

Product-Service Systems: A Customer Engagement Perspective in the Fashion Industry

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Abstract

The current fast fashion model fostering high consumption causes consequential damages to the planet and society, facts that highlight the need to curtail its growth throughout more sustainable solutions. Among these solutions is engaging fashion customers in Product-Service Systems (PSSs), which are oriented towards dematerializing fashion consumption by offering bundles of products and services. Drawing from the social exchange theory, this research sheds light on the benefits customers seek to engage with various coexisting product-oriented and use-oriented PSSs in the fashion industry. A quantitative study among 477 customers in Belgium reveals that customer engagement with PSSs in a fashion industry is a function of the benefits that customers expect to reach (economic, pragmatic, cognitive, personal, hedonic, and societal expectations) and their demographic characteristics (gender and age). Depending on the expected benefits and demographic characteristics, customers were found to engage with different types of PSSs. Accordingly, fashion companies should leverage customers' expected benefits and demographics when developing PSSs and communicating about these PSSs.

Keywords: *product-service system; circular business models; customer engagement; fashion renting; fashion swapping; second-hand fashion.*

1. Introduction

With about 14% of the 2,652 million tons of waste in Europe, the manufacturing industry is a significant source of waste (European Remanufacturing Network, 2021). The fashion industry, in turn, uses 93 billion cubic meters of water in production activities per year and it disposes a value of around £ 140 million of clothing per year, thereby using 26% of the global carbon budget by 2050 (British Fashion Council, 2019). Ellen MacArthur Foundation (2017) confirms that the fashion industry involves unsustainable business models by relying on non-renewable resources, clothing underutilization and inadequate disposal, high greenhouse gas emissions, and exploitation of cheap labor.

These facts make the fashion industry ripe for developing circular strategies (Blomsma et al., 2019) and for designing circular business models (Franco, 2017; Jia et al., 2020), which build upon the circular economy principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems (Urbinati et al., 2017; Centobelli et al., 2020).

Circular business models based on Product-Service Systems (PSSs) are very promising, as value creation in PSSs stems no longer from tangible products alone, but also from intangible services (Tukker, 2015; Geissdoerfer et al., 2020; Fehrer & Wieland, 2021). Indeed, most researchers agree that decoupling value creation from products by adding services increases the circularity of the business model (Pieroni et al., 2019a; 2019b).

Tukker (2015) identifies three types of PSSs: product-oriented PSSs, where the focus is on supplementing products with additional services (e.g., repair services), use-oriented PSSs, where the product is still central to the offer, but remains under the provider's ownership (e.g., rental services), and result-oriented PSSs, where the provider sells results rather than products or services (e.g., power by the hour). These PSSs allow to slow resource loops by extending products' lifetime and intensifying their use (Bocken et al., 2018; Geissdoerfer et al., 2020).

In the fashion industry, product-oriented PSSs (here, swapping and second-hand) and use-oriented PSSs (here, fashion rental) have become more popular in recent years (Armstrong et al., 2014; Diddi et al., 2019). Nonetheless, these PSSs appeal to niche markets (Tukker, 2015; Tunn et al., 2021). Against this background, several researchers call for engaging the customer in PSSs-based business models, but ways to achieve customer engagement with different types of PSSs-based business model are not well-understood (e.g., Elzinga et al., 2020; Geissdoerfer et al., 2020; Hazée et al., 2020; Fehrer & Wieland, 2021).

In response to this gap, this research aims to provide insight into customer engagement with product-oriented and use-oriented PSSs in the fashion industry, by which customer engagement refers to a customer's disposition towards integrating resources – such as time and effort – with PSS-based business models (Storbacka et al., 2016; Finsterwalder, 2018). Drawing from social exchange theory, this research investigates (1) what benefits customers expect to reach in return for engaging with PSSs and (2) how the expected benefits affect their engagement with different types of PSSs.

After outlining the conceptual framework, this research presents the results of the empirical study, which relies upon a survey among fashion consumers. The paper concludes with the theoretical and managerial implications, along with the limitations and future research directions.

2. Conceptual Framework

2.1. Product-service systems (PSSs) enabling the transition to circular fashion industry

The fashion industry has realized unprecedented growths driven by the fast fashion business model favoring trendiness and low prices (Fischer & Pascucci, 2017). Its economic value discourages most brands from adopting circular economy practices (Brydges, 2021). Nevertheless, politicians, Non-Governmental Organizations (NGOs), and consumers increasingly urge the fashion industry to lessen its tremendous ecological carbon footprints and social damages by transitioning towards the circular economy (Ellen MacArthur Foundation, 2017; European Parliament, 2020). Yet, against unsustainable fashion consumption and wasteful practices characterizing the fashion industry (Mishra et al., 2020), circular economy requires the redesign of existing business models or the implementation of new ones (Ünal, et al., 2019a; 2019b), such as business models based on PSSs (Tukker, 2015; Stahel, 2016). PSSs refer to “tangible products and intangible services designed and combined so that they jointly are capable of fulfilling specific customer needs” (Tukker, 2004, p. 246).

