



# Consumer Interest in Adopting Access-Based Product-Service Systems in Sport Retail

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**Abstract**

Climate change has challenged business world to developing products and practices which ensure long-term preservation of the environment. Access-based product-service systems (PSS) in which consumers pay for product use, has been recommended as one solution for reducing consumption levels. In sport retail industry, the development of access-based services is in early stages, and insights especially on consumer interest are needed.

The aim of the research was to examine consumer interest in adopting access-based services of renting, leasing, and membership subscription in sport retail. The focus of the research was to find out which of the services sport retail consumers find interesting, for which product categories and sports they would be willing to use the services, and which factors influence consumers' interest. Quantitative approach was chosen to meet the requirements of market research testing customer reactions to new service offerings. The research was conducted using an online questionnaire with structured questions. A total of 130 responses were collected from members of three training centers in Helsinki metropolitan area.

According to the results, renting was considered the most interesting business model, yet interest for leasing and membership subscription was also found. The preferred product categories for the services were equipment and gear, while using the service for footwear and apparel was rejected. Out of different sports, winter and outdoor sports were seen as most attractive for the services. Factors influencing consumer interest were found from all the themes presented in previous literature. Especially highlighted were service-related factors and motivational factors. Service features valued by respondents included transparent terms and conditions, flexibility, and insurance for damage. Possibility to try new sport or new sport product and possibility to save space at home were considered the most influencing motivational factors.

The research was designed to be an exploratory study for generating preliminary insights for business developers in sport retail industry. Hence, a summary on each studied access-based business model is presented at the end of the paper. The research and summaries can be used by sport retail companies as starting point for examining the feasibility of the business models for their purposes as well as for further research on each of the business model.

**Keywords/tags**

Sport retail, product-service systems, consumer acceptance, sustainable consumption, circular economy

**Miscellaneous**

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## 1 Introduction

Climate change has challenged business world to developing products and practices which ensure long-term preservation of the environment. In recent years, the pace of developing actions to promote sustainability has accelerated. According to recent Corporate Responsibility 2021 study by FIBS (2021), Finnish companies have taken major steps in their sustainability work in the past two years. Corporate Social Responsibility (CSR) actions have become more strategic, targeted, and organized than before (FIBS, 2021). Sporting goods industry has among others taken actions into reducing its environmental impacts. Companies have introduced sustainability strategies to cut carbon emissions and unsustainable practices in supply chains and in overall company functions. The use of harmful and polluting substances has been renounced and use of recycled materials have become the new common. Designers are aiming at product longevity by designing durable products that are repairable and easy to maintain. (Timm, 2019.) Stål and Jansson (2017) tell that companies are gradually extending their perspective from selling eco-labeled products to addressing the whole life cycle of their products. Washing advice and repair possibilities as well as take-back systems and re-commerce (secondhand products) have been introduced by many companies (Stål & Jansson, 2017). These are important steps towards circular economy, which is an economic model that aims at finding solutions for global challenges of climate change, biodiversity loss and pollution (Ellen MacArthur Foundation, 2022) and at same time ensure economic development (Ionaşcu & Ionatcu, 2018).

However, the actions of sport retailers are not enough as they only address the symptoms of the industry's impact on the ecosystem. World population is growing, and overall consumption must be reduced as the world's natural resources have a limit. To address overconsumption, sport retailers must take action and develop business models that help consumers to reduce their consumption. Although circular economy business models, which aim at minimizing resource consumption and circulating material flows, have been introduced, the business world still relies on linear "take-make-dispose" economy (Ionaşcu & Ionatcu, 2018). Main source of profitability is seen to come from selling new products to consumers, albeit that the products are made sustainably and from sustainable (recycled) materials. According to FIBS (2021) Corporate Responsibility 2021 study, Finnish companies do not yet recognize business opportunities arising from sustainability. As consumer awareness on reduced, sustainable consumption keeps on rising, companies

must look into adapting and/or developing their business models to promote reduced consumption. Alternative circular economy business models must be tested, and new models innovated.

Product-service systems (PSS) have been stated as prominent business models to address the need for reduced consumption (Fokker et al., 2019, Johnson & Plepys, 2021). According to Kim (2020) product-service systems are business models which combine products and services as well as supporting networks and infrastructure to generate value and satisfy consumer needs. Common PSS are for example product takeback initiatives where company collects products back from their customers, re-commerce in which company sells second-hand products collected from their customers, product repair and maintenance services as well as renting and leasing services. Considering reduced consumption, renting, leasing and membership subscription service are prominent business models as they promote collaborative consumption. Consumers buy access to the products for the time they need them and after that, products are available for other customers. Less products need to be produced and as the ownership of the products stay with the companies providing the service, they also take care of recycling the product after it can no longer be used. This access-based consumption also reduces the need to produce as many products, and enhances the production of quality, long-lasting and repairable products (Catulli & Dodourova, 2013).

In sport industry, renting is a well-known business model from outdoor and ski-resorts where skis and e.g., mountain bikes have been rented for customers to use during their stay. Yet, sporting goods manufacturer brands and retailers have only awakened to the possibilities renting and other product-service system business models. Smaller outdoor brands have been pioneers in rental services (Henkel, 2020; Diddi & Yan, 2019) but only few big retailers (e.g. Decathlon, Dick's Sporting Goods) have tested renting of other sporting goods than skis and bicycles. With the lack of sport retailers providing possibility for rental, consumers have adopted rental possibilities provided by platform economy. For example, Retkirent.fi is a website through which consumers can rent hiking equipment or -wear from other consumers. Established retail companies may be hesitant to introduce these business models as it requires new knowledge and processes, and the industry lacks research and insights on wider consumer interest in them.

Hence, the aim of this thesis is to address this issue and provide insights for sport retailers on consumer interest in adopting rental, leasing, and membership subscription services in sporting goods

context. The development of product-service systems require knowledge on what would motivate consumers to adopt these business models and what would hinder their interest. The thesis focuses on three product-service system business models: renting, leasing, and membership subscription. These PSS were chosen as they are business models which suit well for sport retail purposes. According to Henkel (2020), outdoor trend boosted by Covid-19 pandemic has shown the potential of rental and leasing services in sporting goods. Outdoor activities like backpacking, hiking, ski touring and mountain biking have become popular sports but many of these activities are done only few days or couple weeks in a year (Henkel, 2020). Equipment rental and leasing are viable options for acquiring the equipment needed in these sports.

As literature lacks sport retail specific research on product-service systems, the thesis takes reference from other industries like mobile phones (e.g. Poppelaars et al., 2018), fashion (e.g. Rexfelt et al., 2009; Fashion for Good, 2019; Becker-Leifhold & Iran, 2018) and washing machines (e.g. Cherry & Pidgeon, 2018), where product-service-systems and customer interest in them have been studied more extensively. Textile and fashion industry has been in the forefront of developing sustainability actions due to the critique over fast-fashion and its harmful social and environmental effects (Stål & Jansson, 2017). Fashion industry insights are also well applicable to sport retail as major part of sport retail is apparel and footwear sales in which fashion influences greatly.

What could be the incentive for sport retail companies to introduce access-based product-service systems into their business? Younger generations are environmentally conscious, pay great attention to sustainability, demand it from companies and therefore sustainability work is becoming a strategic element in building long-lasting competitive advantage (Gazzola et al., 2020). Business model innovation has an important role in enhancing companies' ability to prepare for and adapt to industry evolution and revolution (Cheah et al., 2018) like transition to circular economy. Hernandez (2019) points out that change of paradigm from linear business models to circular business models is already happening. Companies that have started their sustainability work early and put effort into eco-efficiency and eco-design should take action on adopting PSS business models or they may compromise their competitiveness in the future. New businesses will see sustainable products and supply chains as prerequisite and build their business models to circular systems in the first place. (Hernandez, 2019.)

## 1.1 Research Objectives and Questions

The thesis takes a business model development perspective on product-service systems in sport retail. The objective is to provide insights on PSS business model development for sport retail companies and the industry as whole. Consumer interest is a central topic in PSS business model development. This is studied by examining which access-based product-service systems consumers perceive interesting and would be willing to adopt. Focus is also on finding barriers which hinder consumer interest and drivers that advance consumer interest.

Literature lacks sporting goods specific research on product-service systems. Although insights from other industries like fashion and home electronics can be found and can be considered applicable at some extent, it is clear that sport specific research is needed. Industry specific insights are needed to make informed decisions when pursuing circular economy business extensions. Sport retail is a special field of retail and consumer behaviour has its own special characteristics.

