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Sustainable circular economy value propositions in clothing as a service -model

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Abstract:

Due to the environmental challenges, we need a radical change towards sustainable circular economy (CE), which is based on resource efficiency, minimisation of waste and optimisation of the length and utilisation of the material loops. CE requires a collaboration between companies, and thus stakeholders play a significant role in CE-based business models.

To move towards circularity, companies have started to develop novel business models based on offering services instead of selling products. In this study we

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aim to understand what kind of value companies are creating with a clothing as a service model (Caas) for their main stakeholders: a) consumers, b) environment, c) society, d) other key stakeholders. Our data derives from three Finnish case companies. This study creates a framework for sustainable circular value proposition in the textile industry, extends the perceived value by the larger group of stakeholders and includes the consideration of sacrifices into the same discussion.

Keywords: textiles, clothing, circular economy, sustainability, consumers, service, value proposition, environment, society, business model innovation, case study

Introduction

Due to the current linear economic model we are facing several major challenges such as climate change, resource efficiency, biodiversity loss and pollution. In addition to these challenges, our ongoing trends such as population growth and the expansion of the global middle class are setting additional challenges.

In order to tackle these wicked challenges, we need to find novel innovative solutions in society. Circular economy is a viable solution focusing on the efficient usage of materials during the whole life cycle and eliminating waste (Merli, 2018; Geissdoerfer, 2017; Murray, 2017; Ghisellini, 2016). As the CE concept focuses mostly on environmental and business sustainability, concept of sustainability includes the concept on social value as a third element. (Morelli, 2011; Manning et al., 2012; Reinecke et al., 2012; Raworth, 2017).

Adopting the CE principles in companies requires multiple innovations: in products, services, processes, and in business models. Renting or offering products a service is a way to embrace the circular business models, especially the longer lifecycle and efficient resource use and recycling, thus contributing in all these three strategies (Tukker, 2015). Clothing as a service (CaaS) is seen as one of the solutions to prevent fast fashion culture, offering customers also an opportunity for high quality clothes without investing a large sum of money. Thus, there is a growing amount of startups and existing companies that have started to implement the model, offering clothing rental services for consumers.

From consumers' side, the shift from buying towards service model requires quite fundamental changes in mindsets as well as in daily practices. To offer attractive business models for consumers, companies need to gain an understanding how they can offer better value with these new models and what are the main challenges. Furthermore adopting a sustainable circular business model requires collaboration with broad range of stakeholders (Stubbs & Cocklin, 2008; Antikainen & Valkokari 2016).

Therefore, in addition to understand the value for customers, there is an urgent need to understand also the value proposed to the larger group of stakeholders. Traditionally companies have been focusing on what kind of value they will propose for their customers. Instead of taking this traditional viewpoint to value proposition focusing on customers, we use the extended viewpoint including value for environment, society and other stakeholders.

Thus, our aim of the study is to understand *what kind of value propositions clothing as a service business models offer for a) consumers, b) environment, c) society, d) other key stakeholders*. Our data derives from three case companies; one of which is currently

implementing CaaS business model and two of which are in the planning stage of implementing CaaS business model in the near future.

Our framework for the study integrates the customer value literature (modified from Zeithaml, 1998; Woodall, 2003) with the business model and circular business model literature. In our approach, we include the proposed value as well as costs/sacrifices for each group.

The research context of this study, the textile industry, is one of the most pollutants releasing industries of the world. Currently, the dominant operating logics of fashion businesses are based on the linear take-make-disposal model, the mass production and wasteful fast fashion (Pulse of the Fashion Industry, 2017). Approximately, only around 20 per cent of clothing is currently reused or recycled (Global Footprint Network, 2017). It is estimated that globally customers discard annually up to USD 460 billion by throwing away of usable clothing. New business models that are not centred of ownership, can address the fast-changing customer needs, and can shift the perception of clothing as durable products instead of disposable. (Ellen MacArthur Foundation, 2017).

Literature review

Sustainable and CE business model

Sustainable business models and circular business models are closely related literature streams and they can be regarded as a subcategory of business models (Bocken et al., 2014). In addition to economic value, sustainable business models integrate the value for the environment and society, which are often called as three pillars of sustainability (Hansmann et. al., 2012; Boons et al., 2013).

