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Published in:
Journal of Cleaner Production

DOI:
10.1016/j.jclepro.2023.139302

Publication date:
2023

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (Harvard):
Demyanova, D, Colucci, M, Silva, ES & Vecchi, A 2023, 'Assessing consumers' propensity towards product-service systems in the fashion industry: a cross-national comparison between Russia and Italy', *Journal of Cleaner Production*, vol. 428, 139302. https://doi.org/10.1016/j.jclepro.2023.139302

Journal of Cleaner Production 428 (2023) 139302

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

Assessing consumers' propensity towards product-service systems in the fashion industry: A cross-national comparison between Russia and Italy

Daria Demyanova [a], Mariachiara Colucci [a,*], Emmanuel Sirimal Silva [b], Alessandra Vecchi [c]

[a] *Department of Management, University of Bologna, Via Capo di Lucca, 34, 40126, Bologna, Italy*
[b] *Department of Economics and Law, Glasgow School for Business and Society, Glasgow Caledonian University, Cowcaddens Road, Glasgow, G4 0BA, Scotland, United Kingdom*
[c] *Department of Environment and Prevention Sciences (DEPS), University of Ferrara, Palazzo Turchi di Bagno, Corso Ercole I D'Este, 32, 44121, Ferrara, Italy*

ARTICLE INFO

Handling Editor: Yang Liu

Keywords:
Fashion industry
Drivers and barriers
Product-service systems
Italy
Russia

ABSTRACT

To assess the propensity of Russian and Italian fashion consumers to use Product-Service Systems (PSSs), the study identifies the drivers and barriers for their adoption to improve decision-making and targeting of consumers when launching PSSs in markets with different socio-cultural and economic characteristics. After providing a comprehensive list of the services that are currently implemented in the fashion industry, the study also compares the level of interest in PSSs for Russian and Italian consumers, as well as their willingness to recommend, actual usage of, and attitude towards PSSs. The methodology relies on an exploratory empirical study between Russian and Italian consumers, using a survey leading to a final sample of 328 participants. From the findings, it emerges that the national context plays a pivotal role in determining the propensity of fashion consumers to adopt PSSs. We find that Italian consumers are more inclined to adopt PSSs vis-a-vis their counterparts. Further, by identifying the key drivers and barriers, we also highlight potential opportunities and threats for the adoption of PSSs in the future. Given that the widespread adoption at an international level of PSSs is strictly related to their potential in terms of scalability, the findings have highly significant implications for both theory and practice.

1. Introduction

Amongst fashion consumers, there is growing awareness of environmental issues, climate change and lack of resources. Material waste and resource inefficiency are closely associated with the notions of sustainability and Circular Economy (CE). CE aims to decouple economic growth from natural resource depletion and environmental degradation through activities that reduce, reuse and recycle materials in production, distribution and consumption processes (Hvass and Pedersen, 2019). The concept of CE has also gained considerable momentum from governments and policymakers all over the world. Despite this growing attention, in 2019 the Circularity Gap Report showed that only 9% of the world economy was circular (The platform for accelerating the circular economy, 2019).

Within this context, the textile and clothing industry is considered one of the most polluting industries worldwide (Ellen MacArthur Foundation, 2017; McKinsey & Co and Global Fashion Agenda, 2020; Colucci and Vecchi, 2021; Abbate et al., 2023), whereby circular practices to reduce its environmental footprint are required and rather urgent. From a sustainability perspective, not only fashion production but also fashion consumption should become less environmentally and socially harmful. The desire for novelty that distinctively characterizes the fashion industry primarily drives enormous amounts of fashion consumption. This trend coupled with falling prices and questionable quality further encourages fashion consumption, therefore resulting in garments disposal (Armstrong et al., 2015).

Involving the consumer is pivotal to determine the success of CE-driven initiatives (Ferasso et al., 2020; Ki et al., 2021; Elf et al., 2022). More informed consumers are now more interested in the country of origin of fashion products along with supply chains' transparency. Therefore, current studies on consumer behaviour have investigated the factors influencing sustainable clothing purchasing (e.g., green confidence, environmental awareness), clothing reuse (e.g., income and altruism), as well as how consumers handle fashion products at the end

* Corresponding author.
E-mail addresses: daria.demyanova2@unibo.it (D. Demyanova), mariachiara.colucci@unibo.it (M. Colucci), emmanuel.silva@gcu.ac.uk (E.S. Silva), a.vecchi@unife.it (A. Vecchi).

https://doi.org/10.1016/j.jclepro.2023.139302
Received 28 February 2023; Received in revised form 4 October 2023; Accepted 13 October 2023
Available online 16 October 2023

of their life cycle (e.g., through reselling, donation or recycling). Some of these studies specifically focused their attention on the younger generations and their green values, and on what affects the intentions to purchase eco-friendly fashion items, finding that price is (still) a priority (see Abbate et al., 2023 for a review). Initiatives are therefore needed to provide consumers with alternatives to purchasing new, inexpensive, low-quality clothing.

Product-Service Systems (PSSs) are instrumental to support the implementation of circularity by the fashion industry being amongst the most effective solutions to achieve product longevity through the provision of business models that provide for the syncretic delivery of products and services. Some companies are already implementing some PSSs. For instance, Zara, H&M Group, The North Face, and many other companies have implemented take-back programs. Brands such as Nudie Jeans, Patagonia, Barbour offer repair services. Some other brands, such as Mud Jeans and Twinset, see fashion rental as an opportunity to extend their core business. Kering Group has recently invested in the luxury bag rental service “Cocoon”, thus confirming that the rental market is booming.

Given the crucial role played by consumers in determining the success of PSSs initiatives (Tunn et al., 2021) and given their wide range, it is important to understand consumers’ propensity towards each type of PSSs, by identifying those key factors that are likely to increase the acceptance or that might hinder their adoption. The literature seems to suggest that drivers and barriers are likely to vary according both to the context in which the PSS takes place and in relation to the more specific type of PSS under investigation. Consumers have been found to engage with PSSs in the fashion industry depending on the expected benefits and their demographic characteristics (Khitous et al., 2022). Conversely, they also seem reluctant to engage with PSSs when they mistrust providers and do not find easiness of use (Armstrong et al., 2015). Yet, current research has only focused on a few types of PSSs such as styling consultancy, fashion rental, and swapping. Furthermore, the consumers’ demographic features studied so far do not account for nationality amongst the factors affecting PSSs’ propensity (Armstrong et al., 2016; Khitous et al., 2022). By seizing this vacuum, this paper aims to delve more in-depth into the cross-national acceptance of PSSs in the fashion industry.

More precisely, this paper investigates the role of different national contexts on the propensity towards PSSs, by focusing on Russia and Italy. These two countries differ in terms of socio-cultural, and economic dimensions. Furthermore, the maturity of the two countries in terms of CE legislation differs as well, namely Russia has just recently acknowledged these issues whereas Italy has a more established legal framework (Ghisellini and Ulgiati, 2020). To assess the propensity of Russian and Italian fashion consumers to use PSSs, the study develops two main research questions aimed at identifying the drivers and barriers to the adoption of PSSs for Russian and Italian consumers, respectively. The study also compares the level of interest in, and the willingness to recommend PSSs to friends by Russian and Italian consumers. The methodology relies on a comparative study between Italian and Russian fashion consumers, involving a sample of 328 female consumers.

The remainder of this article is organized as follows. The second section focuses on the PSSs as a suitable approach to the implementation of the CE and how this approach is particularly relevant to the fashion industry respectively in Russia and Italy and introduces two research questions. After presenting the methods adopted in section three, the fourth section illustrates the findings. Finally, the fifth section addresses the original contribution of the paper, the managerial implications, and limitations along with directions for future research.

2. Circular Economy and product-service systems in the fashion industry

2.1. The product-service systems approach to circularity

Circularity, in the context of sustainable design and production, refers to a regenerative system where resources are used efficiently and waste is minimized, ultimately aiming to keep products, materials, and resources in circulation for as long as possible (Ellen MacArthur Foundation, 2013; Urbinati et al., 2017), The concept of circularity contrasts with the traditional linear economy, where products are manufactured, used, and then discarded as waste. CE principles promote sustainability by emphasizing the reduction of waste, the reuse of materials, and the recycling of products and components (Yuan et al., 2006).

In recent years, the implementation of circular practices has assumed growing importance in every industrial sector and increasing attention is being paid to their effectiveness (Hrouga and Michel, 2023; Galatti and Baruque-Ramos, 2022). Arguably, there is scope in using resources more efficiently, as better eco-design, responsible waste management and prevention, and the reuse and recycling of materials can possibly bring net savings to businesses and consumers, and also reducing their environmental impact. Companies could benefit from CE regenerative systems that reduce resource inputs, waste, emissions, and/or energy leakages by slowing, closing, and narrowing material and energy loops (Camilleri, 2019).

Conversely, shifting from product use to service use represents one of the most powerful approaches for the achievement of a more circular society (Fargnoli et al., 2012). The Product-Service System (PSS) approach aligns with CE principles (Geissdoerfer et al., 2017; Khitous et al., 2022). It shifts the focus from selling products to delivering services and can help achieve circularity through various strategies, including the 5 R s and 6 R s. The 5 R s and 6 R s strategies are concepts that originate from the CE principles and sustainable resource management. The 5 R s (Reduce, Reuse, Recycle, Recover, and Remanufacture) and the 6 R s (which often include Redistribution) are typically used to describe a set of practices aimed at achieving more circular resource use. They represent a logical progression in the effort to minimize waste and maximize the utilization of resources throughout a product or material’s lifecycle (Ellen MacArthur Foundation, 2013; European Commission, 2020; Ghisellini and Ulgiati, 2020). Table 1 below shows the alignment between the 5 R s/6 R s strategies and the PSSs approach.

Many scholars claim that PSSs are indeed moving society towards a resource-efficient, CE (Tukker, 2015; Piscicelli et al., 2015; Yuan et al., 2006). Differently from product-based business models, service or function-based business models, such as the PSSs, are in fact delivered to achieve the so-called “resource revolution” (i.e., circular goals). PSSs shift the businesses’ focus from designing and selling only physical products, to selling a marketable set of products, services, supporting networks, and infrastructures, by including repair and maintenance, updates/upgrades, help desk, training and consultancy, and disposal services such as recycling and take-back (Gaiardelli et al., 2014).

PSS provides a mix of tangible products and intangible services designed to fulfil specific consumers’ needs through the provision of more dematerialised services, which are also often associated with changes in the ownership structure (Mont, 2002; Tukker and Tischner, 2006). Research supports the assumption that focusing on final user needs or on the service a user wants would provide need-fulfilment systems with the minimization of resource flows in the economy while maximizing user satisfaction (Tukker, 2015). Indeed, the environmental profile of service industries is less problematic than manufacturing, and manufacturers have started delivering value propositions that include the provision of services (Mont, 2002). Selling products and services together is a traditional business model that has received renewed interest as sustainability challenges have increased, focusing on product life extension and the improvement of the product value with intangible

Table 1
Alignment between the 5 R s/6 R s Strategies and the PSSs approach.

5 R s/6 R s Strategies	PSSs Approach
Reduce: Reducing the consumption of resources is the first step towards circularity	In the PSS context, this could involve designing products that are more durable, energy-efficient, and have a longer lifespan. By offering services rather than selling products, companies can also reduce overproduction and overconsumption.
Reuse: Reusing products or components is a key aspect of circularity.	PSS encourages designing products for multiple lifecycles and refurbishing or upgrading them when needed. For example, a company that offers a PSS for office furniture might refurbish and reuse furniture items instead of selling new ones.
Remanufacture: Remanufacturing involves disassembling and rebuilding products to extend their life.	PSS can facilitate this process by maintaining ownership of products and taking responsibility for their maintenance and refurbishment.
Recycle: Recycling is the process of extracting valuable materials from products or components at the end of their life	PSS can incorporate recycling by ensuring that products and materials are designed with recyclability in mind, making it easier to disassemble and separate materials for recycling.
Recover: Recovery involves capturing and repurposing valuable materials or energy from waste streams.	PSS can help in managing waste streams more effectively and finding innovative ways to recover resources from products and services that reach the end of their life.
Redistribute: While not always explicitly mentioned in the 5Rs, redistribution is an important concept in PSS	It involves sharing or leasing products among multiple users, thereby optimizing resource utilization and reducing the overall demand for new products.

services (e.g., Halen et al., 2005). Accordingly, PSS offers product development strategies that heighten consumer satisfaction while dematerializing the traditional production-consumption cycle, and ultimately reducing the environmental impact (Armstrong and Lang, 2013).