Three access-based product-service system business models were chosen to be examined: renting, leasing, and membership subscription. These PSS were chosen based on their suitability for sport retail context and because they are relatively new approaches to sport retail industry. Examples can be found from small companies, but the business models are not widely adopted by the industry. The research problem is addressed with three research questions:

- Which of the three studied access-based product-service systems (renting, leasing, subscription-leasing), provided by a sporting goods retailer, consumers find feasible for sporting goods?
- Which product categories and different sports, consumers would be interested in acquiring sporting goods via renting, leasing and membership subscription services provided by a sporting goods retailer?
- Which factors influence positively on customer interest in adopting access-based product-service systems in sport retail?

The study is explorative in nature and focuses on charting relevant issues on the topic. Based on previous literature from other industries, few general hypotheses can be made. Out of the business models studied, renting seems to be the easiest business model for consumers to adopt. It can also be expected that interest in these services can be found especially among younger consumers and consumers that value sustainability high in general.

Interest in a specific service is of course not guarantee that it will become a successful business. However, sport retail industry can use the insights from the survey to determine which of the product service systems could be feasible business ideas to pursue. Results of the survey can be used to further examine the services that receive the most interest.

## 1.2 Theoretical Framework of the Thesis

The theoretical framework of the thesis is displayed in Figure 1. It combines company and consumer perspective to provide tools for sport retail companies to develop and design product-service system business models.



Figure 1. Theoretical framework of the thesis

Chapter 3 focuses on presenting general information on product-service systems and their linkage to circular economy. It addresses the different categories of PSS, special features that need to be

considered when designing them and the challenges and barriers for product-service system implementation. The chapter also studies factors that influence on consumer acceptance of PSS. Based on literature, the influencing factors are divided into barriers and drivers for acceptance.

## **2 Methodology**

### **2.1 Research approach**

Research approach is determined by the nature of the phenomenon which is studied (Kananen, 2015, p.53). The thesis was conducted using quantitative research approach. Quantitative research uses measuring to examine relationships between variables and statistical techniques are used for analysing data (Hague, 2021, p. 102). Quantitative research allows for producing numeric data on frequencies of the variables and the interrelationships between them (Kananen, 2015, p.138). Quantitative approach was chosen because it is well suited for business research which aims at providing insights for business development and decision making (Kananen, 2015, p. 54). According to Hague (2021, pp. 8-9) quantitative research as a good tool for examining consumer interest, awareness and attitude to new products and concepts. Quantitative market research can be used to understand and test customer reactions to new product or service offerings, their acceptance or rejection (Hague, 2021, p. 36) or their awareness of products/services (Hague, 2021, p. 101).

Quantitative research is characterized by deduction, in which existing theories from literature are tested in practice. It tests the validity of theory in context to the research. Quantitative research requires that the researcher is familiar with the theories explaining the phenomenon. (Kananen, 2015, pp. 54-57.) For this thesis, a review on existing literature on the topic was carried out. The review focused on finding out which factors explain consumer interest in adopting product-service systems. Factors were reviewed based on their applicability in sport retail context. Based on the insights, an online survey for sport retail consumers was formulated to examine whether the factors found from literature are applicable to sport retail context.

## 2.2 Data Collection and Analysis

### 2.2.1 Sampling

Data for the research was collected from sport retail consumers. As general consumer survey was not possible, and a company specific customer register not available for the research, a different approach to sampling was taken. Non-probability sampling, in which the researcher relies on their personal judgement of being able to do the sampling accordingly (Malhotra et al., 2020, p.412), was used for the thesis. This approach is common for online research when the researcher is not able to take a traditional sample or define basic population (Kananen, 2015, p.184). The exact non-probability sampling method that was applied for then thesis is judgement sampling. In judgement sample, the researcher selects the observation units on their consideration; the sample is believed to represent the basic group (Kananen, 2015, p.184). The researcher uses their expertise to form the sample and the sample is considered to represent the population of interest (Malhotra et al., 2020, p.415). Judgement sample is also a form of convenience sampling in which the researcher obtains the sample from convenient elements: the units are accessible, cooperative, and easy to measure. Hence, student groups or members of social organizations are often used for convenience sampling. It is also unexpensive and requires less time than other sampling. (Malhotra et al., 2020, p.413.)

Challenge with non-probability sampling is that the sample does not represent the population statistically (Malhotra et al., 2020, p.413) as it is not formulated based on statistical methods (Kananen, 2015, p. 184). This issue of self-selecting sample is common to online questionnaires (Malhotra et al., 2020, p.413). When participants are recruited from clicking a banner ad or via Facebook, the researcher doesn't know whether the participants are actually representative of the target population. This causes difficulties in generalizing the findings (Malhotra et al., 2020, p.268). The results must be analysed with caution (Malhotra et al., 2020, pp.413-414) and the results are not statistically reliable (Kananen, 2015, p.174). Therefore, convenience sampling suits best for exploratory research when ideas and insights are generated (Malhotra et al., 2020, p.413), like the case in this thesis.

For sufficient data to be gathered in online research, it should be targeted at people who are somehow associated with the phenomenon. This ensures representativeness of the sample. (Kananen, 2015, p.21.) Sample of the thesis consists of members of three Training for Warriors training centres in Helsinki metropolitan area, Finland. Rationale behind the selected sample was that based on their gym membership they represent sport retail consumers. Based on the thesis author's knowledge, the members are also active not only on their gyms but also on other sports as well.

### **2.2.2 Questionnaire Design**

Research problem and research questions guide the compiling of a survey questionnaire (Kananen, 2015, pp. 138-144). Survey questions are derived from research questions to produce data for solving the research problem. Survey questions are also connected to the theories that explain the phenomenon meaning that questions are derived from existing theories. (Kananen, 2015, p.57). Questions must be designed to capture the phenomenon that is researched, i.e. to measure the concepts (factors) which influence on it (Kananen, 2015, pp. 138-144). This operationalization of concepts to variables, when conducted meticulously, ensures validity of the research (Kananen, 2015, p.273). To follow these quantitative research principles, the thesis survey was designed as follows.

The thesis survey consists of three sections. First section of the survey collected demographic data and data related to purchasing behaviour of sporting goods. These independent variables were chosen as they are commonly inquired in retail market research to be used for market segmentation. This part of the questionnaire was aimed at producing data for examining whether they influence on consumer interest. Second part of the survey consisted of direct questions to provide answers to the first two research questions of which services, consumers find interesting and for which product categories and sports they would be interested in using the services.

Third part of the survey was designed to find answers to the third question on which aspects influence consumer interest and focused especially on service features. It was designed based on drivers and barriers of consumer acceptance presented in chapter 3.6. As barriers have been studied extensively and negative formulations in surveys is not recommendable (Kananen, 2015, p.152), the survey was designed to test drivers of consumer acceptance. Factors found from literature

were then converted into variables and further to survey questions. Drivers were examined with statement sentences for respondents to answer with an ordinal scale. All questions in the survey are fixed response alternative questions in which the participants select from predetermined set of responses (Malhotra et al., 2020, p.263). To ensure validity of the research, special attention was paid to the formulation of the survey questions so that they are easy to understand and do not contain multiple meanings. The questionnaire was also tested with two external testers beforehand. The survey questions in detail can be found in Appendix 1.

### **2.2.3 Data Collection**

Research was conducted using Webropol software for the survey and in collaboration with three Training for Warriors training centres in Helsinki metropolitan area. Survey link was posted on the organizations' private Facebook pages in February 2022. Permit for this conduct was acquired from the organizations in December 2021. Survey link was open for two weeks and a reminder was posted in the Facebook pages after one week of initial post.

The survey was designed to be anonymous, and no collection of personal data was done to consider GDPR regulations. Indirect identifiers were paid special attention in survey questions so that individual research participants could not be identified based on them or by combining them with information available elsewhere. This affected especially questions on age and interest in using the services for different sports. Age groups had to be designed for large scales as smaller age groups would compromise anonymity when it was expected that older and very young age groups would be underrepresented. "Other sport, which?" -option had to be left out from listing of different sports as it too could have compromised anonymity if a respondent would have answered a very rare sport.