One of the suggested sustainable CE business models for alternative consumption systems is moving towards functional society concentrating offering services instead of ownership. This model aims to optimize the highest possible use-value for the longest possible time, while consuming as few material resources and energy as possible (Stahel, 2005). The main idea the model is to create environmentally and socially sustainable offers for consumers when company owns the product and has incentive to make products as material- and cost-efficient as possible while making money via service offerings (Mont, 2002, Annarelli et al., 2016, Barquet, 2016, 15; Tukker, 2015).

Customer value proposition in sustainable CE business model

A Traditional view on value proposition

A value proposition aims to identify clear, measurable and demonstrable benefits for consumers when purchasing a particular product or using service. It aims to convince consumer of the superiority of the product/service compared to other existing available alternatives on the markets (e.g. Rintamäki & Kirves, 2017). Thus, in this view, to offer an attractive proposition, suppliers need to offer greater benefits for customers compared to sacrifices with their solution (e.g. Woodruff, 1997; Zeithaml, 1988). Customer value has been defined and explored in many ways in the prior studies (Eggert and Ulaga, 2002; Lindgreen and Wynstra, 2005; Ravald and Grönroos, 1996, Woodall, 2003, Zeithaml, 1988). We apply a framework in which the benefits can be derived into strategic, practical,

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economic, personal and social benefits (e.g. Woodall, 2003). Since the value created for other main stakeholders plays a central role in sustainable business models, we also utilise this approach to another central stakeholder value proposition. The similar framework is applied to the stakeholder perspective.

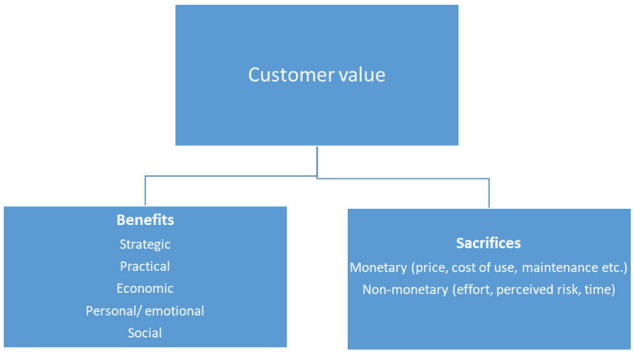

Figure 1 The customer value framework (modified from Zeithaml 1998; Woodall 2003)

Value proposition in Clothing as a service

The earlier literature stresses that clothing needs to fulfil customers' technical performance and emotional expectations, meaning that in addition to aspects such as durability, fit, and quality, it also has to fulfil emotional aspects such as aesthetic experience (Niinimäki, 2017). Currently, unsustainable and linear fast fashion has focused quantity instead of quality to fulfil emotional needs of consumers. One of the identified benefits of the service based business models is that in these model consumers need for change can be satisfied in sustainable way (Niinimäki, 2017). Clothing as a service model focuses on sharing clothes from company to consumers but also among consumers. Thus, it can be called as an access-based consumption filling not only one's needs but also the needs of a group of people, reducing the production of new clothes and increasing the usage level. (Chunmin Lang & al., 2020).

Sustainable value proposition for environment

To consider environmental and social benefits, the value proposition needs to be studied throughout the entire value life cycle including different stages from value creation, appropriation, consumption, renewal to value transfer (Hassan, 2012; Manninen et al. 2018). There exists multitude tools to assess the environmental impact produced by products, systems, and an organization's activities along its value chain. The most tools use LCA or LCA information, such as eco-design and eco-labels. The environmental impacts (Patala et al., 2016; Jorgensen et al., 2008; Soukka, 2007; Fuller & Petersen, 1995) can be divided for example on the following way: Impact to resources (e.g. availability of minerals

and fossil fuels), impact to ecosystems (e.g. biodiversity, land use) and impact to human health (e.g. radiation, respiratory effects, ozone layer depletion, climate change effects).