According to the prevailing definition of PSSs, product(s) and service (s) are combined in a sustainable system - or more sustainable than the competing product - to deliver required user functionality (Tukker, 2015; Tukker and Tischner, 2006). The literature identifies three main categories of PSSs - *Product-Oriented (PO) services*, the least radical and most implemented, in which selling product is core to the value proposition but product-related services are offered as well, such as maintenance or take-back schemes; *Use-Oriented (UO) services* that, differently, lack the ownership of the product, which remains to the company, and offer leasing, renting/sharing or pooling schemes; and finally *Result-Oriented (RO) services* that are centred around the result (or function) delivered instead of the product sold, like management or outsourcing activities, and that represent the most effective source of reduced environmental impact (Tukker, 2004).

The literature review highlights that not all PSSs are by definitions more resource-efficient than (traditional) product-based systems – in particular, PO services still focus on product sales and UO services seem to generate less environmentally conscious user behaviour when products are leased and rented thus leading to faster replacement (and new materials use). Indeed, RO PSSs tend to have the greatest potential to reduce the use of materials and hence the costs but involve the most radical change in the business model, therefore limiting the real contribution to circularity (Tukker, 2015). Companies can escape price competition and find new sources for differentiation by embracing a service-oriented model of manufacturing. Yet, consumers' actual demands and purchasing behaviour seem to confute the assumptions that the customer is more interested in use rather than ownership or is looking for use rather than the product itself (Mont, 2002). Particularly in B2C contexts, consumers appreciate ownership and sense of control (Halme et al., 2006; Tukker and Tischer, 2006), possessing new, 'in fashion' products (Intlekofer et al., 2010), and easy access to the product (Tukker, 2015). PSSs can become a key asset for a new customer value proposition based on functionality, and drive companies to achieve CE goals (Pal, 2016; Stål and Jansson, 2017; Holtström et al., 2019).

2.2. Product-service systems in the fashion industry

Management research has delved into the reasons behind the utilization of circular practices in the fashion industry. Some scholars have explored consumers' motivations to use online fashion rental services. Lee and Huang (2020) and Ek Styvén and Mariani (2020) have identified various factors that positively influence consumers' intentions to use these services, including behaviours, subjective norms, perceived environmental sustainability, economic motivation, and distance from the traditional linear consumption system. Numerous studies have also approached the topic of recycled and reused products from different angles. Some researchers have discovered that environmental considerations and social attitudes play significant roles in customers' decisions to donate clothes (Lai and Chang, 2020; Camacho-Otero et al., 2019). Other studies have investigated consumer behaviours related to recycling and reusing apparel (Paco et al., 2021; Joung and Park-Poaps, 2013). Park and Lin (2020) have examined the disparity between purchasing intentions and experiences when it comes to recycled and upcycled fashion items. Furthermore, researchers have focused on exploring consumer intentions towards the consumption of reused clothing, recycled clothes, and upcycled garments (Hazen et al., 2017; Chaturvedi et al., 2020; Kim et al., 2021). De Jesus and Mendonça (2018) emphasized the significance of socio-cultural factors in the transition to CE. They highlighted social awareness, environmental literacy, and shifting consumer preferences as crucial elements. Finally, Cruz-Cardenas et al. (2019) identified several factors, including income and altruism, as significant antecedents to clothing reuse.

Several types of PSSs, such as take-back, rental, repair, and many other services, give clothes a second life or help consumers dispose of their old clothes in the most environmentally friendly ways. Some authors have advanced the idea that PSSs' success relies on their capability to deliver emotional satisfaction via eco-efficient solutions that are also responsive to social values (Spaargaren, 2003; Armstrong et al., 2015). PSSs depend upon the interaction between companies and consumers to meet needs and to foster a lifecycle approach by thus reducing products' environmental impact (Briceno and Stagl, 2006; Armstrong and Lang, 2013).

Although PSSs have been implemented for quite a long time, the literature has devoted relatively limited attention to the topic and only in recent times. Some studies have focused on the theoretical content of PSSs in the fashion industry (dos Santos et al., 2019; Dissanayake and Weerasinghe, 2021), while others have focused on case studies (Holtström et al., 2019), on the practical application of some PSSs (Stål and Jansson, 2017) or consumers' perspective (Armstrong et al., 2015). However, a comprehensive classification of these services is still lacking. Literature has investigated the role of PSSs in the fashion industry, but there is still no shared or acknowledged list of all the services that follow under the PSSs label. Khitous et al. (2022) reveal that customer engagement with both PO and UO 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). Their study reveals that customer engagement with PSSs do not only depend on individual benefit expectations but also on expectations regarding the societal benefits that fashion items should provide, particularly in terms of reducing social and environmental harm. Furthermore, their findings suggest that customers who engage with PSSs may have higher expectations regarding the societal benefits that fashion items should offer compared to those who do not participate in PSSs. However, this pattern does not apply universally across all types of PO PSSs. Some types of PSSs, such as those with a swapping scheme, may not be associated with the same level of societal benefits in customers' minds. Additionally, customers who engage with a rental service (UO PSS) tend to have lower expectations regarding the societal benefits of fashion items compared to non-engagers, potentially due to the limited use of fashion rental for special occasions.

Regarding individual benefit expectations, differences were identified between customers who engage and do not engage with specific types of PSSs in the fashion industry. Customers who engage in a PO PSSs such as swapping, for example, tend to have higher expectations of hedonic, cognitive, and convenience benefits, but lower expectations of quality benefits compared to non-engagers. Expectations of individual benefits, however, do not play a significant role in customer engagement with a UO PSSs such as rental fashion. Additionally, demographic characteristics, such as age and gender, also contribute to customer engagement with PSSs. Younger customers and female consumers are more likely to engage in PSSs with rental and/or swapping schemes, as well as PO PSSs with swapping or UOPSSs.

After reviewing the existing literature, by capitalising on this work and by adopting the taxonomy introduced by Tukker and colleagues (Tukker, 2004, 2015; Tukker and Tischer, 2006), namely PO, UO, and RO, we identify twelve PSSs that are currently implemented in the fashion industry. Fashion rental (UO) is probably the most discussed type of PSSs. Then the services primarily addressed in the literature are clothing repair service (PO), followed by take-back programs (PO), clothing swaps (UO), fashion re-design service (PO), do-it-yourself (DIY) (PO), styling consultancy (UO), customization services (PO), second-hand retail (PO), fashion result (RO), washing or break-in advice (PO), and digital platforms (UO) as depicted in Table 2.

The last four services are rarely found and loosely discussed by the PSSs literature, so their relationship to the concept of PSS remains rather questionable. There is no evidence of the "fashion result" in the practice, "second-hand retailing" is typically associated with collaborative consumption rather than being considered a standalone PSS, "digital platforms" are primarily viewed as a means of providing services rather than being considered a service themselves, and finally "washing/breaking advice" is not entirely a service, as it can be conveyed through a product in written format (e.g., manual). Since the clothing industry is product-focused (Armstrong et al., 2015), PO services are closer to current business models, while UO and RO services could assist in changing the current ownership-based to service-based consumption (Cherry and Pidgeon, 2018). Even though PO services are easier to implement, UO services represent a greater opportunity for significant environmental impact reduction (Armstrong et al., 2016).

2.2.1. Drivers and barriers for consumers' adoption of product-service systems

The wide articulation of PSSs does not guarantee their success or their widespread diffusion in the fashion market, and companies should consider all the contextual factors that may affect the implementation of such practices. Recent literature has emphasized that consumers' propensity is probably the most critical factor for PSSs implementation and success, as PSSs rely on close collaboration between companies and consumers (Armstrong et al., 2015). For instance, propensity towards take-back services, recycling, reuse, or sharing-use depends on consumers' awareness and consequent involvement, which is a fundamental element of PSSs design and delivery (Armstrong and Lang, 2013). Despite a lack of implementation, according to some studies, consumers seem interested in PSSs, in rental and repair services - the most discussed ones (e.g., Diddi and Yan, 2019; Lang et al., 2019) but also in some design strategies (Niinimäki and Hassi, 2011).

Literature has also started to identify barriers and drivers for consumers' adoption of PSSs. Armstrong et al. (2015), for instance, suggest that the environmental benefits can contribute to the positive perceptions of various PSSs, as they involve a conscious attitude and understanding of environmental problems. However, some studies argue that such concerns have little impact on clothing purchases, and companies cannot rely on consumers' green attitudes to drive PSSs use (Fisher et al., 2008). The effect of financial motivations also remains ambiguous. Providing cost-saving benefits to consumers could be a way to improve consumer engagement in the CE (Dissanayake and Weerasinghe, 2021). However, for example, Hvass and Pedersen (2019) find that financial rewards in discount vouchers did not result in large return volumes in the take-back program. Some other research emphasizes the importance of social motivation for the adoption of PSSs (Armstrong et al., 2016). These mixed findings may stem from the types of the services provided or on the demographic characteristics of the samples involved (Khitous et al., 2022). Emotional attachment may drive PSS, as the higher the consumer's emotional involvement in creating or designing a fashion item, the more likely they will use it or repair – instead of disposing of – it (Dissanayake and Weerasinghe, 2021). In line with this, product customization and personalization applications have emerged with the aim of improving customers' perception of personalized product design (Mourtzis, 2020, 2022). Relatedly, perceived enjoyment positively influences the attitude toward a specific service, such as fashion rental (Lang et al., 2019). Since consumers might be unaware of the PSSs benefits, the information provided by brands might motivate them to use PSS schemes, as well as commercial and promotion initiatives that can demonstrate the value of PSSs. According to some studies, store personnel or the store itself play a crucial role in communicating PSS options (Hvass and Pedersen, 2019; Dissanayake and Weerasinghe, 2021).

As far as barriers to the consumers' adoption of PSSs are concerned, the removal of personal ownership is considered one of the most critical challenges (Armstrong et al., 2015, 2016). When product ownership is important for status or a sense of control, the more functional offerings of a PSS may seem unattractive to consumers. Relatedly, some studies argue that the lack of consumer interest, awareness, and education might hinder the development of a CE and, in particular, the diffusion of PSSs (Hvass and Pedersen, 2019; Dissanayake and Weerasinghe, 2021), as its value proposition remains unclear for the consumers (Armstrong et al., 2015). In addition, consumers are generally scarcely aware of the environmental impact of their clothing, thus education on circular fashion practices (Dissanayake and Weerasinghe, 2021) and additional information about materials and processes (Armstrong et al., 2015) seem rather needed. Along with that, consumers may have limited confidence in the company to deliver the services successfully and may be sceptical about the company's motives for offering such services (Armstrong et al., 2016). Indeed, the complexity of the service offer is an obstacle to building trust (Armstrong et al., 2015). Moreover, some use-oriented PSS models, such as product renting and swapping, encourage consumers to share products where concerns about the hygiene of used goods may arise (Camacho-Otero et al., 2019; Day et al., 2020). Inconvenience might also become a barrier to PSS adoption, for example, in take-back programs (Hvass and Pedersen, 2019). Furthermore, consumers find some of the services time-consuming, such as styling consultancy (Armstrong et al., 2016). In line with that, a lack of necessary skills can become a barrier for a DIY offering (Hirscher et al., 2018). Fashion-oriented consumers and consumers who shop for fashion clothes to express their own identity or fulfil emotional needs are more likely to refrain from switching to PSS as they consider these services as an emotional sacrifice (Armstrong et al., 2016). Similarly, they can prefer to wear new garments, rather than swapping with the used ones (Lang and Zhang, 2019). According to Pereira et al. (2021), consumers often buy fashion items to become a part of a certain group or social class. Moreover, to maintain their reputation, individuals must act according to the expectations of the group members, falling under social pressure to conform (Pereira et al., 2021). Finally, a PSS such as a styling consultancy may raise financial concerns due to their perceived association with high-end clientele or celebrities, resulting in potentially unaffordable prices for average consumers (Armstrong et al., 2016).