The extent to which services are core to the offering allows to discern product-oriented and use-oriented PSSs (Tukker, 2004; 2015). Indeed, these PSSs fall on a continuum from respectively complete transfer of ownership from companies to customers (cf. product-oriented PSS with focus on supplementing products with services) to no ownership transfer from companies to customers (cf. use-oriented PSS and result-oriented PSS where the provider delivers a service based on a product that remains under its ownership). By staying true to transferring ownership from

companies to customers, product-oriented PSSs are less circular than the use-oriented PSS. Both types of PSSs, however, are designated as more promising and feasible than results-oriented PSS for starting the transition to a circular fashion industry (Armstrong et al., 2016; Park & Armstrong, 2017). Indeed, results-oriented PSSs go along with radically changing existing industry practices and consumers habits, as the focus is solely on specific results that product-service combinations could generate for customers (Armstrong et al., 2014; Catulli et al., 2017; Elzinga et al., 2020).

About product-oriented PSSs, second-hand fashion and fashion swapping are gaining popularity (Kuah & Wang, 2020). Second-hand fashion allows for long-term value creation through encouraging the resale of used fashion items and offering take-back services (Brydges, 2021). In fashion swapping, companies ask customers to pay a fee to swap their underutilized clothes (Armstrong et al., 2014). By engaging with swapping, customers foster sustainability and circularity practices through giving a new life to their fashion items by exchanging them with peers (Lang & Zhang, 2019; Henninger et al., 2019). Rental services, in turn, represent the most popular use-oriented PSSs in the fashion industry. Specifically, fashion rental promotes longer lifecycle and efficient use of resource (Jaeger-Erben et al., 2021; Tukker, 2015), through promoting access to high-quality items without ownership, whereby products become the capital assets rather than a commodity (Antikainen et al., 2015; Borg et al., 2020).

2.2. Engaging fashion customers with product-oriented and use-oriented PSSs

Customer engagement is defined as a customer's disposition to integrate resources – such as time and effort – with PSS-based business models (Storbacka et al., 2016; Finsterwalder, 2018). To generate a better understanding of customer engagement with different types of PSSs, this paper relies on social exchange theory. This theory stipulates that “social exchange comprises actions contingent on the rewarding reactions of others, which over time provide for mutually and rewarding transactions and relationships” (Cropanzano & Mitchell, 2005, p. 890).

In a business context, social exchange theory contends that customers who put more time and effort into activities – such as customers who engage with PSSs by choosing and/or paying for them – are motivated by the benefits they expect to reach in return (Harrigan et al., 2018). Said alternatively, social exchange theory proposes that customer engagement with PSS-based business models is a function of what benefits customers expect (Blau, 2004; Verleye, 2014; 2015). The benefits that customers expect in the fashion industry may thus shape their engagement with a PSS.

The customer engagement literature – which builds upon social exchange theory – suggests that customers may expect different benefits: (1) economic benefits (i.e., financial reward), (2) pragmatic benefits (i.e., individual needs), (3) personal benefits (i.e., enhancing social status and esteem), (4) social benefits (i.e., interacting with others), (5) cognitive benefits (i.e., enhancing knowledge), and (6) hedonic benefits (i.e., enjoyment of experiences) (Verleye, 2015).

To uncover what benefits customers may expect from engaging with PSSs in the fashion industry, we conducted an extensive review of the existing research. To date, existing research has paid considerable attention to what benefits customers link to PSSs. As shown in Table 1, these benefits entail economic, pragmatic, personal, social, cognitive, and hedonic benefits. Additionally, customers may also link societal benefits with PSSs, which include environment preservation and society wellbeing (e.g., Lee & Chow, 2020; Medalla et al., 2021).

Table 1. Overview of expected benefits associated with PSSs in the fashion industry.