Environmental impact of the textile industry

The textile industry is considered as one of the most polluting industries in the world. Its environmental impact is caused e.g. by the use of harmful chemicals, high consumption of water and energy, generation of large quantities of solid and gaseous wastes, huge fuel consumption for transportation and use of non-biodegradable packaging materials (Choudhury, 2014). Textile production affect environment in all production stages from fibres to final products (Slater, 2003). Synthetic fibres are made from non-renewable natural resources, and high amount of chemicals and irrigation water are needed for cultivation of cotton. Wet production stages of textile production use fresh water produce waste waters and require energy for drying afterwards.

According to the current trajectories, environmental impacts of textile production are predicted to increase due to the increased textile consumption. It has been estimated that half of the clothes are used for less than a year, and also that environmental impact of textiles can be reduced by 44 % of it wearing times is doubled [Ellen MacArthur Foundation, 2017]. Zamani et al. (2017) showed the potential of CaaS model environmental benefits due to prolonged service life of garments but noted that increased logistics may reduce the overall benefits.

Sustainable value proposition: social value

One of the most commonly used tools the sustainable value proposition for society are Social Impact Assessment and Human Rights Impacts Assessment to assess (Benoit & Vickery-Niederman, 2011). Social impacts can be categorized in human rights (e.g. child labour, forced labour, non-discrimination), labour practices and decent working conditions (e.g. wages, benefits, safety at work, job satisfaction), society (e.g. corruption, job creation, support of local suppliers, and product responsibility (e.g. product safety concerns, labelling, ethical marketing communications) (Patala et al. 2016).

Social impact of textile industry

Textile production is a very labour-intensive, and sectors leading brands are sourcing globally with high pressure at low production costs. While the textile industry is an important provider of basic-level jobs in many developing countries, the global sourcing is often causing the pressure for poor labour conditions (Azarhoushang et al., 2015).

Many brands have recently turned focus on managing of the social and environmental aspects of their supply chains (Pederssen et al., 2018). Within CaaS model focus is changing from quantity and low prices to better quality clothing since profits are gained from each item from a longer period of time. Lowest price will not be the determining factor anymore, and it is easier for companies to focus on sustainable sourcing.

Framework of the study

The framework of the study is drawn from the previous research approaches. Thus, based on the prior literature and our understanding, we present a framework for sustainable value

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proposition that consist of four elements: value for customers, value for environment, social value and value for other central stakeholders (Figure 2, modified from Manninen et al., 2018; Patala et al., 2016).

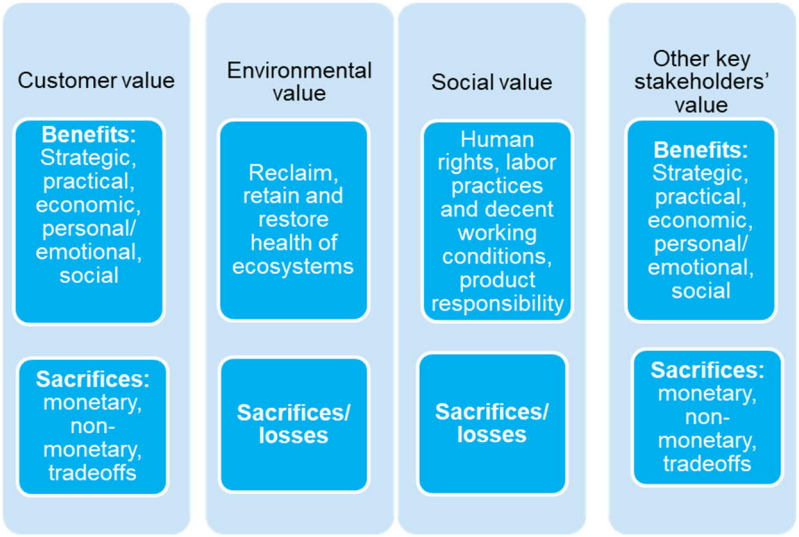

Figure 2 Framework of the study (modified from Antikainen et al., 2019; Manninen et al., 2018; Patala et al., 2016)

Research Design and methodology

Data collection and analysis

Our main data was collected in a workshop, which was organised online due to the COVID-19 situation. We sent an invitation to all 23 companies in our research project to participate in our workshop focused on clothing as a service business. As a result, five companies registered but finally three companies participated in the workshop. From one company we got four participants, another one two, and from the third one a single participant. In addition, seven researchers or experts participated in a role of facilitator, mentor, or observer.