Table 2
List of the PSSs and their categories, as reported in the fashion literature.

PSS Categories PSS Types	Product-Oriented Services (PO)				Use-Oriented Services (UO)							Results-Oriented Services (RO)
	Digital Platforms[a]	Clothing Swaps	Styling Consultancy	Fashion Rental	Do-It-Yourself (DIY)	Customization Services	Take-back Programs	Fashion Re-design Service	Clothing Repair	Second-hand Retail [a]	Washing or Break-in Advice [a]	Fashion Result [a]
Rexfelt and Hiort af Ornäs (2009)				1								
Niinimäki and Hassi (2011)		1		1		1		1	1			
Niinimäki (2012)		1		1	1	1	1	1	1		1	
Armstrong and Lang (2013)		1	1	1		1	1	1	1			1
Armstrong et al. (2015)		1	1	1	1	1	1	1	1			1
Armstrong et al. (2016)		1	1	1	1	1		1	1			
Pal (2016)	1	1		1	1		1	1	1			1
Adam et al. (2017)				1	1	1	1	1	1	1		
Retamal (2017)				1								1
Stål and Jansson (2017)			1	1			1		1		1	
Adam (2018)				1	1	1	1	1	1			
Becker-Leifhold and Iran (2018)			1	1			1		1			
Hirscher et al. (2018)					1							
Lang and Armstrong (2018)		1	1	1				1	1			
Bech et al. (2019)	1	1	1	1			1	1	1		1	
Holtström et al. (2019)				1					1	1		
Day et al. (2020)		1	1	1		1			1			1
Dissanayake and Weerasinghe (2021)		1		1	1				1			
Gyde and McNeill (2021)		1	1	1			1	1				
Huynh (2021)				1			1		1	1		
Johnson and Plepys (2021)				1								
Tunn et al. (2021)				1								
Khitous et al. (2022)		1		1					1	1		1
Jain et al. (2022)		1	1	1								
Amasawa et al. (2023)				1								
Total	**2**	**13**	**10**	**24**	**8**	**8**	**11**	**11**	**17**	**4**	**3**	**6**

Note.
[a] Most current research search generally does not include these practices among the PSSs.

It is important to notice that certain barriers cannot be universally applied to all types of PSSs. For instance, "pleasure from buying products instead of using services" or "lack of property feeling" may not be relevant to take-back programs or customization services, as these PSSs do not exclude the shopping experience or the advantage of possessing a piece of clothes. Table 3 below provides a summary of the main drivers and barriers for the adoption of each type of PSS.

The literature review on consumers' drivers and barriers referred only to some of the eight primary PSSs (i.e., rental, repair service, take-back programs, clothing swaps, fashion re-design, DIY, styling consultancy, customization services) - shows some preliminary research direction, yet existing studies are just a few, not all empirical, and they tend to lead to mixed results. There is no established consensus over which barriers might hinder PSS use and which factors might provide an incentive for consumers to switch from traditional linear consumption to the adoption of PSSs. By capitalising on this literature, the aim of the paper is to assess the extent to which the drivers and barriers reviewed apply to each of the eight PSSs.

2.3. Product-service systems adoption in Italy and Russia

Consumers' attitudes and behaviours are highly affected by socio-cultural and economic factors (Koszewska et al., 2020; Lee and Huang, 2020). Research in the fashion industry has studied differences in consumer behaviours across different countries, showing how different values and norms affect consumers' evaluations of fashion products and services in the CE (e.g., Iran et al., 2019; Lee and Huang, 2020; Koszewska et al., 2020). From a cross-country perspective, only PSSs such as fashion rental, clothing swaps, and styling consultancy have been investigated using US and Finnish consumers (Armstrong et al., 2016). Yet, no explicit cross-country comparisons have been performed so far on the propensity toward each type of PSS.

Italy and Russia represent two main target markets for the fashion industry, having both significantly high fashion expenditures (Statista Apparel Report 2021, 2021a, 2021b). Yet, the two countries are rather different in their socio-cultural and economic viewpoints. The fashion market in Russia is dominated by foreign suppliers (Euromonitor International, 2021c), while Italy relies only on a small share of foreign producers (Euromonitor International, 2021b). The fact that the fashion business is a driving sector of the Italian economy, while for Russia other markets are a priority, has affected the consumption habits and behaviours of their consumers. While the most popular leisure activity for Russians is going to the cinema, Italians prefer to go shopping in their spare time (Euromonitor International, 2021a, 2021d). As for Generation Z, it tends to increase spending on apparel in Italy, whereas, in Russia, it tends to spend more on technology (Euromonitor International, 2021a, 2021d).

Socio-cultural differences between the two countries can be inferred through the concept of "individualism vs. collectivism", which indicates the extent to which individuals are integrated into groups in a society (Hofstede et al., 2010). Culture is a collective phenomenon that affects the views and norms of the members in one group and distinguishes them from the individuals in other groups (Hofstede et al., 2010). According to Hofstede Insights (2017), Russia is characterized by a collectivist society with an "individualism score" equal to 39, while Italy is considered to have an individualist culture with a score almost twice as much as the one for Russia. Since prevailing beliefs and social norms in society play a significant role in collectivist cultures (Germani et al., 2021), pushing people to conform to them, in Russia, for instance, wearing second-hand clothes is not socially acceptable as it tends to be perceived as an indication of low income (Sherunkova, 2019). Moreover, as people in developing countries become more economically prosperous, the preference for extended use of materials and products due to frugal saving considerations is substituted by a growing preference for replacement (Saha et al., 2021). Therefore, the more collectivist culture in Russia may represent a barrier to the adoption of PSSs as consumers' propensity is based on the social system they belong to (Hofstede et al., 2010). Differently, in Italy, given the high level of individualism, and consequent self-actualization, consumers are likely to be less pressured to conform to societal norms in choosing what to wear.

From the socio-cultural standpoint, the two countries seem to differ also along their attitudes toward sustainability. According to fashion industry experts, the trend toward responsible production and consumption cannot yet be called massive in Russia. According to a survey conducted for *Vogue Business*, less than half of Russian consumers require brands to be environmentally and socially responsible (Maguire, 2021). Differently, in Italy, environmental consciousness and sustainability are becoming a popular discussion topic. According to Euromonitor International (2021a), 73% of Italians claim that they try to positively impact the environment through their everyday actions. Almost eight out of ten then believe that companies should consider the ecological footprint an essential part of their business model (Mossuti, 2021). In addition, most Italian consumers stated that clothing manufacturers should be bound by law to consider ethical aspects in their operations (Statista, 2022). Furthermore, almost half of the Italian consumers surveyed would rather avoid buying new when they can repair items, while in Russia this percentage is only 37 (Euromonitor International, 2021a, 2021d). If provided with more information, Italian consumers would be willing to alter their shopping habits (Smith, 2022): there is evidence of concerns about the lack of information on what sustainability entails and what virtuous behaviours to adopt to embrace it more thoroughly. In addition, greenwashing and information dumping create confusion and distrust among consumers that ultimately prevent them from switching their shopping habits to more sustainable ones (Smith, 2022; Pellegrinuzzi and Piva, 2022).

As far as the legislation is concerned, the transition to a CE in Italy began to take shape as early as 2015, following the launch of the "CE Package" and the "EU Action Plan for the CE" by the EU (Ghisellini and Ulgiati, 2020). Differently, Russia still does not have any legislation exclusively dealing with CE. It was only in 2019 that the National project, "Ecology" was launched to improve waste management practices and, as a part of it, to promote CE principles (Ecologyofrussia.ru, 2023), along with a federal project that started in 2022 (Governmentru, 2022). In addition, while Italy seems to acknowledge the pivotal importance of raising public awareness and providing education on waste management and sustainable consumption (MASE, 2017; Ghisellini and Ulgiati, 2020), in Russia these policies are primarily focused on companies' behaviours related to manufacturing (e.g., Maiurova et al., 2022).

Finally, depending on the country's economic structure, macroeconomic events can trigger different responses in buying decisions in different countries. At the outset of the COVID-19 pandemic, the Russian fashion market was already in a phase of stagnation in consumer demand, which arose against the backdrop of a slowdown in economic development, a five-year trend of weakening of the Ruble and constant pressure from international economic sanctions. Thus, most Russians face financial hardship as two-thirds of the fashion market is in the low-end segment (Sedih, 2019). With the onset of *force majeure* created by the pandemic, clothing and footwear became the first item of savings: in April 2020, the revenue of retail stores in the segment decreased by 50–70% (Kostyrev, 2020). Such an economic situation might contribute to the success of PSS among Russian consumers since these PSS make it possible to save money, extend the life of garments, or get new clothes without significant financial investments. Therefore, we can assume that the population will seek financial benefits from using PSSs, instead of buying new products (Sedih, 2019; Kostyrev, 2020; Maguire, 2021).

In Italy, Covid-19 hit as well, as the economic burst was already slowing in 2019, after a modest expansion in 2015 (Crisantemi, 2021). However, according to McKinsey, there are already signs of spending recovery as individuals have confirmed an increasing intention to treat themselves with apparel, shoes, and accessories (McKinsey & Co, 2021).

Table 3
PSS types, drivers, and barriers in the literature on the fashion industry.

		Types of PSSs							
		Do-it-yourself (DIY)	Clothing swaps	Styling consultancy	Customization services	Fashion re-design service	Fashion rental	Clothing repair	Take-back programs
Drivers	Environmental benefits	Dissanayake and Weerasinghe (2021)	Becker-Leifhold and Iran (2018); Dissanayake and Weerasinghe (2021); Khitous et al. (2022)	Armstrong et al. (2015); Armstrong et al. (2016); Dissanayake and Weerasinghe (2021)	Dissanayake and Weerasinghe (2021)	Armstrong et al. (2015); Dissanayake and Weerasinghe (2021)	Armstrong et al. (2015); Armstrong et al. (2016); Becker-Leifhold and Iran (2018); Lang et al. (2019); Day et al. (2020); Khitous et al. (2022); Dissanayake and Weerasinghe (2021)	Armstrong et al. (2015); Dissanayake and Weerasinghe (2021)	Armstrong et al. (2015); Dissanayake and Weerasinghe (2021)
	Emotional factors	Niinimäki & Hassi (2011); Armstrong et al. (2015); Hirscher et al. (2018)	Becker-Leifhold and Iran (2018); Khitous et al. (2022)	Armstrong et al. (2015); Armstrong et al. (2016)	Niinimäki & Hassi (2011); Armstrong et al. (2015)	Armstrong et al. (2015)	Rexfelt and Hiort af Ornäs (2009); Armstrong et al. (2015); Armstrong et al. (2016); Becker-Leifhold and Iran (2018); Day et al. (2020); Khitous et al. (2022)	Armstrong et al. (2015)	
	Financial benefits	Dissanayake and Weerasinghe (2021)	Becker-Leifhold and Iran (2018); Dissanayake and Weerasinghe (2021); Khitous et al. (2022)	Armstrong et al. (2015); Armstrong et al. (2016); Dissanayake and Weerasinghe (2021)	Dissanayake and Weerasinghe (2021)	Dissanayake and Weerasinghe (2021)	Armstrong et al. (2015); Armstrong et al. (2016); Becker-Leifhold and Iran (2018); Day et al. (2020); Dissanayake and Weerasinghe (2021); Khitous et al. (2022)	Dissanayake and Weerasinghe (2021)	Armstrong et al. (2015); Hvass and Pedersen (2019); Dissanayake and Weerasinghe (2021)
	Increase in knowledge and awareness	Pal (2016); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Pal (2016); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Pal (2016); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Pal (2016); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Pal (2016); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Pal (2016); Dissanayake and Weerasinghe (2021); Holtström et al., (2019); Hvass and Pedersen (2019)	Pal (2016); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Pal (2016); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)
	Social factors	Hirscher et al. (2018)	Armstrong et al. (2015); Armstrong et al. (2016); Lang and Armstrong (2018); Khitous et al. (2022)	Armstrong et al. (2016); Lang and Armstrong (2018)		Lang and Armstrong (2018)	Rexfelt and Hiort af Ornäs (2009); Armstrong et al. (2016); Lang and Armstrong (2018); Khitous et al. (2022)	Lang and Armstrong (2018)	
Barriers	Financial concerns			Armstrong et al. (2015); Armstrong et al. (2016)					
	Hygiene concerns		Armstrong et al. (2015); Armstrong et al. (2016); Stål and Jansson (2017); Becker-Leifhold and Iran (2018); Camacho-Otero et al. (2019)				Armstrong et al. (2015); Armstrong et al. (2016); Stål and Jansson (2017); Becker-Leifhold and Iran (2018); Holtström et al. (2019); Day et al. (2020); Tunn et al. (2021)		
	Lack of information	Armstrong and Lang (2013); Dissanayake and Weerasinghe (2021); Hvass	Armstrong and Lang (2013); Becker-Leifhold and Iran (2018); Dissanayake and Weerasinghe (2021); Hvass	Armstrong and Lang (2013); Dissanayake and Weerasinghe (2021); Hvass	Armstrong and Lang (2013); Dissanayake and Weerasinghe (2021); Hvass and Pedersen	Armstrong and Lang (2013); Dissanayake and Weerasinghe (2021); Hvass	Armstrong and Lang (2013); Becker-Leifhold and Iran (2018); Dissanayake and Weerasinghe (2021); Hvass	Armstrong and Lang (2013); Dissanayake and Weerasinghe (2021); Hvass	Armstrong and Lang (2013); Dissanayake and Weerasinghe (2021); Hvass