### **2.2.4 Data Analysis**

Data was analysed using Webropol analysing tools. Main tools used for analysing were frequency tables and cross-tabulation (contingency tables) which are common reporting formats for surveys (Kananen, 2015, p. 219). Cross-tabulation is used in quantitative research to find out links between different answers, whether a relationship between variables exist. Cross-tabulation shows results

for different groups of respondents. (Hague, 2021, p. 102.) To gain deeper insights from cross-tabulation, correlation analysis was carried out for cross-tabulations. Correlation analysis measures interdependencies and intensities dependencies between two variables (Kananen, 2015, p. 229). Webropol Insights were used for correlations as it shows Pearson's r test and its statistical significance. Pearson's r is a method that can be used for examining correlation between dichotomous, nominal and ordinal variables (Bryman & Bell, 2015, pp.345-353) which are included in the survey.

### **3 Product-Service Systems for Circular Economy**

This chapter introduces the concept of product-service systems (PSS). It explains what PSS are, their categorization, and how they are linked to circular economy. It also addresses business model design of PSS, profitability as well as challenges for implementation. Last part of the chapter focuses on barriers and drivers for consumer acceptance of product-service-systems.

#### **3.1 Product-Service Systems as Business Models for Circular Economy**

Product-service systems have been stated as prominent business models for circular economy (see e.g. Fokker et al., 2019, Johnson & Plepys, 2021). Ellen MacArthur Foundation (EMF, 2022) defines circular economy (CE) as an economic system which aims at finding solutions for global challenges of climate change, biodiversity loss and pollution. It has three principles of (a) eliminating waste and pollution, (b) circulating products and materials and, (c) regenerating nature (EMF, 2022). Circular economy is about building a sustainable and closed-loop system to extend and maintain the value of materials and products as long as possible (Ly, 2021). In addition to sustainable materials, design, production and end-of-life practices, circular economy is about reducing overall consumption.

Following EMF's (2022) three principles, Bressanelli et al. (2018) propose that companies wanting to adopt circular economy principles should consider their value proposition according to three CE value drivers. First, company should seek to increase the utilization of their assets to pursue resource efficiency. Second, company must consider how to extend the lifetime of their products. Third, company should enable multiple product lifecycles including reuse, remanufacturing, and as last option recycling. (Bressanelli et al., 2018.) These actions may seem challenging to companies,

yet EMF (2021) highlights that circular economy provides companies the possibility to innovate new business ideas and generate economic opportunities.

Circular economy provides several different approaches to building new business models. Guzzo et al. (2019) classify these approaches under four themes of (a) inner circles which means enhancing the level of use and consumption of products; (b) circling longer which means enhancing the life-time of products, parts, and components; (c) cascade use, referring to recovery of discarded materials and energy; and (d) pure inputs referring to enhancing application of materials and energy.

Figure 2 on next page shows these themes and the strategies under each theme.

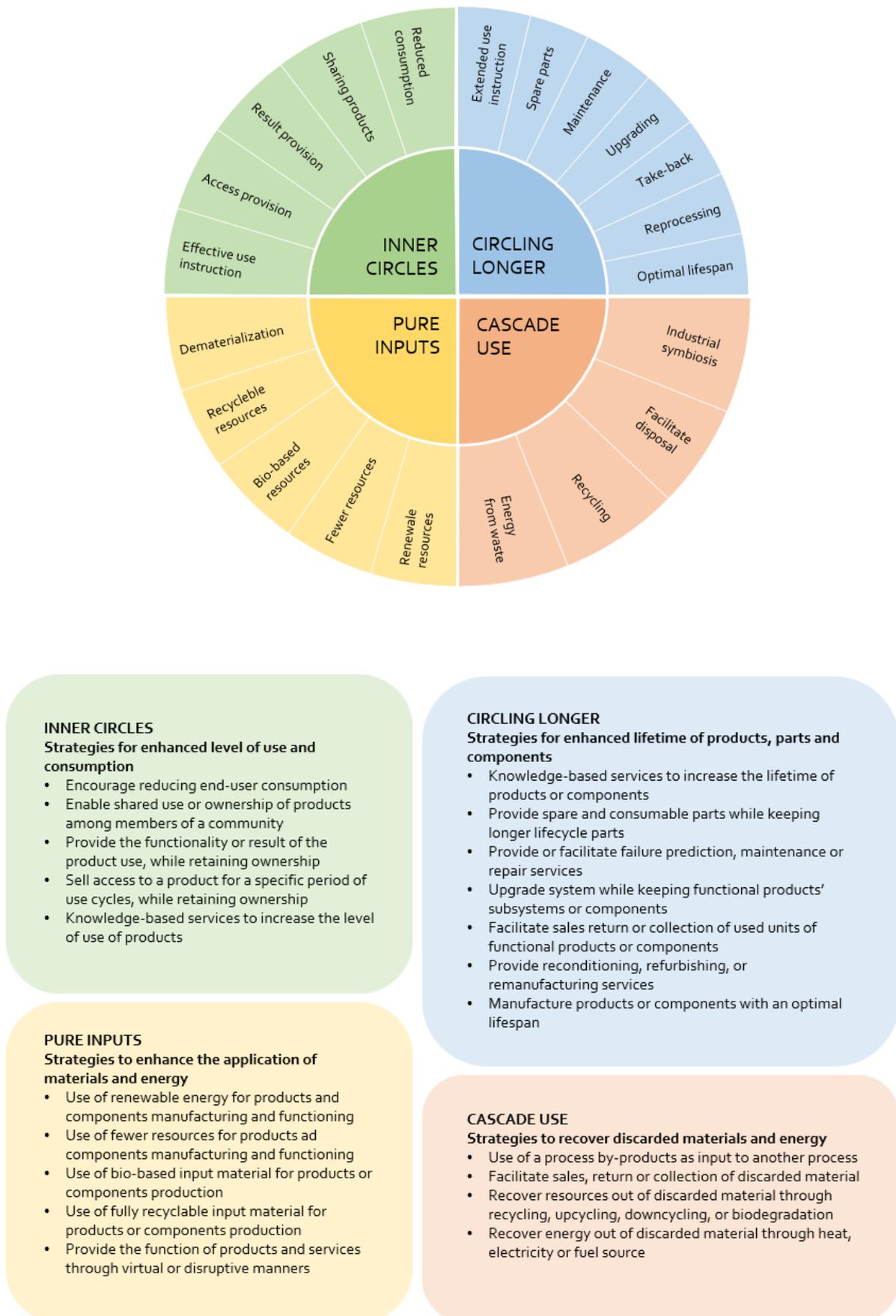


Figure 2. Circular economy strategies (Adapted from Guzzo et al., 2019)

As can be seen from Guzzo et al. (2019) classification in Figure 2, access-based product-service systems are one circular economy business strategy among others. It is included under theme “inner circles” and strategy of selling access to a product for specific time. Inner circles -theme is characterized by two concepts: sustainable consumption and collaborative consumption. Tunn et al. (2019) define sustainable consumption as “shaping and satisfying consumer needs to continuously reduce negative impacts of consumption on the environment and the wider society”. Collaborative consumption refers to consumption practice that is based on either acquiring products second-hand or access to them without ownership. These include practices of gifting, swapping, second-hand, sharing, lending, renting and leasing. This is also commonly referred to as sharing economy. (Becker-Leifhold & Iran, 2018.)

The idea of “inner circles” and access-based product-service systems is to modify consumption patterns (Lang et al., 2016). Rental, leasing and subscription all contribute to sustainable and reduced consumption by providing consumers with the possibility to buy less, i.e. access to products without owning them is the idea behind product-service systems. Guzzo et al. (2019) also point out that most this kind of use-oriented CE strategies also apply strategies that enhance the lifetime of products. This is mainly because durable products, which can be used for long time, increase the revenues from renting and leasing. Majority of companies also apply input strategies to promote sustainability by enhancing the application of materials and energy. To sum up, strategies are somewhat interdependent of one another or complement one another. (Guzzo et al., 2019.) For PSS this means that all the three value drivers of resource efficiency, product life-time extension and multiple lifecycles (Bressanelli et al., 2018) can be utilized at the same time.

### **3.2 General Information and Characteristics of Product-Service Systems**

Kim (2020) defines product-service systems as business models which combine products, services, supporting networks and infrastructure. In PSSs, products are not sold as such but rather their use or functionality (Kim, 2020). This is called servitization of products and is the foundation of product-service systems (Ionaşcu & Ionatcu, 2018). According to Elzinga et al. (2020) the difference between regular business models and PSS business models is in what constitutes as adding value. In product-service systems, value proposition is extended to include not only the fulfilment of customer needs and economic value for society but also environmental and social value for all stakeholders (Elzinga et al., 2020).