Source	Type of PSS	Methods	Economic Benefits = get good prices	Pragmatic Benefits = get high-quality in convenient way	Cognitive Benefits = get chance to explore fashion trends	Personal Benefits = get chance to express uniqueness	Social Benefits = get chance to connect	Hedonic Benefits = have pleasure and fun	Societal Benefit = reduce social and environmental harm
<i>Roux and Guiot, 2008</i>	P-sh	Mix	x	x			x	x	
<i>Guiot and Roux, 2010</i>	P-sh	Mix	x					x	x
<i>Catulli, 2012</i>	U-r	Ql	x	x					x
<i>Cervellon et al., 2012</i>	P-sh	Qn	x						
<i>Catulli et al., 2013</i>	U-r	Ql		x		x			
<i>Isla, 2013</i>	P-sh	Ql	x			x			
<i>Waight, 2013</i>	P-sh	Ql	x						x
<i>Armstrong et al., 2014</i>	P-sh, U-r, P-s	Mix	x		x		x	x	x
<i>Xu et al., 2014</i>	P-sh	Qn	x			x		x	x
<i>Pedersen and Netter, 2015</i>	U-r	Ql	x		x		x		
<i>Yan et al., 2015</i>	P-sh	Qn	x			x			x
<i>Armstrong et al., 2016</i>	U-r, P-s	Mix	x	x	x				x

<i>Ferraro et al., 2016</i>	P-sh	Qn	x		x			x	x
<i>Matthews and Hodges, 2016</i>	P-s	Ql					x	x	x
<i>Park and Armstrong, 2017</i>	P-sh, U-r, P-s	C	x	x			x		
<i>Stål and Jansson, 2017</i>	P-sh	Ql		x					
<i>Becker-Leifhold, 2018</i>	U-r	Qn		x	x	x			
<i>Gopalakrishnan and Matthews, 2018</i>	P-sh	Ql	x		x				
<i>Lang, 2018</i>	U-r	Qn	x	x		x		x	
<i>Lang and Armstrong, 2018</i>	U-r, P-s	Qn			x	x			x
<i>Liang and Xu, 2018</i>	P-sh	Qn	x			x	x	x	x
<i>Camacho-Otero et al., 2019</i>	U-r	Ql	x	x	x	x			
<i>Didi et al., 2019</i>	P-sh	Ql	x	x	x	x			x
<i>Guzzo et al., 2019</i>	n.s.	C		x					
<i>Henninger et al., 2019</i>	P-s	Ql		x					
<i>Lang and Zhang, 2019</i>	P-s	Ql		x		x	x	x	

<i>Antikainen et al., 2020</i>	U-r	Ql	x	x	x	x	x	x	x
<i>Borg et al., 2020</i>	U-r	Ql	x		x			x	x
<i>Hur, 2020</i>	P-sh	Mix	x			x		x	x
<i>Lee and Chow, 2020</i>	U-r	Qn	x	x					x
<i>Lee et al., 2021</i>	U-r	Qn	x		x			x	
<i>Medalla et al., 2021</i>	P-sh	Qn						x	x
<i>Shrivastava et al., 2021</i>	U-r	Ql							x
<i>Silva et al., 2021</i>	P-sh	Qn				x			
<i>Tunn et al., 2021</i>	U-r	Qn		x					

Note. P-sh = product-oriented PSS – second-hand fashion; U-r = use-oriented PSS – fashion rental; P-s: product-oriented PSS – swapping; n.s. = not specified; Ql = qualitative research; Qn = quantitative research; mix = qualitative and quantitative research; C = conceptual paper.

2.3. Gaps and research questions

Most studies consider what benefits customers link to PSSs in the fashion industry rather than exploring how important the expectations in terms of economic, pragmatic, cognitive, personal, social, hedonic, and societal benefits are for engaging customers with business models based on PSSs. More important, none of the existing studies provides insights into the extent to which each expected benefit contributes to engaging customers with different types of PSSs-based business models. Exploring this gap is particularly relevant in the fashion industry where product-oriented and use-oriented PSSs coexist while the uptake of PSSs is still very slow (Tukker, 2015; Corvellec & Stål, 2017; Borg et al., 2020; Tunn et al., 2019; 2021). Therefore, more empirical research is required to uncover ways of achieving customers' engagement with these business models and, thus, to unleash their circular economy potential. Accordingly, this paper addresses the following research questions:

- 1) *What is the impact of customer expectations in terms of economic, pragmatic, cognitive, personal, social, hedonic, and societal benefits on customer engagement with use-oriented PSS-based models with a rental scheme?*
- 2) *What is the impact of customer expectations in terms of economic, pragmatic, cognitive, personal, social, hedonic, and societal benefits on customer engagement with product-oriented PSS-based models with a swapping or second-hand scheme?*

3. Methodology

3.1. Research design and data collection

This research relies on a quantitative approach, whereby a survey is designed to gain a thorough understanding of the way in which the economic, pragmatic, cognitive, personal, social, hedonic, and societal expected benefits in the fashion industry affect their engagement with business models based on product-oriented (here, swapping and second-hand fashion) and use-oriented PSSs (here, fashion renting), as visualized in Figure 1.