(*continued on next page*)

Table 3 (*continued*)

	Types of PSSs							
	Do-it-yourself (DIY)	Clothing swaps	Styling consultancy	Customization services	Fashion re-design service	Fashion rental	Clothing repair	Take-back programs
	and Pedersen (2019); Pereira et al. (2021)	and Pedersen (2019); Pereira et al. (2021)	and Pedersen (2019); Pereira et al. (2021)	(2019); Pereira et al. (2021)	and Pedersen (2019); Pereira et al. (2021)	and Pedersen (2019); Pereira et al. (2021)	and Pedersen (2019); Pereira et al. (2021)	and Pedersen (2019); Pereira et al. (2021)
Lack of interest in PSSs	Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Becker-Leifhold and Iran (2018); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Becker-Leifhold and Iran (2018); Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)	Dissanayake and Weerasinghe (2021); Hvass and Pedersen (2019)
Lack of necessary skills	Armstrong et al. (2015); Hirscher et al. (2018); Dissanayake and Weerasinghe (2021);							
Lack of property feeling						Rexfelt and Hiort af Ornäs (2009); Armstrong and Lang (2013); Armstrong et al. (2015); Stål and Jansson (2017); Becker-Leifhold and Iran (2018); Holtström et al. (2019); Day et al. (2020)		
Lack of trust in the quality	Armstrong et al. (2015)		Armstrong et al. (2015); Armstrong et al. (2016)	Armstrong et al. (2015)	Armstrong et al. (2015)	Armstrong et al. (2016); Lang et al. (2019); Day et al. (2020); Tunn et al. (2021)	Armstrong et al. (2015)	Armstrong et al. (2015)
Pleasure from buying products instead of using services		Becker-Leifhold and Iran (2018)			Armstrong et al. (2015)	Becker-Leifhold and Iran (2018)	Armstrong et al. (2015)	
Preference for new garments instead of used ones		Lang and Zhang (2019)						
Social pressure	Stål & Jansson (2017); Pereira et al. (2021)	Lang and Zhang (2019); Pereira et al. (2021)	Pereira et al. (2021)	Stål & Jansson (2017); Pereira et al. (2021)	Stål & Jansson (2017); Pereira et al. (2021)	Lang et al. (2019); Pereira et al. (2021)	Stål & Jansson (2017); Pereira et al. (2021)	Stål & Jansson (2017); Pereira et al. (2021)
Time required to participate	Armstrong et al. (2015); Hirscher et al. (2018); Dissanayake and Weerasinghe (2021)		Armstrong et al. (2016)	Armstrong et al. (2015)		Holtström et al. (2019); Tunn et al. (2021)		

Though demand for fashion is unlikely to bounce back due to restrained spending power amid unemployment and rising inequality (Catena et al., 2021), fashion companies should seize new opportunities to satisfy changing consumers' needs. Italy is one of the leading countries in the global fashion industry, and the business of fashion is a driving sector of the Italian economy (Statista Apparel Report 2021, 2021a ; Sabanoglu, 2021). Fashion is also an essential part of the Italian culture and tradition. Differently, in Russia the fashion industry is not key to the country's economy, as in fact Russian consumers are supplied mainly by foreign brands (Euromonitor International, 2021b, 2021c; Sabanoglu, 2021). Like all fashion companies, Italian companies are under the spotlight for their negative environmental footprint (Mossuti, 2021; Smith, 2022). Therefore, they are increasingly embracing those practices aimed at tackling environmental issues, educating consumers in this regard or simply addressing the customer-centric challenges of ethics and responsibility (Sheth et al., 2011). Further, Italians are more mature when it comes to embracing sustainable behaviours.

Additionally, PSSs are relatively new business models for fashion companies to reduce their environmental footprint, so it is unlikely that companies can develop and offer a complete range of services to consumers. It is also unlikely that consumers would adopt a complete set of PSSs. Therefore, it is interesting to explore the general propensity towards these services and investigate the relative preference for each of the 8 specific PSSs. Furthermore, a driver to assess consumers' attitudes is represented by the willingness to recommend a product or service (Lewis and Mehmet, 2019). Based on the cultural differences already discussed between Russia and Italy, we can advance that the two contexts face different levels of social pressure (Hofstede Insights, 2017; Germani et al., 2021). In Russia, even though individuals may be interested in the services, they might not recommend them due to the widespread lack of social acceptance regarding the adoption of such services (e.g., a consumer using rental service could be perceived as someone facing economic difficulties).

2.4. Aim of the study

The literature review highlights the importance of PSSs as an approach that is apt to deliver circularity within the fashion industry. It also suggests that despite a widespread consensus over the crucial role played by consumers in determining the success of such initiatives, a blind spot remains on the critical factors that might facilitate or hinder the consumers' propensity to adopt (each type of) PSSs. Relatedly, we revised and identified the key factors that may facilitate or hinder the adoption of each PSS, after having provided a detailed classification of these services. Yet, when targeting international contexts, we have also acknowledged that possible differences in the socio-cultural and economic characteristics of the national context may affect the adoption of PSSs. Nationality, as a demographic factor for assessing consumers' propensity towards PSSs, has been neglected as well so far by extant studies.

Therefore, in the light of the arguments presented above, Russia and Italy given their socio-cultural and economic differences, appear as two very peculiar settings in which we could fruitfully investigate the consumers' propensity toward PSSs adoption in the fashion industry. As such, the paper pursues the following research questions concerning the drivers and the barriers that might motivate and hinder the adoption of PSSs among Italian and Russian consumers, respectively.

RQ1 *What are the most relevant drivers underlying the adoption of each PSSs by Italian and Russian consumers and is there a difference between Italian and Russian consumers in relation to these drivers?*

RQ2 *What are the most relevant barriers hindering the adoption of each PSSs by Italian and Russian consumers and is there a difference between Italian and Russian consumers in relation to these barriers?*

By drawing on the literature previously outlined, these two research questions will guide our exploratory empirical study (see e.g., Verdecchia et al., 2022; Yaraghi et al., 2015) which the following methods section will detail.

3. Methods

A questionnaire composed of three sections was developed to investigate consumers' propensity toward PSSs in Russia and Italy. The first section sets the objective and context of the study, listing the 8 PSSs (i.e., fashion rental, clothing repair service, take-back programs, clothing swaps, fashion re-design, DIY, styling consultancy, customization services) and verifies respondents' level of knowledge of the concept of PSS in general and of each specific service. The second section measured the constructs developed to answer our research questions. A 7-point Likert scale was used to measure, for each PSS service, the respondents' level of interest; a 3-point semantic differential scale was used to measure the intention to adopt each service; and an 11-point Likert scale was used to measure the willingness to recommend each service. Finally, for each PSS, both the specific drivers and barriers were measured, always listing the relevant options implemented by the fashion industry that were reviewed in the literature. The third and final section of the questionnaire contained demographic questions including age, country of residence, level of income, and level of education; it also included two 7-point Likert scales that measured psychographic questions on the general attitude towards sustainable fashion and intention to buy circular fashion items.

The questions, which were originally developed in English were translated into Italian and Russian by native speakers to ensure linguistic equivalence. Furthermore, before launching the survey, the questionnaire was piloted with five Russian and five Italian fashion consumers and changes were made to improve the internal validity of the instrument (van Teijlingen and Hundley, 2002). The main goal of the survey was to target Russian and Italian consumers between 18 and 65 years old to provide a faithful representation of potential fashion consumers. Female consumers were targeted, as they tend to display a higher interest in purchasing and disposing of fashion apparel compared to male consumers; females are also typically more involved than men in fashion items (Lang and Armstrong, 2018; Khitous et al., 2022). Convenience sampling was used to gather the data. The questionnaire was available for 10 days in January 2022. Convenience sampling was chosen because of higher accessibility, availability, and willingness to participate; it is also frequently employed in quantitative studies (see e.g., Vecchi et al., 2021; Silva and Bonetti, 2021) and places primary emphasis on generalizability, ensuring that the knowledge acquired is reflective of the population from which the sample was selected (Etikan et al., 2016). This allowed us to reach 328 valid responses, of which 177 were from Russia and 151 from Italy.

The data analysis used both descriptive and inferential statistics. Descriptive statistics such as the mean and standard deviation, and graphs were used to summarise the data. We used independent samples t-tests to compare the attitudes between Russian and Italian consumers and provide more substantial evidence to support our research questions. The null hypothesis evaluated was that $\mu_{Russian} = \mu_{Italian}$ (ie., the average responses by Russian consumers were equal to the average responses by Italian consumers). Independent samples t-tests were appropriate as both groups were independent and the sample sizes across each group were large enough to assume a normal distribution of the sampling means based on the central limit theorem (Field, 2022). Levene's (1960) test for equality of variances was also considered when interpreting the test outcomes (the results of which are not reported but available upon request). The level of significance (α) was set at $\alpha = 0.10$ and denotes the maximum probability of making a type 1 error (Privitera, 2015).

4. Empirical results

4.1. Sample demographics

A total of 328 consumers from Russia and Italy responded to the survey. Out of these, 54% of the consumers were residents of Russia and 46% were residents of Italy. Table 4 summarises the demographics within this sample.

Overall, most of the respondents (72.8%) were between 18 and 29 years old. This generation composition in our sample is expected and reasonable as there is evidence that Gen Z is the most involved in CE-related topics (Colucci and Vecchi, 2021). They have a higher level of culture and interest regarding environmental and social issues when compared with previous generations such as Baby Boomers and Gen X (Dwidienawati et al., 2021). Gen Z is much more receptive than previous generations, as it was born in an era of maximum diffusion of the web and, in particular social media, characterized by a rapid and consistent diffusion of data and information of all kinds. Furthermore, 85.9% of the respondents from Russia were aged between 18 and 29 whilst 90.7% of the respondents from Italy were aged between 18 and 35.

Generally, out of all respondents, 72% had completed undergraduate and postgraduate education thereby indicating the sample was highly literate and well-educated. This same percentage was higher for Russia (83.6%) in comparison to Italy (58.3%) indicating more Russian

Table 4
Distribution of selected sample demographics.

Factor	Overall	Russia	Italy
Age			
18–23	39.0%	50.3%	25.8%
24–29	33.8%	27.7%	41.1%
30–35	15.2%	7.9%	23.8%
36–41	5.2%	5.1%	5.3%
42–47	4.3%	6.8%	1.3%
48–53	1.5%	1.7%	1.3%
54 and older	0.9%	0.6%	1.3%
Education			
Incomplete Secondary Education	1.8%	1.1%	2.6%
Secondary Education	21.0%	12.4%	31.1%
Bachelor's Degree	36.6%	42.4%	29.8%
Master's Degree	35.4%	41.2%	28.5%
Ph.D	5.2%	2.8%	7.9%
Financial Status			
There is no money to buy food	1.2%	1.7%	0.7%
There is enough money only for food	4.0%	6.8%	0.7%
Enough money to buy food and clothes, but it is difficult to buy most durable goods (e.g., TV, refrigerator)	29.0%	39.5%	16.6%
Buying durable goods (e.g., TV, refrigerator) is not difficult, but I can't afford to buy a car	32.9%	35.0%	30.5%
I can afford to buy a car, but I can't buy an apartment	22.3%	14.1%	31.8%
There is enough money for everything	10.7%	2.8%	19.9%

consumers had completed their university education than Italian consumers in our sample. Finally, we measured the financial status of the respondents by grouping the respondents based on whether they owned a car or not as research by Dargay (2001) indicates that vehicle ownership tends to rise when income grows and is therefore considered as a luxury purchase. The sample of consumers from Italy appeared to be more affluent in comparison to the sample from Russia.