Hernandez (2019) lists many benefits product-service systems can generate. From economic point of view, it offers companies possibility for competitive advantage through for example innovations, differentiation, strategic positioning, and loyal customers. PSSs have also social benefits that include better relationships with stakeholders and collaborative networks. Environmental benefits are the key driver of PSS currently. They include reduced use of natural resources and volume of products produced, closed material flows and reduced waste levels as well as decrease in energy consumption. (Hernandez, 2019.) Customers benefit from PSS business models in many ways including for example access to exclusive products with less money (Catulli & Dodourova, 2013), possibility to save space at home (Mukendi and Henninger, 2020) and not needing to take care of products' maintenance (Poppelaars et al., 2018). These benefits are further addressed in chapter 3.6.

Elzinga et al. (2020) identified three characteristics of PSS business models that are fundamentally different in product-service systems compared to regular business models. **Changes in ownership:** most product-service systems are access based which means that ownership retains within the seller as consumer only buys access to the product. **Changes in responsibility:** in access-based PSS, the service provider owns the product and therefore also has the responsibility for product repairs and maintenance. If customer has bought access to the product for longer time-period, like leasing, companies often include repair and maintenance in the contracts and customer is responsible only for taking the product to service. **Changes in payment structure:** payment is altered in many PSS models when consumer only pays for access to the product. Change is most visible in leasing and membership subscription in which traditional single payment changes into monthly payments. Pay-per-use model charges customer for exclusive access to the product during use. (Elzinga et al., 2020.)

### 3.3 Product-Service System Categories

Product-service systems have been classified and categorized in many ways. Classification has been done based on servitization of the product, interaction between service provider and customer as well as from user and ownership point of view (Kim, 2020). Perhaps the common categorization of PSS is by Tukker (2004) who has divided them by difference in value proposition to three categories of (a) product oriented, (b) use-oriented, and (c) result oriented. Figure 3 displays the categorization.

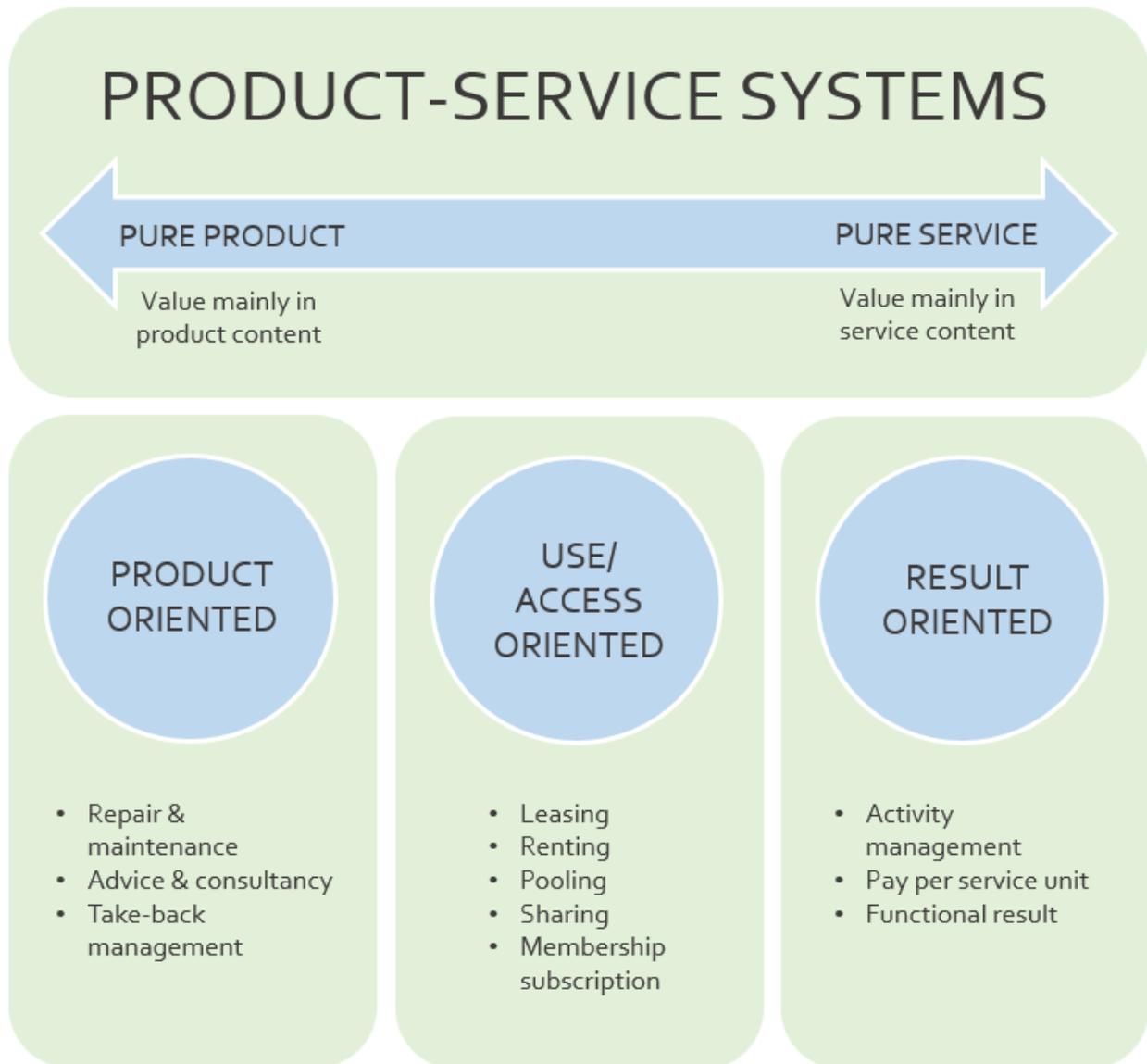


Figure 3. Product-service system categories (Adapted from Tukker, 2004)

**In product-oriented PSS**, additional services are attached to the product (Tukker, 2004). The objective of product-oriented PSS is to sustain and restore the functionality of the product with maintenance and repair services in order to prolong the product lifetime (Bressanelli et al., 2018). Product-oriented PSS include services that are needed during use, for example maintenance service, or advice or consultancy for customer to be able to use the product more effectively. Often companies see this as a non-core business and use third party suppliers for it. (Tukker, 2004.) For customers, this PSS model adds value with extended warranties and repair and maintenance contracts (Bressanelli et al., 2018). Product oriented product-service systems are close to linear business models as they are still based on tangible products (Ionaşcu & Ionatcu, 2018). Therefore, they

are also the least radical, do not require big changes to overall business models and are easy for companies to adopt (Tukker, 2004). Product-oriented model has been criticized for allowing companies still to focus on selling more products which is not in line with circular economy objectives (Bressanelli et al., 2018).

Product oriented product-service systems also include take-back management service and re-commerce. In take-back management company collects back from customers their old and worn-out products and either donates them to charity, re-sells them or uses as material for new products (Hvass, 2014). Re-commerce is a business model that is linked to take-back management. Company collects back the products they have sold to customers and then sell them to new customers as second-hand products. (Fashion for Good, 2019.) Customers are usually provided with a voucher to use for buying a new product or other second-hand product (Hvass, 2014). Repair and maintenance services provided by retailers are also included in product-oriented PSS.

In sport retail business, product-oriented product-service systems are a common business model which is operated in line with products sales. Many sport retail companies which sell sport equipment offer their customers repair and maintenance services for bicycles, skis and snowboards, skates, rackets etc. Also apparel repair advice and services are offered by many retailers. Take-back management service is gaining popularity among sport brands. Examples of sporting goods manufacturer-retailers to take action in take-back management to utilize it for circular economy purposes include e.g. North American Patagonia and Sweden based Haglöfs and Houdini. Patagonia is a pioneering outdoor sportswear brand which (<https://wornwear.patagonia.com/>) offers repair and maintenance services for its North American customers and utilizes take-back management service for their re-commerce and re-craft in which they upcycle worn garments into new unique products. Haglöfs (<https://haglofsrestored.com/>) and Houdini (<https://houdinisportswear.com/en-fi/reuse>) also has re-commerce in which they collect their brand's used garments and restore them for resell in their online store.