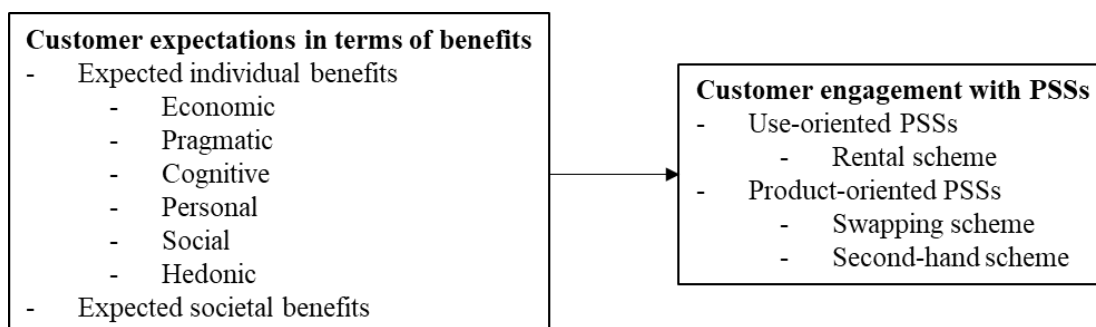


Figure 1. Conceptual framework.

To gain insight into what benefits customers expect, respondents were – in line with the approach proposed by Verleye (2015) – asked to rate the importance of the following expected benefits with regard to clothes: (i) price (cf. economic benefits), (ii) convenience and quality (cf. pragmatic benefits), (iii) fashionability (cf. cognitive benefits), (iv) uniqueness (cf. personal benefits), (v) social interaction (cf. social benefits), (vi) having fun (cf. hedonic benefits) and (vii) sustainability (cf. societal benefits). Specifically, each expected benefit was measured with a single-item scale ranging from ‘0’ (unimportant) to ‘10’ (very important) to provide respondents with a concise survey and increase the responses rate (see Table 2).

To capture customer engagement with different types of PSSs, respondents were asked: “Which of the following transactions have you ever performed? You can select multiple options”, by which the following options were listed: “(1) buying new clothes, (2) swapping clothes, (3) buying second-hand clothes, (4) renting/lending clothes, and (5) other – please specify” (see Table 2). Further inquiry of the respondent responses to the “other – please specify” category revealed that all these respondents mentioned self-made clothes. The answers to these scores were transferred into dummy scores, by which ‘1’ denotes engagement with a given PSS consumption scheme and ‘0’ reflects no engagement with this consumption scheme. If respondents selected “swapping clothes”, a score of ‘1’ represents the engagement with product-oriented PSSs with a swapping scheme. If respondents selected “buying second-hand clothes”, a score of ‘1’ represents the engagement with product-oriented PSSs with a second-hand scheme. If respondents selected “renting/lending clothes”, a score of ‘1’ represents the engagement with use-oriented PSSs with a rental scheme.

To verify the validity of the aforementioned customer engagement scales, the survey also included an alternative scale to capture customer engagement with different types of PSSs. In addition to the question “Which of the following transactions have you ever performed? You can select multiple options”, we also asked respondents: “What proportion of each type of clothes does your wardrobe consists of ... (fill out percentages from 0 to 100 by which the total of all percentages equals to 100)?:” where the respondents could specify the proportion of (1) new clothes, (2) swapping clothes, (3) buying second-hand clothes, (4) renting/lending clothes, and (5) other – please specify” (see Table 2). The two types of scales generated the same outcome in terms of engagement versus no engagement with different types of PSSs, which attests the validity of the results.

The survey was closed with a number of control variables, more particularly gender with ‘1’ being women (70%) and ‘0’ being men (30%) and age (mean = 24,7; standard deviation = 9,62) and a 10-point scale to capture contamination concerns (mean = 7,49; standard deviation =

2,43). Indeed, young consumers represent a market segment, which more than others, vividly seeks sustainable products (Gopalakrishnan & Matthews, 2018; Shrivastava et al., 2021), and contamination concerns were found to affect customer engagement with PSSs (e.g., Hazée et al., 2019).

Table 2. Questionnaire

Construct	Items
<i>Customer engagement with PSSs</i>	<p>Which of the following transactions have you ever performed? You can select multiple options</p> <ul style="list-style-type: none"> - buying new clothes - swapping clothes - buying second-hand clothes - renting/lending clothes - other – please specify: ... <p>What proportion of each type of clothes does your wardrobe consists of ... (fill out percentages from 0 to 100 by which the total of all percentages equals to 100)?</p> <ul style="list-style-type: none"> - buying new clothes - swapping clothes - buying second-hand clothes - renting/lending clothes - other – please specify: ...
<i>Customer expectations in terms of benefits</i>	<p>How important are the following benefits regarding clothes? (0 = unimportant; 10=very important)</p> <ul style="list-style-type: none"> - price - convenience - quality - fashionability - uniqueness - social interaction - having fun - sustainability
<i>Control variables</i>	<p>How important is hygiene for you in the context of clothes? (0 = unimportant; 10=very important)</p> <p>What is your age (in numbers)?</p> <p>What is your gender?</p> <ul style="list-style-type: none"> - Man - Woman - Other