4.2. Descriptive statistics

Table 5 presents the actual usage and attitude towards engaging with PSS in these two markets. The only two services that a considerable proportion of Russian and Italian consumers did not want to try were clothing swaps and DIY services. The only two PSSs that either most or almost most Russian and Italian consumers had used were take-back programs and clothing repair services. Interestingly, even though re-design services had not been used by most Russian consumers in the past, there appeared to be a high interest in trying it out with 70.6% of the sample indicating they would try it. In contrast, Italian consumers appeared very keen to try out fashion rental services, re-design services, styling consultancy, and customization services with over 70% of respondents indicating they would try it.

Table 5
Summary of respondents' usage of PSS services.

Have you used the following PSS'?	Used	Not Used but Will Try	Not Used and Do Not Want to Try
Russia			
Fashion Rental	28.2%	48.6%	23.2%
Clothing Repair Service	48.6%	44.6%	6.8%
Take-back Programs	52.5%	40.7%	6.8%
Clothing Swaps	7.9%	45.8%	46.3%
Fashion Re-Design Services	14.7%	70.6%	14.7%
DIY Services	13.0%	56.5%	30.5%
Styling Consultancy	27.7%	61.0%	11.3%
Customization Services	30.5%	58.8%	10.7%
Italy			
Fashion Rental	9.9%	72.2%	17.9%
Clothing Repair Service	44.4%	50.3%	5.3%
Take-back Programs	62.3%	31.8%	6.0%
Clothing Swaps	19.2%	51.7%	29.1%
Fashion Re-Design Services	19.9%	72.8%	7.3%
DIY Services	13.2%	58.9%	27.8%
Styling Consultancy	19.2%	72.8%	7.9%
Customization Services	20.5%	71.5%	7.9%

We also analysed the level of interest in PSS (measured on a 7-point scale) and respondent's willingness to recommend PSS to friends (measured on an 11-point scale) (see, Table 5). Fig. 1 shows that Italian females appear to show more interest in PSSs than Russian females, albeit slightly in some cases. Therefore, we used independent-samples t-tests (Table 6) to compare the average interest of Russian and Italian consumers in PSS which showed that Italian consumers are significantly more interested in clothing repair services, clothing swaps, re-design services and DIY services in comparison to Russian consumers.

In terms of willingness to recommend PSS to friends, based on the mean responses, Russian consumers were most willing to recommend take-back programs *($M = 7.46$, $SD = 3.041$)* and styling consultancies *($M = 7.13$, $SD = 3.274$)* only. In contrast, Italian consumers were most willing to recommend clothing repair services *($M = 7.74$, $SD = 2.566$)*, take-back programs *($M = 7.77$, $SD = 2.793$)*, re-design services *($M = 7.50$, $SD = 2.680$)*, styling consultancies *($M = 7.57$, $SD = 2.990$)* and customization services *($M = 7.39$, $SD = 2.914$)*. Furthermore, Russian consumers were more inclined to not recommend clothing swaps ($M = 4.40$, $SD = 3.218$) and DIY services *($M = 5.04$, $SD = 3.393$)*. However, there were no PSSs that Italian consumers were unlikely to recommend to friends. Fig. 2 shows that Italian consumers demonstrate a higher willingness to recommend PSSs to friends than Russian consumers. Therefore, we also tested the mean responses of Russian and Italian consumers for statistically significant differences using independent-samples t-tests (Table 6). Accordingly, we can conclude that Italian consumers are significantly more likely to recommend clothing repair services, clothing swaps, fashion re-design services, DIY service, and customization services to their friends in comparison to Russian consumers.

Finally, we assessed the consumers' attitude towards sustainable fashion and purchase intent associated with companies that embrace circularity. If we define interest as those indicating they are either somewhat interested, interested, or very interested on the scale, then 67.8% of Russian consumers were interested in sustainable fashion whilst 75.5% of Italian consumers were interested in sustainable fashion. In terms of purchase intent, if we define the likelihood of purchasing as either somewhat likely, likely, or very likely on the scale, then 71.2% of Russian consumers were likely to purchase from companies that embraced circularity whilst for Italian consumers the likelihood of purchasing was at 88.7%.

4.3. Impact of country of residence on adoption of PSSs

We begin by analysing the drivers that would motivate (Table 7) and barriers that would limit (Table 8) consumers in Russia and Italy to adopt different PSSs. According to our discussion in section 2.2, we consider, for each PSS, the corresponding barrier (i.e., differently from drivers, not all the barriers apply to each PSS).

In general, the high mean responses recorded by Italian consumers indicate they are more likely to engage with PSSs in comparison to Russian consumers. As reported earlier, on average, Italian consumers recorded a higher interest and willingness to recommend PSS to friends too. Note, in what follows, we only discuss where drivers and/or barriers recorded a minimum average *(M)* rating of 5 (which suggests respondents at least *'somewhat agreed'* on the importance of a given driver or barrier on a 7-point scale) and/or where we found evidence of significant differences in attitudes between Italian and Russian consumers. This is because where respondents at least somewhat agree a driver or barrier is of importance, it represents a risk (i.e., opportunity or threat, see Hillson, 2002) that requires immediate attention. However, where average ratings are below $M = 5$ but still significantly different across countries indicates risks that could emerge within a given market in the future.

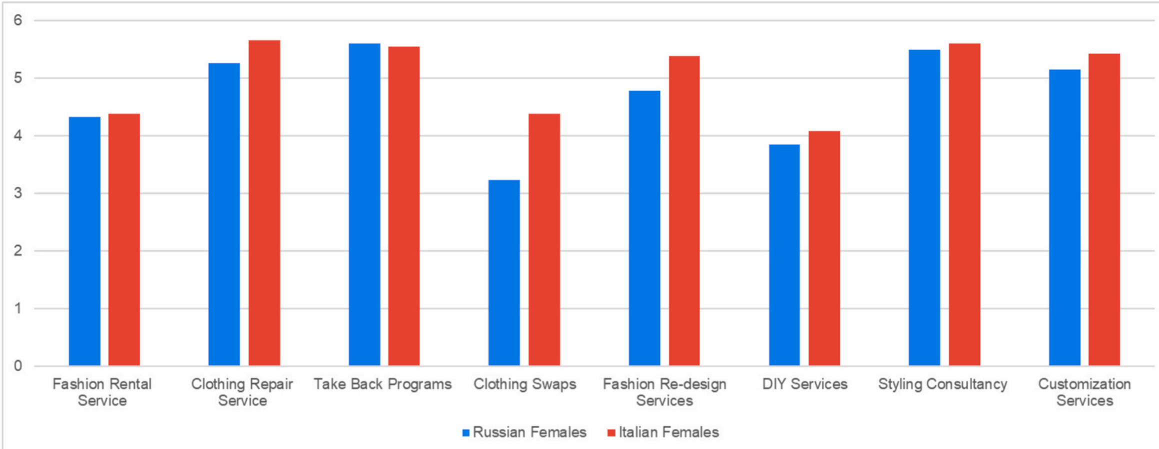

Fig. 1. Respondents' interest in PSS services.

Table 6
Descriptive statistics for level of interest in PSS and respondents' willingness to recommend PSS to friends.

	Russia Mean (SD)	Italy Mean (SD)
Fashion Rental		
Interest	4.33 (1.961)	4.39 (2.000)
Willingness to recommend	5.76 (3.267)	6.31 (3.071)
Clothing Repair		
Interest	5.26 (1.787)	5.66 (1.574)**
Willingness to recommend	6.72 (3.003)	7.74 (2.566)***
Take-back Programs		
Interest	5.60 (1.862)	5.55 (1.644)
Willingness to recommend	7.46 (3.041)	7.77 (2.793)
Clothing Swaps		
Interest	3.24 (1.937)	4.38 (1.969)***
Willingness to recommend	4.40 (3.218)	6.34 (3.055)***
Fashion Re-Design Services		
Interest	4.78 (1.908)	5.39 (1778)**
Willingness to recommend	6.19 (3.153)	7.50 (2.680)***
DIY Services		
Interest	3.85 (2.105)	4.09 (2.154)
Willingness to recommend	5.04 (3.393)	5.84 (3.256)**
Styling Consultancy		
Interest	5.49 (1.825)	5.60 (1.826)
Willingness to recommend	7.13 (3.274)	7.57 (2.990)
Customization Services		
Interest	5.15 (1.908)	5.43 (1.768)
Willingness to recommend	6.64 (3.442)	7.39 (2.914)**

Note: *Interest in PSS was measured on a 7-point likert scale whereby 0 denoted I am not interested at all and 7 denoted I am very interested. Willingness to recommend was measured on an 11-point likert-scale whereby 0 denoted definitely will not recommend and 10 denoted will definitely recommend. Within the 'Interest' rows,* *** indicates a statistically significant difference between the average rating by Italian consumers on their interest in a given PSS in relation to Russian consumers based on an Independent Samples T-test at $p = 0.01$ and ** at $p = 0.05$. *Within the 'Willingness to recommend' rows,* *** indicates a statistically significant difference between the average rating by Italian consumers on their willingness to recommend a given PSS in relation to Russian consumers based on an Independent Samples T-test at $p = 0.01$ and ** at $p = 0.05$.

4.3.1. Fashion rental

The environmentally friendly nature of fashion rental *(M = 5.46, SD = 1.907)*, the prospect of saving money *(M = 5.70, SD = 1.758)*, being better educated about this service *(M = 5.07, SD = 1.910)* and elicitation of positive emotions *(M = 5.44, SD = 1.761)* via the adoption of fashion rental services were significantly more important drivers motivating Italian consumers to engage in fashion rental in relation to Russian consumers (Table 7). Russian consumers did not at least somewhat agree that any of the drivers were important for their adoption of fashion rental. However, on average across both Russian and Italian consumers there was no evidence of being influenced by friends as a driver. In terms of the barriers for the adoption of fashion rental services (Table 8) Russian consumers were significantly unlikely to adopt fashion rental than Italian consumers because they like to wear their own clothes instead of renting *(M = 5.19, SD = 1.681)*. In addition, on average Russian consumers somewhat agreed that concerns around hygiene were also important *(M = 5.14, SD = 1.727)* even though there was no evidence of a significant difference between this, and the lower rating given by Italian consumers *(M = 4.89, SD = 2.123)*. Whilst based on average ratings Russian consumers failed to at least somewhat agree that preference for the shopping process *(M = 4.83, SD = 1.677)* and it not being customary for friends to use fashion rental *(M = 4.73, SD = 1.669)* were important barriers, it was still significantly higher than the ratings for the same barriers by Italians. This indicates these two barriers could be useful to keep an eye on in relation to Russian consumers and their adoption of fashion rental. In contrast, the average ratings by Italian consumers for the lack of information about how fashion rental works was low *(M = 4.88, SD = 2023)* but it remained significantly higher than the rating by Russian consumers. This indicates the importance of Italian consumers being provided sufficient information about how fashion rental works to ensure this barrier does not transform into one which hinders their adoption of fashion rental.