We gave a preliminary assignment for each company to prepare for the workshop. The assignment asked them to consider both the (positive) value and negative impacts that the clothing as a service model would provide in their business. We advised them to consider viewpoints of different stakeholders: customers, environment, society and other main stakeholders. Negative impacts were characterized as sacrifices, losses or problems. Templates for documentation were provided and all companies returned filled templates before the workshop.

Our online workshop was organised on April 3rd2020 with Zoom web conferencing platform and Miro online collaborative whiteboard. A value map template for each

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company was prepared by researchers on Miro canvas in advance. The template guided consider the value and sacrifices/losses for each stakeholder during the whole value creation process of clothes, from the need to the recycling of clothes.

The workshop started with introductions of participants and introducing the method. After that, we divided the companies into three separate online rooms to consider each company case. In each room there were participants of only one company, a facilitator and a mentor/observer. One researcher provided methodological and technical support for all groups. The results of the discussions were written on the value map template. Discussions were also recorded. Working in groups lasted from one and a half to two hours depending on the breaks the group decided to have. The 30 minutes joint session to draw conclusions was in program after the working in the groups.

Recordings of discussions were transcribed. The recording as well as the preliminary assignment documents were used to complement the value maps, which were produced during the workshop. The online workshop was followed by the follow-up meeting with each company. We were able to clarify and complement the data in these meetings.

The results and conclusions presented in this paper are primarily based on the analysis of the preliminary assignment documents, value maps produced in workshop and the recorded discussions in workshop. As secondary data, we used information from earlier background interviews with the companies and their websites as well.

Cases

We concentrate on exploring the value propositions of three Finnish clothing companies.

In case 1, the company currently offers clothing as a service for customers. The company focuses on clothing rental business for consumers. A membership-model is implemented, in which the customers are committed to the service for a certain amount of time and monthly fees are applied. The products are presented in a digital platform but visits to physical stores are required for the rental process.

In case 2 the company focuses in offering professional work wear in a B2B environment. CaaS model is not currently implemented, but the aim is to plan and implement the CaaS model in the near future.

In case 3 the company is currently selling products for consumers via consumer representative network and web sites. Some products of the company are already rented out by other companies, but the company aims to focus more on rental business by themselves, too.

Results

A) Value for customers

Economic value

Control of costs and property management

Based on the company representatives, consumers appreciate that the costs of the system are known well beforehand with no upcoming surprises. Tracing of each piece of clothing may also be included in CaaS. In order to trace the usage of the clothing, enables the

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optimization of the amount and quality of clothing.. These are important especially for business customers.

No need to invest money
When using CaaS, a customer doesn't need to invest money in owning clothing.

Practical Value

Lower risks -Responsibility of the product is on the manufacturer
The respondents stated that one of the advantages of CaaS for customers is that the responsibility of the product remains on the manufacturer. This reduces the economic risks as well as practical inconveniences.

Easiness through full service
One of the benefits for the consumers is easiness that was mentioned in all cases. In CaaS consumers there are limited amount of choices, which are also preferred for some consumers. CaaS may include "full service" including cleaning and repairing in one package. You may even always get a clean and unbroken piece of clothing when needed without need to wait for washing or repair. This is most convenient option to take care of the need of clothing. The service can also in future suggest the selection for the user based on his/her individual preferences, measurements, style of for some specific occasion. This was not yet in use in cases companies. CaaS may also provide different accessories to supplement clothing. This makes it easy to acquire them and ensure that they fit with clothing. Furthermore, a customer doesn't need to mind when and how to dispose the product, but they can trust the CaaS provider will do it in responsible way. A guarantee, that the product will be recycled into reasonable products after its life, would be of additional value for a customer.

No storage needed
In CaaS a customer doesn't need space for storing clothes when they are not in use and neither need for storage management. For example, CaaS takes care of checking the condition of clothing after the use period and renewal when required.

"The content of the closet is in more efficient use in the rental model"

Flexibility-Clothing just when needed
Clothing may be ordered for only a limited period when it is needed. For example, if specific clothing is needed for a certain project or even in an occasional need for a shorter period. CaaS may provide a fast response to immediate need.