To gather the survey data, respondents were recruited in Flanders (Belgium) in July 2019. Specifically, we announced the survey on various social media and via email, which implies that potential respondents were located around these channels. In response to this convenience sampling, 542 respondents filled out the survey. Yet, some surveys were incomplete or inaccurate, because of which this number shrunk to 477 after data cleaning. In the final sample, 54% of the respondents were women under the age of 25 years old, which is line with the observation that female consumers display higher interest for fashion apparel purchase and disposal than male consumers (O’Cass, 2004; Lang et al., 2018).

To address the under- and over-representation of specific demographic groups in comparison with population-level datasets on gender and age, we used – as suggested by Bansal et al. (2020) – the iterative proportional fitting (IPF) technique. Specifically, this technique allows the survey sample proportions in four gender- and age-based groups (here, women and men above and below 25 years old) with the corresponding proportions in the 2020 population-level dataset from Statistics Flanders to estimate person-level weights. All estimated weights vary between 0.13 and 5.86. In line with the approach of Bansal et al. (2020), we rely on the weighted sample when presenting the results.

3.2. Data analysis

The statistical analyses were performed with the Statistical Package for Social Science (SPSS) software, using a binary probit model with the aim to uncover how expectations in terms of economic, pragmatic, cognitive, personal, social, hedonic, and societal benefits explain customer engagement with different types of PSSs-based business models. As customer engagement with a given PSS has only two possible outcomes (i.e., 1 = yes; 0 = no), the binary probit model is a very suitable one as it allows for modeling relationships where the dependent variables are dichotomous (i.e., dummy variables) (Daykin & Moffatt, 2002).

Three probit models were estimated, as this research considers customer engagement with product-oriented PSSs with second-hand scheme (Y1), customer engagement with use-oriented PSS with rental scheme (Y2), and customer engagement with product-oriented PSS with swapping scheme (Y3). The independent variables X_i are similar across the different probit models and represent the expected individual and societal benefits listed in Table 1 (here, expectations in terms of economic, pragmatic, cognitive, personal, social, hedonic, and societal benefits) along with the demographic characteristics (here, gender and age). The coefficient β captures the impact of the independent variables (i.e., demographic characteristics and expected benefits) on the dependent variable (i.e., customer engagement with a specific type of PSS), and ε the error terms (independent and normally distributed).

4. Results

As far as the expected benefits from fashion acquisition are concerned, Table 3 shows that the expectations in terms of economic, pragmatic, cognitive, personal, hedonic, and societal benefits have mean scores ranging from 3,78 to 8,36 and their standard deviations vary between 1,14 and 3,07. These descriptive statistics suggest that not all expected benefits are equally important while their importance also varies among the respondents.

Table 3. Descriptive statistics about the importance of expected benefits from fashion.

Expected benefits	Minimum	Maximum	Mean	Std. Deviation
<i>Economic benefits</i>	0,10	10,00	7,61	1,83
<i>Pragmatic benefits – convenience</i>	0,00	10,00	6,15	2,96
<i>Pragmatic benefits – quality</i>	5,00	10,00	8,36	1,14
<i>Cognitive benefits</i>	0,00	10,00	5,14	2,61
<i>Personal benefits</i>	0,00	10,00	5,32	3,07
<i>Social benefits</i>	0,00	10,00	3,78	2,93
<i>Hedonic benefits</i>	0,00	10,00	6,36	2,51
<i>Societal benefits</i>	0,90	10,00	7,27	2,03

Note. These descriptive statistics rely upon the weighted sample.

All survey respondents mentioned that they possess new clothes in their wardrobes (100% of the respondents). As shown in Table 4, about 62,1% of these respondents do not engage with PSSs-based business models. Table 4 also provides more details about those respondents who engage with business models based on PSSs. About 28,5% of the respondents engage with one PSS scheme (here, use-oriented PSS with rental scheme, product-oriented PSS with swapping scheme, or product-oriented PSS with second-hand scheme). About 8,6% of the respondents engage with two or more of these PSS schemes, by which the combination of renting and swapping is the most popular (7,1% of the respondents). Indeed, the most popular type of PSS among the respondents is use-oriented PSS with a rental scheme (18,9% of the respondents), followed by product-oriented PSS with a swapping scheme (16,2% of the respondents) and product-oriented PSS with a second-hand scheme (12,7% of the respondents).

Table 4. Descriptive statistics about combinations of PSS schemes.