**Use-oriented PSS**, which are also referred to as **access-based PSS**, differ from product-oriented in that product is not sold to customers, instead customer pays a fee for access to it. Use-oriented PSS include business models like product lease, renting, sharing, or pooling. In product lease, own-

ership of the product stays with the service provider which usually is also responsible for maintenance and repair. Lessee pays a monthly or yearly fee for the access to have unlimited individual access to the product. Product renting and sharing are similar to leasing as customer pays for short term use, and ownership of the product stays with service provider who is responsible for repair and maintenance. Difference to leasing is that user does not have unlimited individual access to the product; others can use the product at other times. Product pooling is similar to renting and sharing but allows simultaneous use of many clients at the same time. (Tukker, 2004). Subscription-renting which is also called as membership subscription is one example of product pooling. In membership subscription, customer pays monthly fee for access to predetermined number of products for limited amount of time. (Tu & Hu, 2018.) Clothing libraries are an example of this kind of service.

Access-based PSS usually include an agreement on maintenance and repair (Tunn & Ackermann, 2020). Consumer does not have to wash or otherwise maintain the product before returning it. In leasing, the contract often includes repair and maintenance service which customer can use without extra payments. For customer, this model means easy maintenance and takeback initiatives (Bressanelli et al., 2018). However, customers are expected to inform about repair and maintenance needs and take reasonable care of the product during use (Tunn & Ackermann, 2020).

In sporting goods context, rental is the most familiar access-based business model to consumers. Outdoor resorts often have rental service for skis, mountain bikes, kayaks, SUP -boards etc. and consumers have been happy to use these services. Outdoor sporting goods retailers have also been the pioneers in rental services by renting out backpacking and hiking gear like tents, sleeping bags and camping stoves to consumers who wish to try out backpacking for the first time. Most of the rental services focus on equipment and renting of activewear has been available to a very limited extent. Houdini, the Swedish activewear brand, has been a pioneer in this as they have rented out shell layers (jackets, pants) since 2014, mostly to consumers in skiing resorts. Also in Finland, some rental services in skiing resorts rent also apparel for skiing. Otherwise activewear rental has not become widespread in Finland yet, but the interest for it is growing. For example, recent circular economy startup Loop25 (<https://loop25.fi/>) has taken the opportunity and started outdoor activewear rentals for consumers around Finland. Consumer-to-consumer rentals on the other hand have gained momentum with the rising sharing economy. As mentioned in introduction,

there are online platforms where consumers can lease their sporting goods to other consumers. Examples of these services operating in Finland include Retkirent (<https://retkirent.fi/>), Lainappi (<https://www.lainappi.fi/>) and Nettivuokraus (<https://www.nettivuokraus.com/>). Pure membership subscription services for sporting goods are not currently available in Finland and only few examples can be found from abroad (see e.g. <https://www.joingearhouse.com/gear-inventory>). However, similar business idea is used by some skiing centers as they offer season-tickets for skiing equipment. The ticket price includes access to standard equipment for the whole season.

**In result-oriented PSS**, customer pays for the result not the actual product or service (Tukker, 2004). Usually, this model includes combination of product and service to produce the outcome, so customer pays for performance (Bressanelli et al., 2018). This model includes services like outsourcing, pay-per-use and functional result. In outsourcing, a part of company activities is bought from third party like catering or office cleaning. On pay-per-unit service, customer pays only for the output, like copying in offices. Functional result business model is similar to pay-per-unit model, but the result can be more abstract. (Tukker, 2004.) Although this category of product-service systems is considered to have significant sustainability potential, it is not suited for all industries (Bressanelli et al., 2018), including sporting goods industry.

### 3.4 Designing Access-Based Product-Service Systems

Bilińska-Reformat et al. (2019) point out that innovative changes in business models can be either evolutionary or revolutionary. Evolutionary innovations are changes that modify existing solutions, usually in individual functions or operations. Revolutionary innovations are radical changes which reconstruct existing value proposition, strategies, and operations. Most often business model changes in retail business are evolutionary. (Bilińska-Reformat et al., 2019.) Especially in circular economy business models, it is common that companies choose to implement less-complex models as a starting point to be able to communicate about them to consumers and through that gain immediate wins (Pieroni et al., 2019b). It also allows companies to gradually gain new capabilities required for circular economy business models and help convincing all stakeholders that CE business models can generate results/revenue. Using less-complex models as steppingstones it is possible to expand into more sophisticated circular economy business models. (Pieroni et al., 2019b.) Whether the company aims at smaller bm alterations, add-ons or wishes to make more radical changes, business model innovation is needed for the process.

Product-service system business model innovation challenges company to rethink its value proposition, relationship with customers and stakeholders, products included in the service, company processes, networks, and revenue model (Antikainen & Valkokari, 2016). In other words, it urges company to (re-)design all the business model elements. Many frameworks and models for circular economy business model innovation have been introduced by researchers. They vary from simple (e.g. Bocken et al., 2014; Pieroni et al., 2019b) to very detailed and practical solutions (e.g. Kim, 2020; Pieroni et al., 2019a; Pessoa & Becker, 2017). Hence, a company starting to develop a circular economy product-service system business model has the possibility to choose their preferred model. Framework for sustainable circular business model innovation by Antikainen and Valkokari (2016) is used in the thesis to present the aspects that need to be considered when designing a circular economy access-based product-service system.

Antikainen and Valkokari (2016) base their framework on Business Model Canvas by Alexander Osterwalder which is a commonly used template for business model development. The researchers have enriched the model with other tools and research on circular economy to build a framework that is better suited and appropriate for developing sustainable and circular business models. It is a generic model which aims at providing companies a tool for designing and reconfiguring their business models. (Antikainen & Valkokari, 2016.) The model is presented in Figure 4 next page.

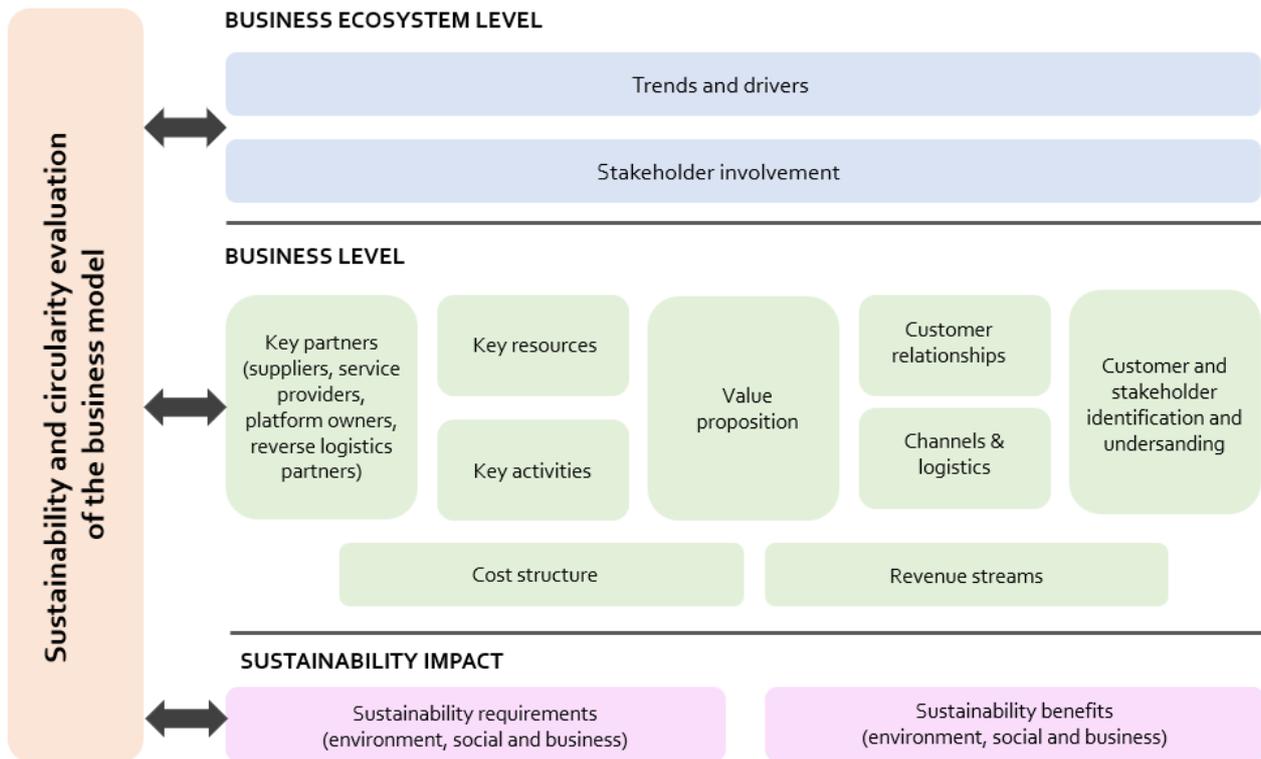


Figure 4. Framework for sustainable circular business model innovation (Adapted from Antikainen & Valkokari, 2016)

The framework offers a holistic perspective to business model innovation. It consists of several levels for business model innovators to consider. Basic business model canvas elements are complemented with analysis of business ecosystem, analysis of sustainability requirements and benefits as well as iterative process of sustainability evaluation. Business ecosystem level in the framework calls for companies to analyze the business environment and scan for trends and drivers in local and global contexts. This includes for example the knowledge of new legislation that may have a significant influence on the business model. Sustainability impact level is for considering sustainability requirements and recognizing the sustainability benefits possible with the business model. (Antikainen & Valkokari, 2016.)

