily life were also important for users. This study contributes to the literature on acceptance and adoption of circular offerings such as PSSs in several ways. First, it gathered empirical data from real-life examples of use-oriented PSS in the fashion sector to address

Table 7
Socio material conditions influencing the adoption of fashion subscription services.

Condition	Description	Quotes from online reviews
Daily life	Research has found that the impact offerings have in daily routines depend on the activities influence users' engagement with circular offerings.	*it takes some finagling and getting used to in order to be successful in renting pieces for everyday life.* *I spent 2 h picking out more than 30 items for my closet since I kept getting the notification saying I needed more items in my closet before they start processing my shipment.* *It was hard to cancel and they do not refund your money.* *I was mad at myself for not putting a reminder on my calendar.*
Ease of use	This condition includes how easy is to use the solution, and how well does it fit in domestic life.	*Too much of a hassle, especially when you don't get to decide which clothing items are being shipped to you!* *Just like most of these online services you have to CALL to cancel while it takes just 30 s and a credit card number to sign up to begin with.*
Legal	Only two studies considered legal issues such as the formality of the transactions and the type of agreement required.	*I sent an email declaring that I would dispute all future credit card charges and report them to user agencies if they did not cancel my account.* *What really bothers me the most, is that they have my NEW bank account information that hadn't been release to anyone!!*
Location	The place where the solution takes place, virtual or physical, has been brought up by two studies indicating that it can be unfavourable.	*I live in Chicago so pretty centrally located and it takes 8 days from the day I ship back to the day I receive IF my shopping closet is full.* *Part of the problem is that they only have one distribution centre, and it is located in Ohio. That means there is longer turn-around/shipping times for those of us on the West Coast*
Technology	Only one study was found that explored the technology as a factor influencing user satisfaction, not acceptance. It focussed on the technical features of the solution.	*My notices of PayPal payments were in a junk mail file and I rarely use the PayPal account so I missed this mess - also partly my fault.* *The website is counter intuitive to what you'd like to be able to do (like maybe make a list of the choices you're considering before you pick your final three)*

Table 8
Psychosocial factors for acceptance and adoption of circular offerings in the fashion sector.

Factor	Description	Quotes from online reviews
Attitude	As suggested by the TPB and related models, positive attitudes towards a solution influence intentions.	*Im so disappointed in their "retention" offers after I described my frustration of their charges.* *This is a great way to expand my wardrobe*
Behaviours	Studies addressing behaviours, explored how purchasing, disposal and acquisition behaviours were related to acceptance of circular offerings	*I am a person who gets bored with something after I've worn it a couple of times.* *given how chaotic my home/work life is.*
Environmental values	The literature indicates that environmental values are a significant factor influencing the acceptance of circular offerings. Authors refer to it as eco-consciousness, sustainability focus, ethics and ecology. Only one article suggested they do not matter.	Not mentioned
Materialism	Another aspect that has been frequently researched in regards to intention to participate in circular offerings is materialism and its related construct possessiveness.	*I am an admitted shopaholic and GB allows me to wear clothes for as long as I like with no commitment but with the option to buy at discounted prices.* *It was not unusual for me to purchase a $100 + in online shopping per month for a few new pieces.*
Subjective norms	The individual interpretation of social norms and social behaviour are	Not mentioned
Other	Other factors or aspects explored by a small number of studies included nostalgia, previous experiences with similar offerings, integrity, intention and perceived behavioural control.	*I am a person who gets bored with something after I've worn it a couple of times.* *I'm a happy customer and would recommend Unlimited to any one who is flexible and adventurous*

questions of user acceptance and adoption using a novel data source. Based on these data, it was able to offer an overview of the economic factors that influenced users of use-oriented PSS in the fashion sector. Additionally, it provided a detailed account of the specific activities users are required to perform, avoid or end up implementing because of their participation. This is valuable information for product and service designers working with the circular economy as it offers an overview of the circular offering's customer journey.

In contrast with findings from previous literature, users did not mention environmental values as a factor influencing acceptance and adoption of the service. Why is this the case should be addressed in future research. Moreover, the reviews did not provide many insights into psychosocial and cultural factors. We suggest this could be the result of the nature of the source; because online reviews are considered as exemption event reports, they do not invite users to elaborate on their personal experience and reasons

to participate in the service. In addition, online reviews failed to provide demographic information beyond gender, which has been identified as a relevant factor influencing acceptance. Furthermore, and because all case studies had women as their customer segment, the results of this study are only applicable to them. In order to explore gender differences, new research is needed using data from companies serving additional customer segments. Finally, and because online reviews capture the user experience at one point, they do not offer an overview of the user experience over time which can provide more complete understanding of the dynamics of acceptance and adoption.

To address these limitations, future studies should explore how to combine user-generated online reviews with more traditional methods such as interviews, auto-ethnography or non-participant observation to provide deeper and broader insights into the user's personal characteristics and journey with the offering. To broaden explore the role of demographic variables, new research

Table 9
Cultural factors of acceptance and adoption of circular offerings in the fashion sector.

Factor	Description	Quotes from online reviews
Desire for change	In connection with experimentation, users have indicated that these offerings help them fulfil their need for something different.	*What a great way to try different styles without breaking the bank!* *If you don't like the style, you can just wear it once.* *I get to try new things out of my normal comfort zone with the option to buy.*
Experience	Treasure hunting and a pleasant shopping experience involved in these offerings are also expected to influence acceptance.	Not mentioned
Experiment	The possibility to try new styles and brands without investing and test them has also been suggested by the literature as influencing acceptance.	*It's been a really fun way to experiment with different styles and I get a ton of compliments on the dresses I wear.* *I do like having a variety of clothes and this has allowed me to go out of my comfort zone to experiment with things I would never had bought.*
Fashion involvement	The interest a person has in fashion trends has been an element considered by authors in the area.	*[Company A] has definitely made me a fashionista!*
Interaction	This factor refers to the possibility of socializing, creating relationships and community building among users and with providers. Some studies found a positive relationship, others a negative influence with acceptance.	Not mentioned
Uniqueness	The desire for uniqueness, the need to differentiate one-self from others, and how these offerings help individuals fulfil it is another aspect considered by researchers.	*I wore a long red dress from [Company B] to a Gala, in fairness it looked awesome on me, but when I arrived to the Gala I felt that I was in a rented dress because almost every girl there was in a dress I recognized from scrolling through selections off the [Company B], I'm sure they recognized my rental as well*
Political position	This aspect refers to the need to protest the current economic and political system through alternative consumption practices.	Not mentioned
Identity and status	This element refers to the type of message consumption of circular offerings sends about the user, the user's status in society, and reputation regarding the user's social group.	*I got a ton of compliments on all of my dresses* *Everyone raves about my beautiful dresses, and my coworkers and students look forward to what I'll wear next.* *I have received tons of compliments from young to old.*

should also include companies focusing on different demographics since this study only used women-oriented businesses. Finally, additional digitally based and user generated data sources such as social media, forums and customer service chats could help enrich the researchers' understanding of consumer and user acceptance factors.

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