Type of PSS	Frequency	Percent	Valid Percent	Cumulative Percent
<i>No PSS</i>	313	62,1	62,1	62,1
<i>Only use-oriented PSSs with rental scheme</i>	49	9,7	9,7	71,8
<i>Only product-oriented PSSs with swapping scheme</i>	42	8,3	8,3	80,1
<i>Only product-oriented PSSs with second-hand scheme</i>	53	10,5	10,5	90,6
<i>Use-oriented PSSs with rental and product-oriented with swapping scheme</i>	36	7,1	7,1	97,7
<i>Product-oriented PSSs with second-hand scheme and use-oriented PSSs with rental scheme</i>	7	1,4	1,4	99,2
<i>Product-oriented PSSs with second-hand scheme and swapping scheme</i>	1	0,1	0,1	99,3
<i>All types of PSSs</i>	4	0,7	0,7	100,0

Note. These descriptive statistics rely upon the weighted sample.

Binary probit models with the PSS schemes (here, rental, swapping, and second-hand schemes) as the dependent variables and the demographic characteristics (here, gender and age) along with the expected benefits (here, economic, pragmatic-convenience, pragmatic-quality, cognitive, personal, social, hedonic, and societal) as independent variables are estimated (see Table 5).

The results indicate that, among the surveyed respondents, customers who engage with product-oriented PSSs with a swapping or second-hand scheme tended to be women, as there is a positive impact of gender on both engagement with swapping and second-hand. Customers who engage with use-oriented PSSs with a rental scheme and product-oriented PSSs with a swapping scheme tended to be younger, as reflected in a negative impact of age on customer engagement with these PSSs.

Interestingly, customer expectations in terms of individual benefits explain customer engagement with product-oriented PSSs with swapping and second-hand schemes while societal benefits explain customer engagement with use-oriented PSSs with a rental scheme and product-oriented PSSs with a second-hand scheme. Yet, the exact set of individual and/or societal expectations that shapes customer engagement with different types of PSSs varies among the surveyed respondents, which are detailed hereafter.

Engagement with use-oriented PSSs with a rental scheme tended to be respondents with lower expectations in terms of the societal benefits. In other words, for these respondents, it is surprisingly less important to reach societal benefits (see Table 5).

The opposite holds for respondents who engage with product-oriented PSSs with a second-hand scheme. Here, engagement with this type of PSS manifested itself among respondents with higher expectations in terms of the societal benefits. Engagement with product-oriented PSSs with a second-hand scheme, however, also tend to manifest itself among respondents with higher expectations in terms of the economic and personal benefits and lower expectations in terms of the hedonic benefits (see Table 5).

With regard to product-oriented PSSs with a swapping scheme, engagement manifested itself among respondents with higher expectations in terms of hedonic benefits, cognitive benefits, and pragmatic benefits oriented towards convenience and lower expectations in terms of pragmatic benefits oriented towards quality (see Table 5).

Table 5. Parameter estimates for binary probit models.

Parameter	USE-ORIENTED PSS – RENTAL							PRODUCT-ORIENTED PSS – SWAPPING							PRODUCT-ORIENTED PSS – SECOND-HAND						
	B	Std. Error	95% Wald Confidence Interval		Wald Chi-Square	df	Sig.	B	Std. Error	95% Wald Confidence Interval		Wald Chi-Square	df	Sig.	B	Std. Error	95% Wald Confidence Interval		Wald Chi-Square	df	Sig.
			Lower	Upper						Lower	Upper						Lower	Upper			
<i>Intercept</i>	-0,52	0,71	-1,92	0,88	0,53	1	0,47	-0,63	0,78	-2,15	0,90	0,65	1	0,42	-2,01	0,83	-3,64	-0,38	5,81	1	0,02
<i>Gender = 1,00</i>	0,19	0,16	-0,12	0,50	1,50	1	0,22	0,45	0,17	0,11	0,79	6,62	1	0,01	0,44	0,18	0,10	0,79	6,41	1	0,01
<i>Gender = 0,00</i>	0 ^a							0 ^a													
<i>Age</i>	-0,02	0,01	-0,04	-0,01	12,97	1	<,001	-0,03	0,01	-0,04	-0,02	16,99	1	<,001	-0,01	0,01	-0,02	0,01	0,71	1	0,40
<i>Economic</i>	0,07	0,05	-0,02	0,16	2,19	1	0,14	-0,04	0,05	-0,14	0,06	0,70	1	0,40	0,16	0,06	0,03	0,28	6,10	1	0,01
<i>Pragmatic - convenience</i>	0,01	0,03	-0,04	0,06	0,15	1	0,70	0,08	0,03	0,03	0,14	8,43	1	0,00	0,06	0,03	-0,01	0,12	3,11	1	0,08
<i>Pragmatic – quality</i>	0,11	0,08	-0,05	0,28	1,85	1	0,17	-0,18	0,08	-0,34	-0,01	4,49	1	0,03	-0,17	0,09	-0,36	0,01	3,37	1	0,07
<i>Cognitive</i>	0,02	0,03	-0,05	0,08	0,30	1	0,59	0,14	0,04	0,07	0,21	13,35	1	<,001	-0,04	0,03	-0,11	0,02	1,62	1	0,20
<i>Personal</i>	-0,02	0,03	-0,07	0,04	0,30	1	0,58	-0,01	0,03	-0,07	0,05	0,17	1	0,68	0,06	0,03	0,00	0,12	4,16	1	0,04
<i>Social</i>	-0,04	0,03	-0,09	0,02	1,35	1	0,25	-0,04	0,03	-0,10	0,02	1,47	1	0,23	0,05	0,03	-0,01	0,12	2,49	1	0,12
<i>Hedonic</i>	0,03	0,03	-0,04	0,09	0,59	1	0,44	0,20	0,04	0,11	0,28	21,28	1	<,001	-0,14	0,04	-0,22	-0,07	13,07	1	<,001
<i>Societal</i>	-0,18	0,04	-0,27	-0,10	17,15	1	<,001	-0,03	0,05	-0,13	0,06	0,51	1	0,48	0,16	0,06	0,04	0,28	6,70	1	0,01