What is different from other business model innovation models, this model includes sustainability and circularity evaluation of the business model. It highlights the practice of continuous iteration

where sustainability of the model, its' aspects and changes made are evaluated. For the evaluation, the researchers suggest using lifecycle assessment tools which can be found from circular economy literature. (Antikainen & Valkokari, 2016.)

For practitioners who are familiar with different business model innovation frameworks and tools Antikainen and Valkokari's (2016) framework provides a good starting point for PSS development. The framework still lacks more detailed presentation of special aspects that need to be considered when designing a product-service system. Hence, insights from research on the topic are also needed to guide the process. In the following, the main insights from literature concerning access-based product-service system design are presented.

### **BUSINESS ECOSYSTEM LEVEL**

Understanding business ecosystem level is crucial in all business model development. Bilińska-Reformat et al. (2018) state that economy globalization including trade internationalization, social changes, competitors' activities, and the development of information technology play a significant role in business innovations on retail sector. Product-service system developers should carefully examine trends, future legislation and regulations and the competitive environment to analyze their influence on the business model they are developing. It is also important to study how the possible product-service system compares to current situation and competitors' offerings and future scenarios on how relevant the model is in the future (Rexfelt and Hjort af Ornäs, 2009). Useful tools for business ecosystem analysis are for example well-known Pestel analysis and Porter's five forces analysis.

Understanding trends in the market helps in capturing them to build competitive advantage. For example, urbanization means that people have less storage space and renting outdoor shell garments can really be a viable option in the future. (Holtström et al., 2019.) Global and local trends can act as drivers for change in consumer behavior, and developers should ask how the business model answers to consumer needs rising from the trends.

## BUSINESS LEVEL

In business level decisions, special focus should be paid to customer centric development, stakeholder and key partner collaboration, channels, and logistics as well as cost structure and revenue streams.

**Customer centric development.** In access-based PSS design, the need for customer centric development is highlighted by many researchers (see e.g., Kim, 2020; Holtström et al., 2019; Rexfelt & Hjort af Ornäs, 2009). As product-service system development is about servitization of business model, service-oriented perspective for customer centricity is needed. Antikainen and Valkokari (2016) propose that consumers should be perceived as users of the service rather than buyers of the service. The difference in the perspective helps to understand consumers as stakeholders and co-creators, not objects of marketing communications (Antikainen & Valkokari, 2016).

When starting the design process, it is important to develop a comprehensive understanding of consumer needs, practices (Rexfelt & Hjort af Ornäs, 2009), attitudes, behavior, and preferences (Holtström et al., 2019) of the chosen target group. Rexfelt and Hjort af Ornäs (2009) state that this can be done by studying target group consumers' habits, and issues they find problematic. They propose different scenarios to be studied, considering what impact a solution can have on consumer acceptance. To reach adequate understanding, two things need to be studied: consumer activities now, and their beliefs on how they would see future with the presented PSS. It is possible to present consumers ideas on possible PSS and ask how they see the PSS would change their activities (or would they?). The researchers recommend complementary data-collection with for example service design methods to extend the understanding further. Different scenarios collected from customers can then be classified, evaluated based on desirability and motive, and then compared against the different PSS solutions. After this, the model is refined and presented again to the consumers. (Rexfelt & Hjort af Ornäs, 2009.)

Interaction with customers is a great way to gain insights from customers. Customer relationships can be built, and insights collected by building a social media community for the service and by arranging events for customers to join (Pedersen & Netter, 2015). Holtström et al. (2019) mention in their study that outdoor sports retailer Houdini uses their Houdini Friends community and Houdini

Hangouts for this consumer interaction. Houdini Hangouts are events arranged for customers and Houdini Friends are selected brand ambassadors, active outdoor influencers, and athletes. Both are used to increase customer interest in active outdoor life and to build and strengthen close relationship with customers. (Holtström et al., 2019.) Especially membership subscription service customers appreciate the possibility to interact with other customers (Pedersen and Netter, 2015). For sport retailers this could be something like events where athletes or experts give advice on technique or share their tips on exercising.

Holtström et al. (2019) propose this proactive approach to customer relationships also to be used for educating customers on sustainable consumption practices. Customers can be informed about the advantages of access-based consumption instead of owning products (Holtström et al., 2019). Promotion can focus on communicating about the simplicity of the service as well as saving time and energy and contributing to sustainable consumption.

**Product selection and design.** Fashion for Good (2019) report on product-service system business models in fashion highlight that companies must understand which PSS models are best suited for their product offering. Each industry and different segments inside them have their own specific requirements based on product types and their current and future customer base. Hence, some generalizations can be made which can help to evaluate the models' suitability. Rental is best suited for products that are used infrequently, like one-off events or specific activities. Membership subscription suits for product groups that are frequently used yet need regular refreshing and are used for short period of time. (Fashion for Good, 2019.)

According to Holtström et al. (2019), product quality and durability is crucial in access-based business models. They highlight that durable, high quality and timeless products are not only a sustainability benefit but also generate revenue when they are rented or leased multiple times in product lifetime. Hence, product design for access-based PSS should focus on addressing issues of continuous use, increased washing, and less careful use of customers. Repair and maintenance possibilities should be included in the design to address profitability and sustainability requirements. (Holtström et al., 2019.) Product lifetime can also be enhanced with product modification, upgradability, and standardization. Standardization allows for products to be modified for customer preferences or future requirements and to be upgraded with new technology features. (Bocken et

al., 2016.) Timeless design is an important feature in rental clothes considering long-term use, but element of fashion and style should not be forgotten altogether. Product that seems old-fashioned in customers' eyes may not be rented as many people use clothes for self-expression. (Holtström et al., 2019.)

In addition to servitization requirements, products should be designed aiming at multiple lifecycles to endure refurbishment, remanufacturing, and recycling (Bressanelli et al., 2018). Design that is based on components allows for separating materials that will enter different cycles. These actions enhance sustainability but also have an influence on profitability when virgin materials do not need to be used for products. (Bocken et al., 2016.) Retailer-manufacturer companies can address these product-related aspects in their own processes but multibrand retailers must initiate a close collaboration with supplier brands to ensure high quality and durability of the products used in the service.

**Revenue streams and cost structure.** Profitability is the prerequisite for company survival in long-term (Holtström et al., 2019). van Loon et al. (2020) state that sustainable business models like product-service systems must be profitable for companies to start implementing them. Economic performance is easy to overestimate if all scenarios and possible costs are not considered (van Loon et al., 2020). When pursuing access-based business models, it is important to examine and consider the new cost structure which the model brings with it. In rental and leasing model, new costs occur from for example product maintenance (e.g. washing in clothes) and reverse logistics (Holtström et al., 2019). Depending on the current business model, new staff and IT solutions may be needed to run the service. Access-based business models also require capital investments as the products are owned and maintained by the service provider (Tukker, 2004). Yet, cost savings come from reduced production and material costs, and the fact that the same product is rented or leased multiple times (Stål & Hervé, 2018).