4.3.2. Clothing repair

As visible via Tables 7 and in relation to Russian consumers, Italians were significantly more influenced by drivers such as being certain that clothing repair was more environmentally friendly *(M = 5.67, SD = 1.712)*, the prospect of saving money *(M = 6.01, SD = 1.553)*, and the opportunity to experience positive emotions *(M = 5.40, SD = 1.811)*. The prospect of saving money *(M = 5.27, SD = 1.826)* and experiencing positive emotions *(M = 5.03, SD = 1.724)* were also drivers that Russian consumers at least somewhat agreed to be important, but at a lower level in relation to Italian consumers. Furthermore, a better understanding of how the clothing repair process works would also encourage Italian consumers *(M = 5.05, SD = 1.998)* even though this rating was not significantly different from the lower rating given by Russian consumers *(M = 4.88, SD = 1.730)*. Interestingly, Russian consumers rated the importance of friends using fashion rental as a driver *(M = 4.89, SD = 1.672)* significantly higher than Italians *(M = 4.30, SD = 1.949)* indicating the importance of this aspect to Russians in comparison to Italians and a potential opportunity for the future. In terms of barriers (Table 8) for adopting clothing repair, none of the average ratings by Russian or Italian consumers achieved the at least *'somewhat agree'* level of importance for their decision-making process. However, Russian consumers reported a significantly higher level of agreement on the

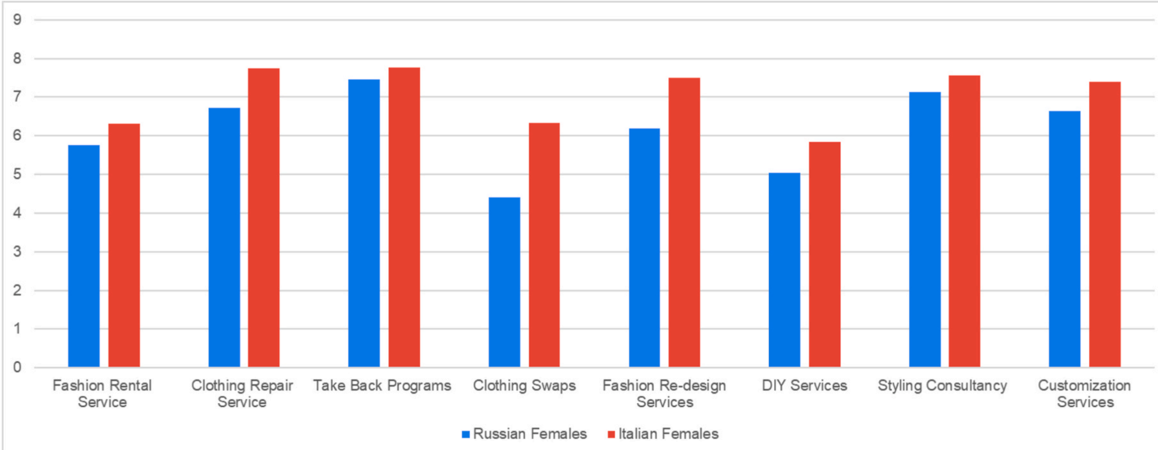

Fig. 2. Willingness to recommend PSS services to friends.

importance of the following barriers, in relation to Italian consumers: Their preference for the shopping process which is absent when repairing clothing *(M = 4.26, SD = 1.662),* the use of clothing repair not being customary among their friends *(M = 3.82, SD = 1.570)* and not being interested in clothing repair as a PSS *(M = 3.10, SD = 1.705).* Note how the ratings for these barriers are less than the at least somewhat agree level indicating they do not threaten the adoption of fashion rental at present. However, the fact that they are significantly closer towards the higher ratings in relation to the average ratings by Italian consumers indicates that they should not be entirely ignored in the Russian context.

4.3.3. *Take-back programs*

Here, the drivers motivating adoption (Table 7) across both Russian and Italian consumers were the fact that it was environmentally friendly, saves money, they could obtain a better understanding of how it works, and it brought about positive emotions. However, Italian consumers were significantly more driven than Russian consumers by the environmentally friendly nature of the service *(M = 5.99, SD = 1.740)* and the money-saving prospect *(M = 5.60, SD = 1.804)*. Furthermore, even though it was rated low, the importance of friends using take-back programs was significantly more prominent as a driver among Russian consumers *(M = 4.83, SD = 1.734)* as opposed to Italian consumers *(M = 4.34, SD = 1.983).* In terms of barriers (Table 8), once again, neither Russian nor Italian consumers reported averages that indicated that they at least '*somewhat agreed*' any of the barriers we evaluated were important for their decision-making process. However, a closer look at the results shows a significant difference between the Russian consumer's average ratings for the process of donating clothing taking too long *(M = 3.69, SD = 1.657),* it not being customary among their friends to use take-back programs *(M = 3.71, SD = 1.611)* and them simply not being interested in it *(M = 2.80, SD = 1.707)* in relation to Italian consumers. Once again, these barriers represent potential threats that could emerge in future for take-back programs in the Russian market if these are left ignored over time. Interestingly, Italian consumers are significantly more affected by their lack of trust in what companies do with donated clothing *(M = 4.54, SD = 2.019)* in relation to Russian consumers, indicating a potential threat in the Italian market.

4.3.4. *Clothing swaps*

Table 7 shows that currently, Italian consumers are significantly more likely to adopt clothing swaps than Russian consumers due to the environmentally friendly nature of the service *(M = 5.37, SD = 1.979)*, the opportunity to save money *(M = 5.52, SD = 1.911)* and if they can be educated about how this service works *(M = 5.15, SD = 2.015)*, and can benefit from the associated positive emotions *(M = 5.23, SD = 1.975)*. There was also a significant difference between Italian consumers rating of the importance of their friends using clothing swaps *(M = 4.72, SD = 1.987)* as a driver in relation to the rating by Russian consumers *(M = 4.17, SD = 1.854).* This indicates a potential opportunity for further driving Italian consumers adoption of clothing swaps in future. Interestingly, Russian consumers did not rate any of the drivers around at least the somewhat agree level in terms of clothing swaps, which was similar to the fashion rental case. Furthermore, as was seen in Table 6 Russian consumers interest and willingness to recommend swaps was also significantly lower thant Italian consumers. The barriers (Table 8) help understand why Russian consumers are not welcoming of this service. They have concerns about hygiene *(M = 5.15, SD = 1.712)*, and a significantly more liking towards wearing new rather than used clothes *(M = 5.23, SD = 1.703)* in comparison to Italian consumers. Furthermore, Russian consumers preference for the shopping process which is absent when swapping *(M = 4.81, SD = 1.623),* swapping not being a customary among friends *(M = 4.85, SD = 1.861)* and having no interest in clothing swaps *(M = 4.47, SD = 1.727)* were barriers that were not at the at least somewhat agree level, but were still significantly higher on average in relation to Italian consumers indicating potential threats that could impose further barriers for clothing swaps in the Russian market. There were no barriers rated at least the somewhat agreed level by Italian consumers.

4.3.5. *Fashion Re-design*

Like with clothing swaps, Table 7 shows that currently, Italian consumers are significantly more likely to adopt fashion re-design than Russian consumers due drivers such as the environmentally friendly nature of the service *(M = 5.63, SD = 1.835)*, the opportunity to save money *(M = 5.85, SD = 1.651),* if they can be educated about how this service works *(M = 5.44, SD = 1.776)* and can benefit from the associated positive emotions *(M = 5.57, SD = 1.783).*

That said, Russian consumers too were likely to adopt fashion re-design to save money *(M = 5.03, SD = 1.646)*, to benefit from positive emotions *(M = 5.20, SD = 1.600)*, and if there were opportunities to improve their understanding of how it works *(M = 5.03, SD = 1.637)*. In terms of barriers (Table 8) neither Russian nor Italian consumers had indicated that on average they at least somewhat agree that any of the barriers were evaluated were important for their decision-making process. Nevertheless, in relation to Italian consumers, there was a significant difference in the rating by Russian consumers on their preference for the shopping process which is absent when engaging with fashion re-design services *(M = 4.32, SD = 1.638),* fashion re-design not being customary among friends *(M = 4.31, SD = 1.540)* and not being interested in this PSS *(M = 3.51, SD = 1.952)*. In future, these could potentially translate into more significant barriers for the success of fashion re-design services in the Russian market.

Table 7
Drivers motivating engagement with PSS, by country.

Service	Russia		Italy	
	M	SD	M	SD
Fashion Rental				
I was sure that they are more environmentally friendly	4.54	1.898	5.46***	1.907
It would help me save money	4.93	1.897	5.70***	1.758
My friends and acquaintance used them too	4.65	1.696	4.36	1.927
I had a better understanding of how PSS work	4.70	1.744	5.07*	1.910
They brought me positive emotions	4.85	1.790	5.44***	1.761
Clothing Repair				
I was sure that they are more environmentally friendly	4.87	1.755	5.67***	1.712
It would help me save money	5.27	1.826	6.01***	1.553
My friends and acquaintance used them too	4.89***	1.672	4.30	1.949
I had a better understanding of how PSS work	4.88	1.730	5.05	1.998
They brought me positive emotions	5.03	1.724	5.40*	1.811
Take-back Programs				
I was sure that they are more environmentally friendly	5.38	1.780	5.99***	1.740
It would help me save money	5.08	1.697	5.60***	1.804
My friends and acquaintance used them too	4.83***	1.734	4.34	1.983
I had a better understanding of how PSS work	5.21	1.675	5.33	2.026
They brought me positive emotions	5.36	1.615	5.33	1.850
Clothing Swaps				
I was sure that they are more environmentally friendly	4.11	1.842	5.37***	1.979
It would help me save money	4.25	1.882	5.52***	1.911
My friends and acquaintance used them too	4.17	1.854	4.72***	1.987
I had a better understanding of how PSS work	4.37	1.879	5.15***	2.015
They brought me positive emotions	4.29	1.844	5.23***	1.975
Fashion Re-Design Services				
I was sure that they are more environmentally friendly	4.68	1.639	5.63***	1.835
It would help me save money	5.03	1.646	5.85***	1.651
My friends and acquaintance used them too	4.73	1.568	4.43	1.924
I had a better understanding of how PSS work	5.03	1.637	5.44**	1.776
They brought me positive emotions	5.20	1.600	5.57*	1.783
Styling Consultancies				
I was sure that they are more environmentally friendly	4.61	1.676	5.09**	1.983
It would help me save money	5.15	1.643	5.58**	1.838
My friends and acquaintance used them too	4.69*	1.633	4.31	2.037
I had a better understanding of how PSS work	4.88	1.701	5.08	2.005
They brought me positive emotions	5.37	1.637	5.75**	1.790
DIY Services				
I was sure that they are more environmentally friendly	4.22	1.856	4.92***	2.121
It would help me save money	4.35	1.862	5.10***	2.138
My friends and acquaintance used them too	4.24	1.794	4.18	1.939
I had a better understanding of how PSS work	4.50	1.883	4.89**	2.082
They brought me positive emotions	4.68	2.034	5.07**	2.020
Customization Services				
I was sure that they are more environmentally friendly	4.60	1.673	5.56***	1.821
It would help me save money	4.60	1.628	5.70***	1.640
My friends and acquaintance used them too	4.66	1.602	4.52	1.907
I had a better understanding of how PSS work	4.73	1.593	5.38***	1.746
They brought me positive emotions	5.23	1.674	5.64**	1.651

Note: 7-point scale from strongly disagree (1) to strongly agree (7). M refers to Mean and SD refers to Standard Deviation. *** indicates a statistically significant difference between the mean responses of Russian and Italian females based on an Independent Samples T-test at $p = 0.01$, ** at $p = 0.05$ and × at $p = 0.10$.

4.3.6. *Styling consultancies*

As seen in Table 7, Italian consumers are significantly more likely to engage with styling consultancies than Russian consumers driven by their beliefs about the environmentally friendly nature of styling consultancies *(M = 5.09, SD = 1.983)*, money-saving prospects *(M = 5.58, SD = 1.838)*, and as it brings about positive emotions *(M = 5.75, SD = 1.790)*. Moreover, having a better understanding of how this service works *(M = 5.08, SD = 2.005)* would also motivate adoption by Italian consumers, even though this was not seen to be a significantly more important driver in relation to their Russian counterparts. On the other hand, Russian consumers are motivated by the prospect to save money *(M = 5.15, SD = 1.643)* and benefit from positive emotions *(M = 5.37, SD = 1.637)*. Nevertheless, like with take-back programs, even though it was rated low, the importance of friends using styling consultancies was a significantly more prominent driver among Russian consumers *(M = 4.69, SD = 1.633)* as opposed to Italian consumers *(M = 4.31, SD = 2.037*), indicating a potential opportunity for the future. In terms of barriers (Table 8), once again, on average neither Russian nor Italian consumers indicated that they at least somewhat agreed these were important for their decision-making process. However, concerns around the quality of the service *(M = 4.17, SD = 1.594)* was significantly more important to Russian consumers than Italians whilst Italian consumers were significantly more likely to avoid styling consultancies as they did not want to spend their money on it *(M = 4.68, SD = 2.093)*. Given that Italian's at least *'somewhat agreed'* on the importance of money saving as a driver, the threat of not wanting to spend money on this service is not as high, yet a potential barrier that could hinder its adoption in the future.