Testing is easy
CaaS system also offers a good possibility for consumers to test new styles, which is convenient and risk-free through the system. Customers can test clothes of previously unknown brands and evaluate the quality, sizing etc. of the brand before the possible decision of buying and owning clothes.

Getting a good quality clothes when needed
In consumer markets, a significant amount of clothes available are low quality. This is because there is a lack of incentives for companies to offer good quality. In CaaS, however, the quality of the clothes plays a key role in order to offer them in good condition. In some cases, a customer may need especially new or, at least, new looking clothing. In other cases, some wear or even repairs may show in clothing if they still are appropriate for use. Customer may select an appropriate quality for their need and save some money.

Information and learning about clothes
The online rental clothing platform offers information to the customer about different attributes of clothes and different clothing brands. The online platform includes a vast amount of information accessible in one place and this makes finding information easy for the customer. In one of the CaaS-models analysed in this research the service provider gives information about the cleaning of each garment to the customers and the customers are responsible of cleaning the rented clothes. As a consequence, the CaaS-model can be considered to teach customers about maintenance of clothes; the customers can learn to take better care also of the clothes that they own.

Saving time
Online platform or web shop of the clothing rental service saves time of the customer because the customer can get access to a vast amount of clothing choices in one place and the reservation of the rental clothes can be done regardless of time and location.

Easier sustainability and responsibility reporting
Whole life cycle sustainability information may be provided by CaaS. The information may also include the recycling of the materials of the product. This makes it easier for business customers to get information for the responsibility reporting.

Emotional/social benefits

Good conscience
Respondents stated that one of the benefits of CaaS is that a customer can be certain that clothing is effectively in use and will have a long lifespan since they are appropriately overhauled and repaired. Thus, the CaaS offers an ecologic choice for consumers, and this way also creates good feeling for consumers.

Inspiration, image and status
CaaS-model can give positive images of oneself to the customer, including a status as a responsible and ecologically valued person. The display of the clothes in the online platform or physical store and possibility to try on clothes in the store can inspire the customer and give new ideas for style or lifestyle. Stories and history of the clothes (e.g. when, where and by whom the clothing was previously used, how the product was produced) visible in the online platform can boost the inspirational factor.

"Customers can experience shopping with clear conscience."
"Customers have a possibility to go wild with styles and stand out in a crowd in a positive way with clothing."

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Sense of community
The membership-model and monetary commitment to service provider creates feeling of belonging to a community of consumers. Social contacts with other customers or personnel in the physical store enhance the feeling of community.

> *"We form a community that the customers want to be part of. They want to be one of the power women or forerunners in fashion."*

Treating oneself, entertainment
Choosing new clothes to rent and visiting the physical store with social contacts are considered as luxury, treat or entertainment for some customers.

Customer sacrifices/loss

Economic sacrifices

More expensive that buying
The respondents stated that currently the customers consider long term continuous use of CaaS probably more expensive than buying.

Practical sacrifices

Doubt about the compliance
Customer may doubt if the used clothing is still compliant with the required standards (e.g. fire safety or cleanliness)

Fear of destroying a cloth and the related argument
There may be argument between a customer and a supplier whether some wear or damage would be a result of a normal use and thus included in the service agreement. There may also exist a fear of consequences of damaging the clothing. Thus, some consumers are concerned of breaking or spotting the clothes more if they are using CaaS.

Requires more planning
Usage of CaaS requires significantly more planning then going to own closet or closest shop to buy an item. Therefore, this can be regarded as a significant sacrifice especially to those consumers that are not familiar with the system. To make this hurdle lower, CaaS companies focus on the efficiency and speed in their processes to deliver the clothes for their customers as quickly as possible.
Limited selection/ Disappointment in products and offering
Since in CaaS the selection is more limited than in many clothing shops, this can be seen as a sacrifice by some customers. However, this is a consumer specific factor: for some consumers this factor is a benefit, for others sacrifice. Customers can feel also disappointed of the quality or selection of the clothes. Especially in the membership-model the lack of suitable clothes when needed can be considered negative, because of the monetary commitment to the service.

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"Customers with strict style can have challenges in finding clothes that they like. The customers that are more open to trying out something new are the most suitable segment for us in terms selection of clothes."

Necessity of travelling
In some CaaS models using the service requires visiting the physical store, as delivery service is not available or suitable to the business model (eg. rental process requires personal presence). The sacrifice for the customer depends on the proximity of the physical store location and availability of online service.