Revenue structure changes when access-based business model is introduced to company portfolio (Holtström et al., 2019). The main revenue source in access-based business models are fees: rental, lease, or subscription fees (Pedersen & Netter, 2015). This means that profits are generated long-term instead of short-term which is common for linear business models (Pessôa & Becker, 2017). Challenge in rental and leasing models is that enough rental agreements must be sold at

profitable price (Holtström et al., 2019). Especially leasing as business model should be examined thoroughly as it is easy to make too optimistic assumptions on its profitability (van Loon et al., 2020). In access-based PSS a certain rental/leasing intensity level is required for financial viability (Ionaşcu & Ionatcu, 2018).

van Loon et al. (2020) point out that for product-service system business models to be profitable, service fees may have to be raised to a level where the cost for consumer is too high. This is a significant barrier for customer adoption and therefore also the expansion of these business models. The researchers remind us that PSS business models must be financially viable for both, the company, and the customer. Therefore, different customer segments should be studied separately to analyze BM viability from their point of view. In their study on washing machines, van Loon et al. (2020) found that budget washing machines have higher costs (repair costs and more frequent purchases) for customers than premium washing machines. Therefore, they propose that consumers would benefit from PSS of premium washing machines if the service fee were acceptable. Yet they state that from company perspective, the additional costs of leasing may create a challenge in generating same level of profit as in the linear business model. In leasing model, the repair and maintenance costs can create challenges for profitability. Also, administration costs of the leasing service may hamper profitability. Cost components of a leasing PSS must be examined thoroughly to ensure everything has been taken into account. (van Loon et al., 2020.)

Fashion for Good's (2019) report on circular business models in fashion industry addresses the financial viability of these business models. The report includes a financial analysis on three CBMs: rental, subscription rental and re-commerce. The models were studied across four industry segments of Value-Market, Mid-Market, Premium and Luxury. All three models were found to be financially viable for established retailers, but some differences were found across segments in the margin potential. Re-commerce was found to be the most attractive model and in all segments. Subscription rental has strong potential in general and rental appeared to be very viable for higher-value segments. In general, all the models were seen to have biggest opportunities in higher value segments. Value Market's biggest challenge is the new variable costs associated with the new models. (Fashion for Good's, 2019.)

When a circular product-service system business model is introduced, it is often run on the side of other circular economy business models or the current linear BM of the company. This means that revenue streams can come from many sources (product sales, renting, re-commerce) and their financial viability in the future must be examined and ensured (Holtström et al., 2019). Van Loon et al. (2020) research highlight the need to run many scenarios and calculations based on them. Appropriate market potential and upscaling possibilities are factors that ensure economic growth (Pieroni et al., 2019b).

**Resources and capabilities.** Access-based product-service system business model development challenges companies to create and acquire new resources and capabilities. Holtström et al. (2019) state that new digital solutions may be needed for bookings, reverse logistics chain and infrastructure must be created for product returns, and financial resources are needed for new kind of product inventory. The researchers point out that the needed new resources and knowledge can become a restraint for the organization, and therefore companies are encouraged to look for them from outside the company. New organizational capabilities are also needed. Introducing a service-based business model requires collective effort from all company departments. Different business units need to collaborate and old way of working in silos should be avoided. (Holtström et al., 2019.) As Hidalgo-Carvajal et al. (2021) point out, servitization calls for a flexible organizational culture and practices.

Holtström et al. (2019) also highlight that company should adopt a mindset that promotes continuous development and innovations. Catulli and Dodourova (2013) agree with this and state that organizational innovation is a requirement for successful implementation of PSS business models. Committed managers must drive the innovation process and development of tangible plans as well as intraorganizational collaboration. Their input is needed also for developing close relationships with suppliers, consumers, other organizations, and institutions. (Catulli & Dodourova, 2013.)

**Channels and logistics.** In circular economy product-service systems material flows are both forward and reverse and therefore reverse logistics and closed-loop supply chains are the prerequisite of them (Bressanelli et al., 2018). One key challenge in developing a PSS is creating a well-functioning distribution network for garment exchange, collection and returns (Holtström et al.,

2019). This may require outsourcing or close co-operation with key partners in logistics (Pal et al., 2019). Logistics should be designed to be as convenient for customers as possible. Easy pick-up and return are essential for the business models to work. (Holtström et al., 2019.) Logistics are also needed for handling of products that are discarded from service. Products should be sent to recycling or re-processing companies to be converted into new products or materials for new products. (Elzinga et al., 2020.)

Digital technologies have a significant role in enabling servitized business models (Bressanelli et al., 2018). Functioning technical platforms and logistics system to handle bookings and agreements are needed for smooth operations (Holtström et al., 2019). Tunn et al. (2020) underline that access-based product-service systems in consumer markets are highly digitalized. Services are built on digital platforms; customers use them via mobile apps and products can have sensors embedded on them to follow usage. Especially access-based services that provide short-term access are dependent on mobile solutions to help frequent access and return of products. (Tunn et al., 2020.) Examples of this include mobility services like city bikes and electric scooters that are operated via mobile apps. Company wishing to implement rental or subscription services should therefore acquire the needed digital resources for this if not already existing. In leasing, transactions are fewer and mobile app is not necessarily needed.

Consumers and users value the convenience and flexibility provided by the digital platforms. Special attention should be paid on user-friendliness and reliability of the online platforms like mobile applications (Tunn et al., 2020). It should include all features which are provided to the customers by the service, booking and ordering, rental agreements, and changes to them etc. (Holtström et al., 2019). Digital channels also provide great communication channel for managing customer relationships (Tunn et al., 2020). This customer engagement can be used for continuous development of customer experience, product offering and product design (Fashion for Good, 2019).

Bressanelli et al. (2018) have identified several other functionalities that are enabled by digitalization, especially with Internet of Things (IoT) and Big Data and analytics, to support product-service systems. These include improving product design for efficiency and sustainability, monitoring and tracking product activity, optimizing product usage, providing technical support as well as preven-

tive and predictive maintenance, upgrading the product, enhancing renovation and end-of-life activities. Internet of Things with built-in sensors in products provide possibility to check the status of the products and inform about maintenance needs, gather usage data for product improvements and customer guidance on optimal product usage. (Bressanelli et al., 2018.) This is especially viable for more complex products (Tunn et al., 2020) like bicycles. Although digitalization allows for many different solutions, the ones developed for PSS must be justifiable from consumer, company, and sustainability perspective, and should not be created just for the sake of digital possibilities (Tunn et al., 2020). The need for digital solutions should be carefully examined from all perspectives.

**Collaboration and stakeholder involvement.** Catulli and Dodourova (2013) state that the change from linear business models to circular business models calls for actors from different industries and institutions to join efforts. The researchers highlight the importance of collaboration in stakeholder relationships. Ability to develop and manage relationships with other organizations, institutions, and customers, builds businesses' social capital and innovations. (Catulli & Dodourova, 2013.) Collaboration can also be looked for from outside own business field or industry. For example, sport retail can join efforts with a hotel so that customer can book sport equipment together with hotel accommodation (Holtström et al., 2019).

Close and transparent relationships with suppliers, logistics and technology providers need to be established to reach economies of scale. Collaboration with other stakeholders like financiers and legislative actors are needed to support a market development towards a more sustainable and circular economy. (Holtström et al., 2019.) Catulli and Dodourova (2013) especially mention the importance of consumer involvement. Without customers' contribution and support it is difficult to make PSS business models viable (Catulli & Dodourova, 2013).

**Communication.** To achieve economies of scale, PSS business models require a fundamental behavioral change from customer side. Retailers must work actively to promote this change and not rely on change to happen at their own pace. (Fashion for Good, 2019.) Communications play a significant role in this, and it should be considered already in business model innovation phase (Rexfelt & Hjort af Ornäs, 2009). Communication should highlight the change in value proposition for customers; new access-based model must offer more advantages compared to ownership

(Holtström et al., 2019). In general, it is recommended to reinforce customer benefits and limit drawbacks at the same time (Rexfelt & Hjort af Ornäs, 2009). It is also important to communicate consumers about the sustainability benefits. Environmentally aware consumers are interested in ways to reduce their environmental impact and therefore are more likely to adopt the caring instructions (Tunn & Ackermann, 2020).

**Sustainability – requirements and benefits.** Product-service system business models are not automatically sustainable (Tukker, 2004), they must be designed to be sustainable (Bocken et al., 2014). Access-based product-service systems are said to reduce the number of products needed, which clearly has environmental benefits (Tunn et al., 2020). Tunn and Ackermann (2020) propose two different approaches for this: focusing on extending the product's lifetime as much as possible and focusing on maximizing the product utilization during its lifetime. The best option from sustainability point of view is that these approaches are combined; the products for the service are designed and produced durable and can therefore be used many times (Tunn & Ackermann, 2020). Product repair and maintenance possibilities further enhance these actions and contribute to sustainability of the business model (Tunn et al., 2020). Product end-of-life practices must also be considered in design phase. Recycling of worn out and discontinued products into new materials and products must be taken into account in business model development (Poppelaars et al., 2018).