Note. These parameter estimates rely upon the weighted sample; ^a = set to zero because this parameter is redundant.

5. Discussion

The fast-fashion industry despite being among the most unsustainable industries (Ellen MacArthur Foundation, 2017) still prevails, while sustainable fashion – as shown by this research – merely appeals to niche markets (Corvellec & Stål, 2017; Borg et al., 2020), even though customers reflect a growing interest in sustainability (Antikainen et al., 2020; Lee & Chow, 2020; Medalla et al., 2021). Therefore, there is an urgent need to increase customer engagement with circular business models (Urbinati et al., 2021) such as business models based on product-oriented and use-oriented PSSs (da Costa Fernandes et al., 2020). By investigating how expectations in terms of economic, pragmatic, cognitive, personal, social, hedonic, and societal benefits affect customer engagement with PSS-based business models, this research contributes to a better understanding of how to engage customers with different types of PSSs from a theoretical and practical perspective. In what follows, we elaborate on the theoretical and practical implications of this research while also outlining the limitations and future research directions.

5.1 Theoretical implications

From a theoretical perspective, this study builds upon recent calls for addressing PSSs beyond the narrow firm-centric view, by exploring what benefits customers expect when engaging with PSS-based business models (Fehrer & Wieland, 2021; Geissdoerfer et al., 2020; Antikainen et al., 2020). Specifically, this research demonstrates that the success of business models based on PSSs in the fashion industry is dependent upon customers' expectations, as the benefits that customers expect from fashion items, in general, shape – as proposed by social exchange theory – their engagement with different types of PSSs in the fashion industry. As a matter of fact, the results advance social exchange theory by showing that customer engagement with different types of PSSs in the fashion industry is shaped by not only expectations in terms of the individual benefits – such as uniqueness (personal benefits) – but also expectations about the societal benefits that fashion items should bring (here, reducing social and environmental harm). As such, this research builds upon the work of Matthews and Hodges (2016) and Brydges (2021) who refer to a growing consumer demand for more environmentally sustainable offers.

Meanwhile, the present research suggests that customers who engage with PSSs may have higher expectations about the societal benefits that fashion items should bring than those who do not engage with PSSs, but this does not hold for customer engagement with all types of PSSs. Indeed, customers who engage with second-hand fashion were found to have higher

expectations in terms of the societal benefits than those who do not engage with second-hand fashion, which confirms – in accordance with Medalla et al. (2021) and Hur (2020) – the growing awareness about the role of second-hand fashion in preserving people and the environment. Other types of PSSs, however, may not play that role in people’s minds, as customers who engage or do not engage with PSSs with a swapping scheme do not have different expectations in terms of the societal benefits. Moreover, respondents who engage with PSSs with a rental scheme even tend to have lower expectations in terms of societal benefits of fashion items than those who do not engage with this type of PSS. One explanation is that the use of fashion rental is restrained to special occasions, such as weddings and carnival.

About customer expectations about the individual benefits that fashion items should bring, the present research also identified differences between customers who engage and do not engage with specific types of PSSs in the fashion industry. First, the empirical evidence shows that respondents who engage with swapping tend to have higher expectations in terms of hedonic, cognitive, and (pragmatic) convenience benefits and lower expectations in terms of (pragmatic) quality benefits than those who do not engage with swapping. Customers who engage with second-hand fashion, in turn, tend to have lower expectations in terms of hedonic benefits than those who do not, but the opposite holds for their expectations in terms of economic and personal benefits. Finally, expectations in terms of individual benefits do not play a role for customer engagement with rental fashion.