4.3.7. *DIY services*

Table 7 shows that he adoption of DIY services by Italian consumers in relation to Russian consumers was significantly driven by the potential to save money *(M = 5.10, SD = 2.138)* and benefit from positive emotions *(M = 5.07, SD = 2.020)*. Furthermore, Italian consumers also rated their belief that DIY services would be more environmentally friendly *(M = 4.92, SD = 2.121)* and the importance of having a better understanding of how DIY services work *(M = 4.89, SD = 2.082)* at a significantly higher level than Russian consumers. However, at present neither Italians nor Russians at least *'somewhat agree'* that these drivers are important for their adoption of DIY services. They could still be opportunities for driving adoption of DIY services in the Italian market in future. In contrast, on average, Russian consumers did not rate any of the drivers at the at least somewhat agree level to be considered important for their adoption of DIY services. In terms of current barriers (Table 8), Italian consumers somewhat agreed that their lack of skills necessary for DIY *(M = 5.40, SD = 1.898)* could be a potential barrier for its adoption. Russian consumers believe its quicker to buy new clothes than make it themselves *(M = 5.12, SD = 1.698)* and believed they did not have the necessary skills to DIY *(M = 5.20, SD = 1.680)*. For the future, it is noteworthy that Russian consumer's adoption of DIY could further be restricted by their preference for the shopping process which is absent when engaging in DIY *(M = 4.56, SD = 1.754)*, DIY not being a customary practice among their friends *(M = 4.84. SD = 1.689)* and not having an interest in DIY as a PSS *(M = 4.20, SD = 1.793)* as these average ratings were significantly higher than those by Italian consumers.

4.3.8. *Customization services*

Italian consumers were significantly more likely to adopt customization services in comparison to Russian consumers because of its environmentally friendly nature, economic benefits, if there were

Table 8
Barriers hindering engagement with PSS, by country.

	Russia		Italy	
Service	M	SD	M	SD
Fashion Rental				
I don't have enough information about how it works	4.21	1.795	4.88***	2.023
I am concerned about the quality of the services provided	4.80	1.665	4.53	2.071
I am concerned about hygiene issues	5.14	1.727	4.89	2.123
The process of renting takes longer than buying	4.60	1.645	4.52	1.932
I like the shopping process, which is absent in this service	4.83*	1.677	4.46	2.065
I like to wear my own clothes instead of renting	5.19*	1.681	4.79	1.991
Among my friends it is not customary to use this service	4.73**	1.669	4.24	2.097
I am not interested in it	3.97	1.831	3.72	2.085
Clothing Repair				
I don't have enough information about how it works	3.96	1.785	4.05	2.288
I am concerned about the quality of the services provided	4.23	1.611	3.91	2.101
I like the shopping process, which is absent in this service	4.26***	1.662	3.53	2.065
It is faster to buy new clothes than repair old ones	4.31	1.654	4.13	2.121
Among my friends it is not customary to use this service	3.82***	1.570	3.26	1.961
I am not interested in it	3.10**	1.705	2.62	1.910
Take-back Programs				
I don't have enough information about how it works	4.01	1.849	4.20	2.114
I don't trust what companies do with donated clothing	3.94	1.827	4.54***	2.019
The process of donating clothes takes too long	3.69***	1.657	3.09	1.906
Among my friends it is not customary to use this service	3.71***	1.611	2.77	1.797
I am not interested in it	2.80*	1.707	2.43	1.711
Clothing Swaps				
I don't have enough information about how it works	4.76	1.704	4.95	2.019
I am concerned about hygiene issues	5.15	1.712	4.83	2.135
Participation in swaps takes too long	4.63	1.502	4.56	1.916
I like the shopping process, which is absent in swaps	4.81***	1.623	4.05	2.090
I like to wear new clothes rather than used ones	5.23***	1.703	4.05	2.080
Among my friends it is not customary to wear second-hand	4.85***	1.861	3.58	2.021
I am not interested in it	4.47***	1.727	3.42	2.041
Fashion Re-Design Services				
I don't have enough information about how it works	4.51	1.844	4.85	2.219
I am concerned about the quality of the service	4.41	1.614	4.17	2.119
I like the shopping process, which is absent in redesign	4.32**	1.638	3.88	2.065
It is quicker to buy new clothes than redesign old ones	4.54	1.655	4.31	2.108
Among my friends it is not customary to change designs	4.31***	1.540	3.73	2.120
I am not interested in it	3.51**	1.589	3.05	1.952
Styling Consultancies				
I don't have enough information about how it works	3.66	1.716	3.98	2.165
I am concerned about the quality of the service	4.17***	1.594	3.59	2.017
It is quicker to buy new clothes than to consult a stylist	3.78	1.610	4.04	2.169
I do not want to spend money on styling consultancy	4.10	1.555	4.68***	2.093
Among my friends it is not customary to use this service	3.86	1.564	3.93	2.148
I am not interested in it	3.00	1.735	2.99	1.963
DIY Services				
I don't have enough information about how it works	4.59	1.798	4.78	2.129
I am concerned about the quality of the service	4.54	1.610	4.31	2.133
I like the shopping process, which is absent in DIY	4.56***	1.754	3.80	2.114
It is quicker to buy new clothes than to make them myself	5.12	1.698	4.95	2.070
I don't have the necessary skills to DIY	5.20	1.680	5.40	1.898
Among my friends it is not customary to make clothes via kit	4.84***	1.689	3.84	2.203
I am not interested in it	4.20**	1.793	3.74	2.195
Customization Services				
I don't have enough information about how it works	4.23	1.744	4.58	2.152
I am concerned about the quality of the service	4.09	1.632	3.79	2.054
Design customization takes too long	4.27	1.604	4.11	1.977
Among my friends it is not customary to customize things	4.05	1.526	3.76	2.035
I am not interested in it	3.26	1.742	3.36	2.057

Note: 7-point scale from strongly disagree (1) to strongly agree (7). M refers to Mean and SD refers to Standard Deviation. *** indicates a statistically significant difference between the mean responses of Russian and Italian females based on an Independent Samples T-test at $p = 0.01$, ** at $p = 0.05$ and $\times$ at $p = 0.10$.

opportunities to understand better how it works, and if adoption brought positive emotions (Table 7). Russian consumers were also influenced to engage in this service if it brings positive emotions. In terms of barriers (Table 8) neither Russian nor Italian consumers reported any barriers as at least somewhat important for their decision-making process.

5. Discussion

The original contribution of the paper is to show, for each of the drivers and barriers found in the literature, their relative importance in driving or hindering the adoption of PSSs between Italian and Russian consumers. From the findings it emerges very clearly that national characteristics play a pivotal role in determining the propensity of fashion consumers to use PSSs. This has significant implications both for theory and practice.

5.1. Theoretical implications

From a theoretical standpoint, this study acknowledges the central role of consumers in the success of PSSs on the market, therefore contributing to a more circular fashion industry, while focusing on nationality demographics as a factor that differentiates the disposition towards the adoption of PSSs. Extant research has neglected the importance of national culture toward the propensity of fashion consumers to use PSSs, whereas our study places national culture, namely socio-cultural, and economic factors, at the top of the research agenda. Furthermore, while the literature has only marginally investigated the role of PSSs in the fashion industry, for the first time we provide an exhaustive classification of all the services that are adopted in this context. We show evidence of the propensity to adopt PSSs in Russia and Italy for each type of PSSs.

Fig. 3 provides a snapshot summarizing the findings for RQ1 whereby we not only identify the most relevant drivers (i.e., where consumers on average at least '*somewhat agreed*' a driver was important) for the adoption of each PSS but also show where there are statistically significant differences between Italian and Russian consumers in relation to these drivers. As visible, neither Italians nor Russians at least

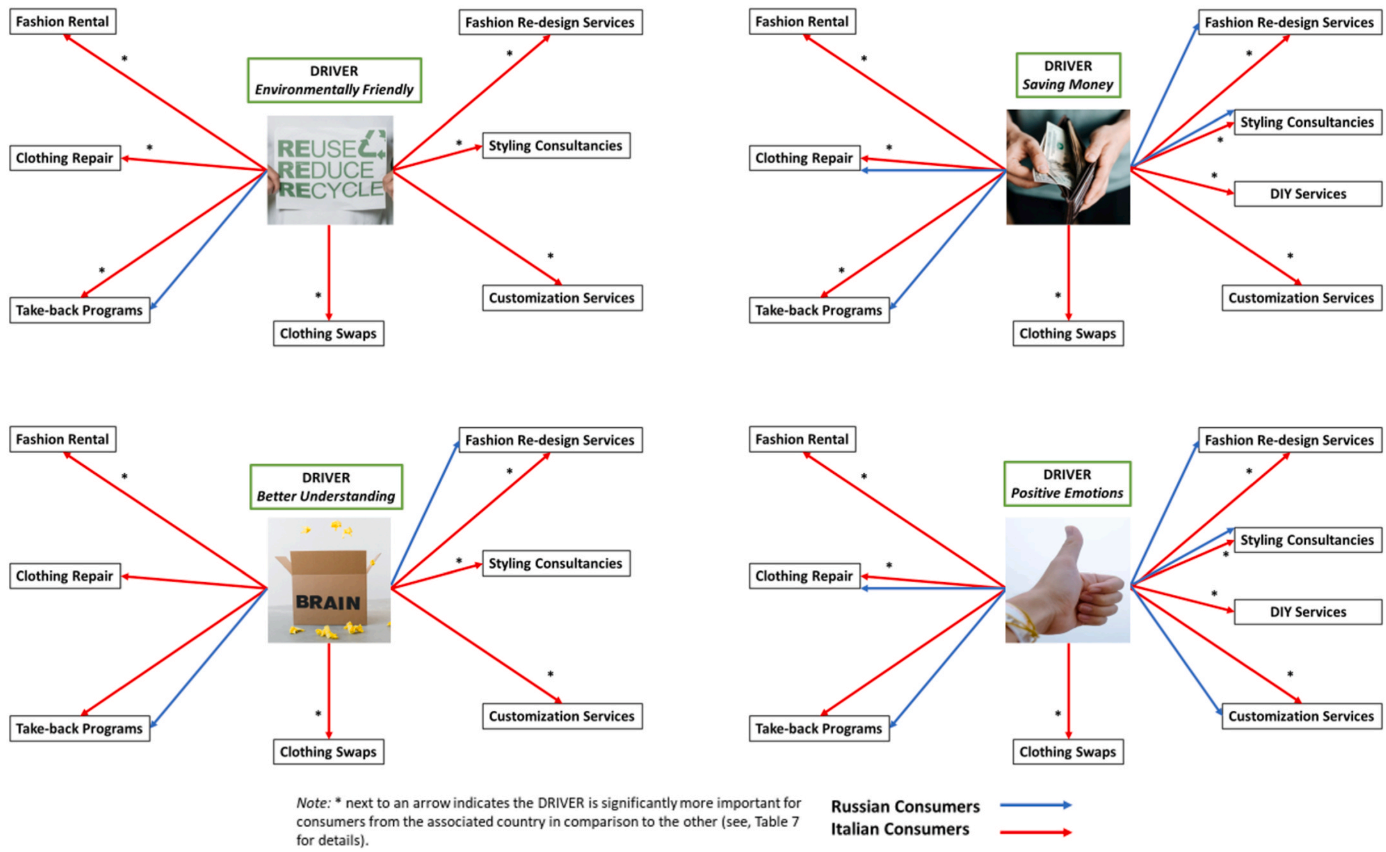

Fig. 3. Findings for RQ1: Most relevant (i.e., 'somewhat agreed' or M ≥ 5) and significantly more important (*) drivers for adopting various PSSs.