Emotional sacrifices

Disappointment of not getting new clothing
One of the concerns is that especially users in a business customer organisation may be disappointed if they (never) get new clothing. Uncertainty about whether the clothing would be new or used, may also be disadvantage.

Doubt about a privacy violation
If the clothing has a tracing system, there may be doubts about a privacy violation.

CaaS feels strange
One of the current sacrifices is that the advantage of CaaS was not clear to customers compared to more familiar model of buying new clothes and owning them. The new system also requires a significant change of current practises as well as mindsets.

Concern of the hygiene
This factor is identified in almost every consumer service. Part of the consumers have doubts concerning the hygiene of the clothes, which lowers the value of the system in their eyes.

B) Environmental value

Environmental benefit

Whole Life-Cycle is planned
In CaaS model the whole life-cycle of the product can be planned and managed, which is a significant benefit for the environment.

Longer life, less production of raw material by optimisation of use
CaaS enables longer life and more effective use of clothing, which reduce the need to produce new clothing and use of virgin materials (as well as material recycling). This way every piece of cloth gains maximal usage, until the end of the life-cycle.

Efficienct maintenance of clothes
The maintenance of the product is handled by the professional companies, which can ensure the ecologic aspect in a better way.

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Minimising the unnecessary and miss purchases
In CaaS, customers can change the clothes in flexible way that creates value for them in many ways. From the environmental perspective CaaS prevents consumers from purchasing the clothes that they later find unnecessary, creating clear benefit by reducing unnecessary production.

Sustainable and responsible disposal
The product will be appropriately recycled at the end of the life of the product. The optimal solution would be closed loop from cloth to cloth, which would reduce the production of virgin materials.

Less physical space, less travelling
The digital platform for CaaS is scalable without a lot of required physical space. The customers do not always need to travel for using the service.

Shifting of the general opinion about consuming towards sustainable choices
The CaaS-model increases consumer`s awareness of sustainable consuming and motivates consumers towards environmentally aware choices.

> *"The rental business for clothes generates demand and respect for sustainable vintage pieces, fashion brands and lifestyle in general. Demand for textile maintenance is also generated."*

Environmental sacrifices/loss

Transportation increases energy consumption and emissions
CaaS may increase the amount of transportation of the clothing between customer and service providers. This would increase the amount of energy consumption and CO2 emissions. CaaS requires logistic solutions from the service provider as well as from the customer when visiting the physical store.

Washing of clothes
Although, washing is done by professionals minimising the environmental impact, CaaS system may increase especially washing concerning some clothes that consumers otherwise wash seldom.

Unnecessary production
Strive for the use of recycled material may tempt to produce unnecessary products or to use the material in the products where it has no environmental advantage.

Energy consuming digital services
Digital platform for CaaS generates energy consumption.

Possible rebound effect - increase of the consumption

Despite being a sustainable choice, CaaS might in some cases motivate people to consume more, which then might override the positive environmental impacts of the CaaS.

C) Value for the society

Benefits for the society

Increasing employment
Cleaning and repair services will employ people. On the other hand, CaaS might also reduce employment from some of the actors in the textile industry value chain such as in production and wholesale.

Efficiency in waste management
The solution helps the waste management since the producer takes care of the waste during the whole process.

Equality
CaaS makes the people more equal offering high quality clothes in an affordable price.

Path leader
CaaS can be a used a good example of sustainable consumer solutions encouraging also others to join.

Responsibility
The recycled products are manufactured in Europe, where the social responsibility of the production is more controlled.

Demand for responsible production
CaaS generates

demand for sustainable and socially responsible brands and production of clothes. Eg. actions that respect human rights are expected from the brands involved in CaaS.

Communality
Especially CaaS-models that require physical presence in stores create a sense of community to cities.

> *"Our business creates a modern community in the city, get-togethers and gatherings."*

Synergies for local businesses
In the membership-model customers visit the physical stores regularly, which can be reflected also to near-by businesses as increase in customer flow.

Sacrifices/loss for the society

Expenses of sustainability

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Customers may not be ready to pay the costs of environmental or social sustainability.