The aforementioned evidence suggests that the expectations in terms of individual and societal benefits may steer customers towards engaging with specific types of PSSs, thereby building upon social exchange theory. Demographic characteristics, however, also have their role to play, as age and gender also explain customer engagement with PSSs. Indeed, the present research suggests that – in line with the work of Lee and Chow (2020) and Armstrong et al. (2016) – customers who engage with PSSs with a rental and/or swapping scheme tend to be younger and customers who engage with PSSs with product-oriented PSSs with a swapping or second-hand scheme also tend to be female consumers.

5.2 Practical implications

By highlighting customers’ expectations in terms of the individual and societal benefits that fashion items should reach and how these expectations shape customer engagement with different types of PSSs, this research is a step further to the implementation of PSSs-based business models in consumer markets, which has so far received little attention (Borg et al.,

2020; Annarelli et al., 2021) despite its potential for a circular economy transition (Tukker, 2004; 2015).

First, the research findings may help fashion companies to determine what benefits to signal when communicating about PSS-based business models with customers. Customers who engage with PSS-based business models with a swapping scheme tend to care more about hedonic, cognitive, and (pragmatic) convenience benefits than those customers who do not engage in swapping. Against this background, fashion providers may benefit from signaling these types of benefits when communicating about their swapping events. Providers of second-hand fashion, in turn, may benefit from signaling the economic, personal, and societal benefits to customers, as these benefits tend to be valued by their customers who engage with second-hand fashion.

Second, higher expectations in terms of (pragmatic) quality and/or hedonic benefits were found to steer customers away from engaging with PSS-based business models with a swapping scheme and a second-hand scheme. Consequently, fashion providers with product-oriented PSSs may boost engagement by investing in meeting expectations that are not (fully) met. To meet the quality expectations, fashion providers can consider setting quality standards during fashion-swapping events. By launching a mobile app for second-hand fashion, companies have a chance to meet high expectations in terms of hedonic benefits. Indeed, existing research suggests that mobile apps generate fun for customers (Alnawas & Aburub, 2016).

Third, PSS providers in the fashion industry may take advantage of not only aligning their communication with the individual and/or societal benefits that customers expect from fashion, but also educating customers about the societal benefits that different types of PSS-based business models can generate from them. This recommendation echoes the call of Mishra et al.'s (2020) for increasing customers' awareness for sustainable fashion. To achieve this end, fashion providers may rely on Instagram micro-celebrities. Indeed, recent research suggests that micro-celebrities may contribute to fueling the circular fashion (Shrivastava et al., 2021). Moreover, the same goes for established fashion brands, as they increasingly embrace the idea of PSSs featuring their own designs (Brydges, 2021). If these fashion brands join PSS providers in communicating about the benefits of renting, swapping, and second-hand fashion, customer engagement can reach a boost.

5.3 Limitations and future research avenues

This research presents the following limitations that need to be addressed in future studies. First, as customer engagement with different types of PSSs may vary across different countries, future

research might opt for a cross-country analysis of customer engagement with product-oriented and use-oriented PSSs. More particularly, future research may investigate the role of legislative frameworks, socio-cultural values, and norms along with the availability of different PSSs. Large scale surveys in which customers from different countries are involved may allow to uncover new patterns underlying customers' engagement with PSSs.

Next, given that consumer markets are characterized by lower PSS adoption than business markets (Tukker, 2015), future research could investigate the generalizability of our research findings by exploring customer engagement with product-oriented and use-oriented PSSs in other consumer markets than the market for fashion consumption. Coherently with this, therefore, also cross-industry analyses of customer engagement with product-oriented and use-oriented PSSs deserve further investigation. Additionally, given the spread of digital technologies and online platforms for a business models' transition of companies towards circular economy, future research could investigate customers' expected benefits from engaging with various PSSs-based business models in the physical reality (e.g., physical stores) and the digital reality (e.g., online sharing platforms).

Finally, the present research explores fashion PSSs from a customer engagement perspective, although the adoption of PSSs-based business models may be associated with a vaster network of actors (Geissdoerfer et al., 2020; Fehrer & Wieland, 2021), spanning from designers, schools, and micro-celebrities on Instagram. Therefore, future research could investigate the impact these actors exert on customer engagement with PSSs.

6. Conclusion

This research reveals that customer engagement with various and coexisting PSSs in the fashion industry is a function of the benefits that customers expect to reach (economic, pragmatic, cognitive, personal, hedonic, and societal expectations) and their demographic characteristics (gender and age). Depending on demographic characteristics and the expected benefits, customers were found to engage with specific PSSs (here, product-oriented and use-oriented PSSs). As a consequence, fashion companies may benefit from leveraging demographics and expected benefits when developing PSSs and communicating about these PSSs.

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