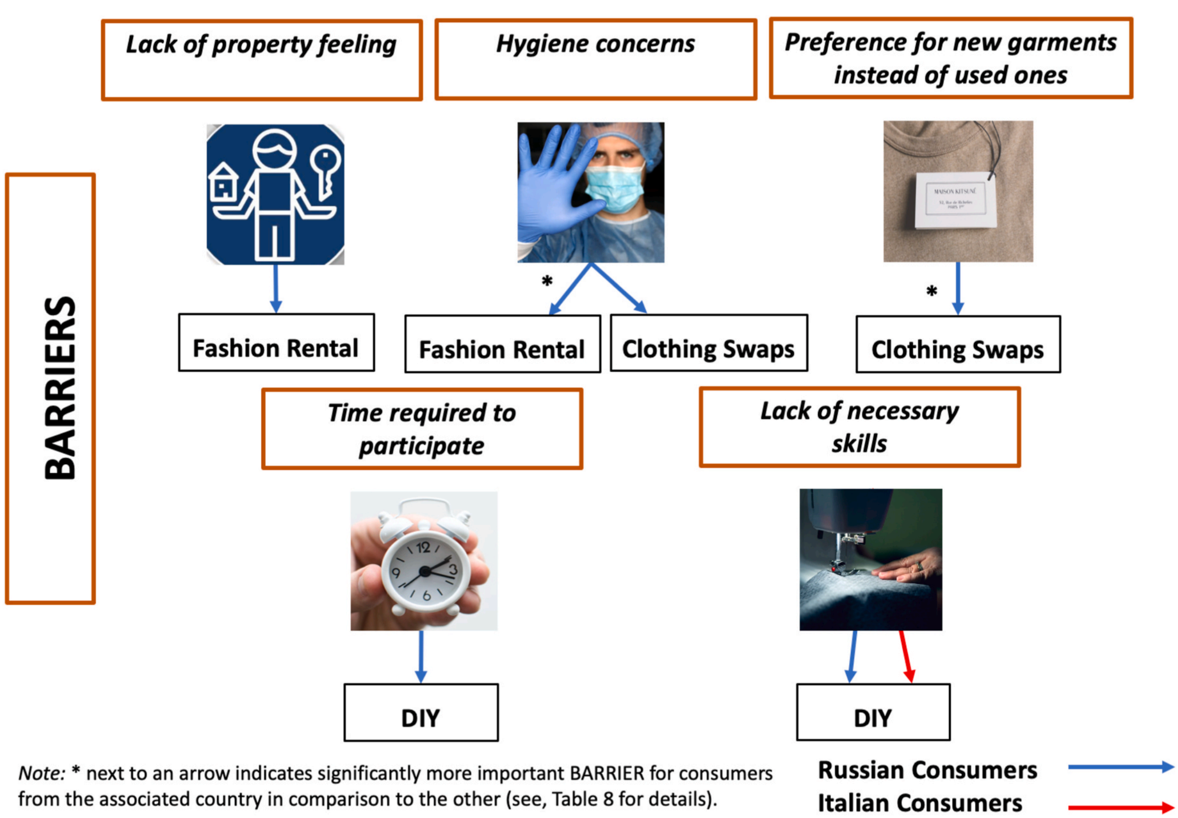

Fig. 4. Findings for RQ2: Most relevant (i.e., 'somewhat agreed' or M ≥ 5) and significantly more important (*) barriers hindering the adoption of various PSSs.

'somewhat agreed' that social influence was an important driver for the adoption of PSSs. Also, the high number of red arrows vs. blue arrows indicates there are more opportunities for encouraging Italian consumers to adopt PSSs in relation to Russian consumers. Our findings show that, compared to all PSSs evaluated here, there are more opportunities to convince Russian consumers to adopt take-back programs (4 potential drivers) and fashion re-design (3 potential drivers). Also, it would be extremely difficult to encourage Russian consumers to adopt fashion rental, clothing swaps and DIY services as none of the drivers reached the threshold $M \geq 5$. Noteworthy that even in the Italian case, only two drivers (i.e., financial and emotional benefits) appear sufficiently important in driving the adoption of DIY services.

In addition, based on the application of inferential statistics on the findings in Fig. 3 (as explained in Section 4), it emerges that environmental and financial benefits tend to play a significantly greater role when deciding to use PSSs for Italian fashion consumers than the Russians, for all the PSSs (given the statistically significant differences between the average ratings). In previous research, there were mixed findings about these two drivers, so we contribute by explaining that they affect the adoption of PSSs differently depending on the national demographics. Emotional benefits drive more Italian consumers than Russians, for all PSSs except for tack-back programs for which there are no statistically significant differences. The increase in knowledge and awareness drives Italian consumers more than Russians for most of the services (i.e., rental, swaps, fashion re-design, and customization). This result is in line with evidence that suggests that Italian consumers seek information about sustainability to make more conscious choices (Ghisellini and Ulgiati, 2020).

In terms of RQ2, Fig. 4 provides a snapshot which summarises our findings. Our research was only able to find prominent barriers *(ie., $M \geq 5$)* for fashion rental, clothing swaps, and DIY. We expand on these findings further for the benefit of the readers. In the case of fashion rental, Russian consumers are significantly more likely to avoid adopting this PSS than Italian consumers because they prefer to wear their own clothes instead of renting. In addition, hygiene concerns are also a prominent barrier for Russian consumers though we did not find evidence of any statistically significant difference between the lower rating reported for this barrier by Italian consumers. In terms of clothing swaps, Russian consumers are significantly more likely to avoid adopting this PSS than Italian consumers because they like to wear new clothes rather than used ones. Hygiene-related concerns are also prominent once again for Russian consumers as was the case with fashion rental. In terms of DIY services, both Russian and Italian consumers are unlikely to adopt this PSS mainly due to the lack of skills to engage in DIY whilst for Russians, the fact that it is quicker to buy new clothes as opposed to making them themselves is also a prominent barrier.

Finally, according to Yasin and Achmad (2021), when consumers are interested in a service or phenomenon, they are more likely to recommend it or discuss it with their friends. As the two concepts of interest (Table 6) are measured on two different scales, in Fig. 5 we plotted the standardized average interest in PSS and willingness to recommend PSS to friends for both Russian and Italian consumers. As visible, consumer interest and willingness to recommend do indeed follow a similar trend as suggested by Yasin and Achmad (2021). The result is more pronounced for Russian consumers, but even in the case of Italian consumers one could see that increases in interest and drops in interest correspond with slight increases and drops in willingness to recommend PSS.

5.2. Managerial implications

Conversely, from the practitioners' perspective, being the fashion industry truly globalised and one of the most polluting industries of the planet after oil, the evidence not only further emphasise the pivotal role played by the consumers (Armstrong and Lang, 2013; Tunn et al., 2021) but it also stresses the importance for companies to gain a more in-depth understanding of national culture propensity towards the adoption of these PSSs in order to ensure both their scalability and international success.

When launching new products and services, prudent risk management can drive the odds of success (Mu et al., 2009). The drivers and barriers discussed in Section 5.1 are those which we would expect practitioners to pay immediate attention to in terms of launching any of these PSSs in the Russian and/or Italian markets. However, prudent risk management calls for the effective identification and curbing of both opportunities and threats (Verbraeck, 2023), which we alluded to in Section 4, as these are risks that could emerge in future. Table 9 below summarises the risks. As visible, for Russian consumers, except for styling consultancies and customization services, the rest of the PSSs are at risk of not being adopted due to a lack of interest. Therefore, practitioners should consider devising methods and approaches for promoting consumer interest in the related circular practices within this market. This aspect did not appear as a threat in the Italian context. Furthermore, for Russian consumers, the uncustomary nature of PSSs (except styling consultancies) could also pose a threat to adoption in future. Therefore, practitioners should consider how to create and promote social influence in the context of these PSSs to avoid this threat in future. Finally, another common threat in the Russian context is the consumer's preference for the shopping process (except in the case of take-back programs and styling consultancies). Practitioners should consider how technology (for example, augmented and mixed reality) and gamification processes could be used to supplement for the lack of the shopping aspect when consumers adopt these PSSs. Finally, even though our findings direct us to conclude that Italian consumers are more likely to adopt circular practices, we identify some further opportunities and potential threats to adoption in Table 9.

5.3. Limitations and future directions

It would be highly beneficial for future research to focus on a vast array of cross-national comparisons besides Russia and Italy to further clarify the role of national culture in PSSs adoption and to include religion as an additional factor that may affect the propensity to adopt PSSs. Religions and beliefs as value systems are likely to play a pivotal role in shaping societies' activities and consumers' behaviour.

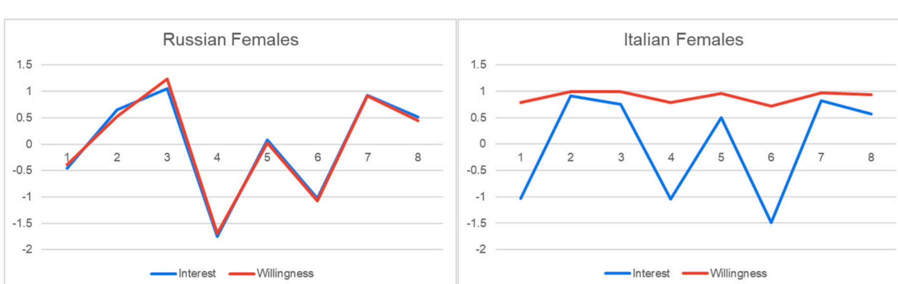

Fig. 5. Is interest in PSS more likely to lead to a recommendation to friends.?.

Table 9
Potential opportunities and threats for the adoption of PSS in future.

	Russian Consumers		Italian Consumers	
PSS	Opportunity	Threat	Opportunity	Threat
Fashion Rental		• Preference for the shopping process • Not customary among friends		• Lack of information about how it works
Clothing Repair	• Friends use this	• Preference for the shopping process • Not customary among friends • Lack of interest		
Take-back Programs	• Friends use this	• Time consuming nature of clothing donation • Not customary among friends • Lack of interest		• Lack of trust in what companies do with donated clothing
Clothing Swaps		• Preference for the shopping process • Not customary among friends • Lack of interest	• Friends use this	
Fashion Re-design		• Preference for the shopping process • Not customary among friends • Lack of interest		
Styling Consultancies	• Friends use this	• Quality concerns		• Not keen on spending money on this
DIY Services		• Preference for the shopping process • Not customary among friends • Lack of interest	• Environmentally friendly nature • A better understanding of how it works	
Customization Services				

Future research should also address consumers' propensity towards specific Industry 4.0 pillar technologies adoption which could be in turn integrated into PSSs by thus further enhancing their effectiveness. For instance, fashion companies can develop virtual prototypes prior to the production of physical samples. This would allow for more efficient and sustainable production processes since companies can conduct digital experiments on different designs and materials without wasting resources. Conversely, PSSs involve the integration of products and services to provide a holistic solution to customers' needs. In the fashion industry, this could include services such as styling advice, customization options, and repair services. By using simulation software to design and test products, fashion companies can gain valuable insights to better understand the needs and preferences of their customers, which can ultimately inform the development of PSS offerings. For example, a fashion company could use simulation software to create a virtual fitting room where customers can try on clothes and accessories in a digital environment. The virtual fitting room could be integrated into the PSS offering, such as personalized styling (mass personalization) based on the customer's virtual fitting room experience. Further to that, data can be collected from the simulation software to inform product development process, such as for the identification of more popular designs and materials among the customers.

Future research should be also carried out in relation to our inconclusive results as to acquire a finer-grained understanding of the consumers' propensity from a cross-cultural perspective. Being these PSSs aimed at introducing circularity in the fashion industry by thus significantly curbing overconsumption, their widespread adoption would be hugely beneficial for society at large. It would also be interesting to see how these findings would compare against male consumers in these same markets. Finally, more qualitative research into the drivers, barriers, opportunities and threats identified in our study could provide more definitive guidance on how practitioners can best exploit and/or curb these using the improved understanding of consumer behaviour.

CRediT authorship contribution statement

Daria Demyanova: Conceptualization, Investigation, Methodology, Data curation, Writing. **Mariachiara Colucci:** Conceptualization, Writing, Supervision, Project administration. **Emmanuel Sirimal Silva:** Methodology, Data curation, Formal analysis, Writing. **Alessandra Vecchi:** Conceptualization, Writing.

Declaration of competing interest

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

Data availability

Data will be made available on request.

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