Decrease of demand and employees for traditional fashion businesses
CaaS model takes a share of the traditional fashion business in terms of cash flow and employees.

D) Value to the other key stakeholders

Benefits to the other key stakeholders

The whole life-cycle is well planned
Since the CaaS is well planned system, it is easy and sustainable solution for stakeholders.

Image of responsible company
The stakeholder may improve their image as a responsible actor when they participate such a sustainable action.

Brand awareness
Consumers become aware of stakeholder's brands and have a possibility to try certain brand`s clothes via the rental model. This generates new customers for stakeholders as the brand awareness is risen via CaaS and more cash flow is generated.

"Some of the design brands use us as a marketing channel. They want to collect feedback from each rented item."

Use for spare inventory/items
In some cases like bankruptcy or moving to a new business location, stakeholders have a possibility to sell their spare inventory to be utilized in CaaS-business. Also, items from previous seasons can be channelled to CaaS businesses.

Stronger customer relationships
CaaS focuses to establish long-term customer relationships, which enable companies to learn from customers and increase customer satisfaction.

Sacrifices/loss for the other key stakeholders

Decrease in order volumes
CaaS decreases the volume of the sales turning focus on more long-term customer relationships that might temporally cause decrease in turnover and over production.

Claims of "green washing"
If the service model is not implemented with truly sustainable solutions, the might claims of "green washing", which may hurt also the image of closest stakeholders.

Sustainable CE value proposition of CaaS

As an outcome of the study, we present a framework for circular value propositions of CaaS (Figure 2)

	Customer value	Environmental value	Social value	Other key stakeholders' value
Benefits	**Economic** Control of costs and property management No investments needed **Practical** Lower risks Easiness through full-service No storage needed Flexibility and selection Testing is easy Knowing the quality Possibility to test Information and learning Saving time **Emotional/social** Good conscience of ecologic choice Inspiration and status Community of consumers Entertainment	• Whole Life-Cycle is planned • Longer life, less production of raw material by optimisation of use • Efficient maintenance • Minimising of the unnecessary purchases • Sustainable and responsible disposal • Less physical space, less travelling • Shifting of the general opinion about consuming	• Increasing employment • Efficiency in waste management • Equality • Path leader • Responsibility • Demand for responsible production • Communality • Synergies for local businessses	• Life-cycle is planned • Image of responsible company • Brand awareness • Use of spare inventory/items • Stonger customer relationships
Sacrifices	**Economic** More expensive than buying **Practical** Doubt about the compliance Fear of destroying a cloth and the related argument Requires more planning Limited selection **Emotional** Disappointment of not getting new clothing Doubt about privacy Feels strange Concern of the hygiene	• Transportation increases energy consumption and emissions • Washing of clothes • Unnecessary production • Energy consuming digital services • Possible rebound effect	• Expenses of sustainability • Decrease of demand and employees for traditional fashion businesses	• Decrease in order volumes • Claims of "green washing"

Discussion and conclusions

This study contributes to the discussion of the CE business models, sustainability and business model innovation by providing an understanding on how to create and implement CE value propositions especially in the textile sector. Study also extends the customer value proposition framework to reflect the sacrifices and costs with the proposed customer benefits. Furthermore, the study renews the old customer value proposition discussion by adding new perspectives: environment, society and other central stakeholders of the current company. Thus, the study suggests that in order to implement a CE based business model, this broad perspective is needed.

Currently fashion industry is looking for more sustainable and circular solutions and clothing as a service is one of the most promising ones. Based on our results, it seems that CaaS model has potential to create multiple kinds of value for the customers including economic, practical and emotional or social benefits. Thus, it seems that there are also plenitude of still untapped value creation opportunities for example related to adding personalised services and increasing the communality among customers. One of the challenges of CaaS is to evaluate the impacts for the environment and society. For example, creating a positive impact of the local employment might cause the dramatic opposite

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impact in elsewhere since currently the value chains in textile industry are highly global. Thus, we need to take a holistic approach when evaluating the impacts.

Our study represents an exploratory qualitative approach. The data is limited only to service provider data, which therefore needs to be complemented with the customer perspective to gain more accurate framework. Finally, understanding how the value is created during the customer journey helps us create a valuable understanding for researchers and companies to develop attractive CaaS models.

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