Customers have a significant influence on sustainability of access-based product-service systems. Johnson and Plepys (2021) studied the sustainability potential of clothing rental from customer perspective with aim to understand the potential of clothing rental to substitute the purchase of new products. The study revealed that customer engagement with rental has major impact on the environmental savings potential of the business model. The aspects to contribute to the sustainability potential are how many times customers wear the garments, how often rental substitutes or complements their purchase of new products and how consumers travel to the rental locations (Johnson & Plepys, 2021). How customers handle the products during rental-period also impacts product longevity (Tunn & Ackermann, 2020).

These aspects highlight the need for well-designed communications plan to inform and educate consumers about their possibilities to contribute to the service sustainability with their consumption habits (Johnson & Plepys, 2021). Customers should be encouraged to use the rented products multiple times during rental period (Johnson & Plepys, 2021) and take good care of them with proper maintenance (Tunn & Ackermann, 2020). Customers should also be encouraged to (fully) substitute new product purchases with the rentals. Driving to the rental locations should be discouraged. (Johnson & Plepys, 2021.)

Johnson and Plepys (2021) present suggestions for business model development from sustainability point of view. New garments should be designed and manufactured to be durable and of high quality. In rental BMs the use of garments per rental period should be maximized. This can be done by offering longer rental periods and avoiding promoting short one-use rentals. Rental BMs should have good size inventory so that rental can be used to fully (or as much as possible) replace purchasing of new garments. (Johnson & Plepys, 2021.) In rental, it is also important to reduce transport needs with multiple pick-up and drop-off locations (Johnson & Plepys, 2021) and consider home delivery services to be offered for customers. Also, other logistics used in the business and for product maintenance should be designed in the most sustainable way possible (Fashion for Good, 2019).

Bocken et al. (2014) highlight that circular economy business model innovations should tackle sustainability at its source rather than consider it as mitigating outside pressures. This means that instead of considering only economic gains, social and environmental benefits should be maximized too. The researchers underline that although circular economy innovations may not be economically viable in the beginning, they can become viable in the future when consumer attitudes change, and regulatory changes are made by authorities. (Bocken et al., 2014.)

This chapter has focused on presenting aspects that need special attention when innovating a PSS business model. Servitization and sustainability requirements influence all areas of business model development from value proposition to key partners and logistics. All business model innovations face challenges and barriers which need to be addressed. Next chapter presents key obstacles that organizations may face when planning to implement a product-service system.

### 3.5 Challenges and Barriers for Implementation

Companies starting to implement PSS business model face challenges and barriers that rise from the company's organizational deficiencies (internal) and from the market and industry (external) the company is operating in. Many of the barriers are linked to the special features of PSS business model design and they can be mitigated by taking them on account when designing the new business model.

**Internal barriers.** For successful PSS implementation, readiness for holistic organizational change is needed. Pal et al. (2019) mention that one major barrier for implementation is combining circular economy thinking with linear business model logic. This is a strategic misalignment which means that practices, goals, and strategies will not be in line with the chosen circular business model. The change that product-service systems require from organization is not understood correctly. Readiness to reconsider organizational structure, thinking and processes is needed from top management to be able to drive the change across organization. (Pal et al., 2019.)

Organizational resistance may occur when business model is converted from linear to circular (Pal et al., 2019). Employees may have difficulties in understanding the need for change and the potential that PSS can deliver (Catulli & Dodourova, 2013). Pal et al. (2019) point out that changes in organizational structure may be needed and new collaboration between departments required which often leads to employee resistance. Change management with extensive communication and employee engagement is needed to prepare employees for the strategic change and to enhance the needed cross-organizational commitment (Pal et al., 2019).

Company may also be lacking the competences and capabilities that are need in business model change (Catulli & Dodourova, 2013). Armstrong and Lang (2013) state that one challenge for PSS implementation can be the symbiotic product-service offering of the model. Company must have competence to successfully deliver both, product, and service. Manufacturer companies may have difficulties with service requirements and service centered companies may not have expertise in products. (Armstrong & Lang, 2013.) This can cause major hindrances for implementation if the company is not able to abandon what Pal et al. (2019) refer to as company centric view of thinking that everything must be done and known inside the company. The ability to understand that the

needed resources can be acquired from outside the company is important (Pal et al., 2019). Inter-organizational collaboration and partnerships are a significant part of circular business models (Catulli & Dodourova, 2013). Collaborative networks and strategic alliances should be set up to capitalize the expert knowledge and competence of each stakeholder in the network (Armstrong & Lang, 2013). Companies often use outsourcing to help with PSS as it allows flexibility and lean organizational structure. This specialization trend not only reduces risks but also allows for new business innovations as small companies are established to deliver the new services needed in PSS implementation. (Catulli & Dodourova, 2013.)

Financial costs are another major challenge in adopting product-service systems (Catulli & Dodourova, 2013). Investments are required to establish the needed reverse logistics system and closed-loop supply chain which are needed for logistics, laundry, disposal, and manufacture (Becker-Leifhold & Iran, 2018). Organizational as well as system (technological) restructuring may be needed. These challenges are bigger for large companies with extensive organizations and systems, as smaller companies may be more agile to make this kind of changes. Implementing PSS gradually may help large companies to deal with the needed investments. (Catulli & Dodourova, 2013.)

**External barriers.** Conditions in the market and business environment as well as consumer resistance cause hindrances for product-service system implementation. Cultural change poses the greatest challenge for PSS adoption. Holistic change in political, industrial, organizational and consumer culture is needed on the road to circular economy. (Armstrong & Lang, 2013.) Hernandez (2019) highlight that business environment should be shaped to support the change from linear to circular BM. Actions to provide such conditions include improving collaboration between organizations, rethinking incentives to attract producers and consumers to adopt the models, new legislation and providing financial resources. (Hernandez, 2019.)

Interorganizational dynamics in the industry can also set a barrier for implementation. According to Stål and Jansson (2017) there are often similarities on which circular economy initiatives companies offer to their customers. Many offer their customers eco-labeled products, washing advice and take-back schemes but only few are taking more innovative approach. There seems to be similarity in the elements offered which they claim to be an outcome of interorganizational dynamics.

Companies observe each other and adopt similar measures to their competitors to keep up in the competition (Stål and Jansson, 2017).

Market unacceptance may occur if understanding of consumers' motivation into using circular economy-based services is not examined when developing a PSS (Pal et al., 2019). Holtström et al. (2019) state that identifying barriers that may hinder customer adoption and acceptance is vital for PSS business model design. Understanding what the barriers are and why they occur, helps to lower, or remove them. Barriers come mainly from customer preferences and behavior, but financial reasons are also possible. (Holtström et al., 2019.) These barriers and the drivers to mitigate them are further addressed in next chapter. To achieve economies of scale, PSS business models require a fundamental behavioral change from customer side (Fashion for Good, 2019). Therefore, service providers must work actively to promote this change and not rely on change to happen at their own pace. Communication and engagement with consumers should be used for encouraging customers to adopt reduced consumption attitude (Pal et al., 2019).

### **3.6 Consumer Acceptance of Product-Service Systems**

Consumer interest and acceptance of product-service systems have been studied extensively. As literature review of Camacho-Otero et al. (2018) reveals, studies have been conducted from different perspectives, including many industries, and covering different product-service systems. This chapter focuses on studies which can be seen applicable to sport retail context, and which cover mainly PSS business models of renting, leasing, and subscription-renting. Findings that are related to other types of PSS are presented when they are applicable also to the PSSs subject to the thesis.

Camacho-Otero et al. (2018) point out that most of the articles addressing consumer acceptance of PSS or other circular economy business models focus on examining barriers and drivers. Barriers are factors that cause hindrances for consumer interest or cause overall rejection of the services. Drivers are factors that enhance consumer interest and mitigate barriers. (Camacho-Otero et al., 2018.) These factors can be further categorized based on different themes. Strict categorization of factors is not possible as many of them are closely linked to each other, and some factors can be placed on two or more categories. Hence, many different categorizations can be found in the literature. Based on categorizations of Camacho-Otero et al. (2018), and Mostaghel and Chirumalla (2021) which are seen in Figure 5, four themes were formulated for the thesis purposes.

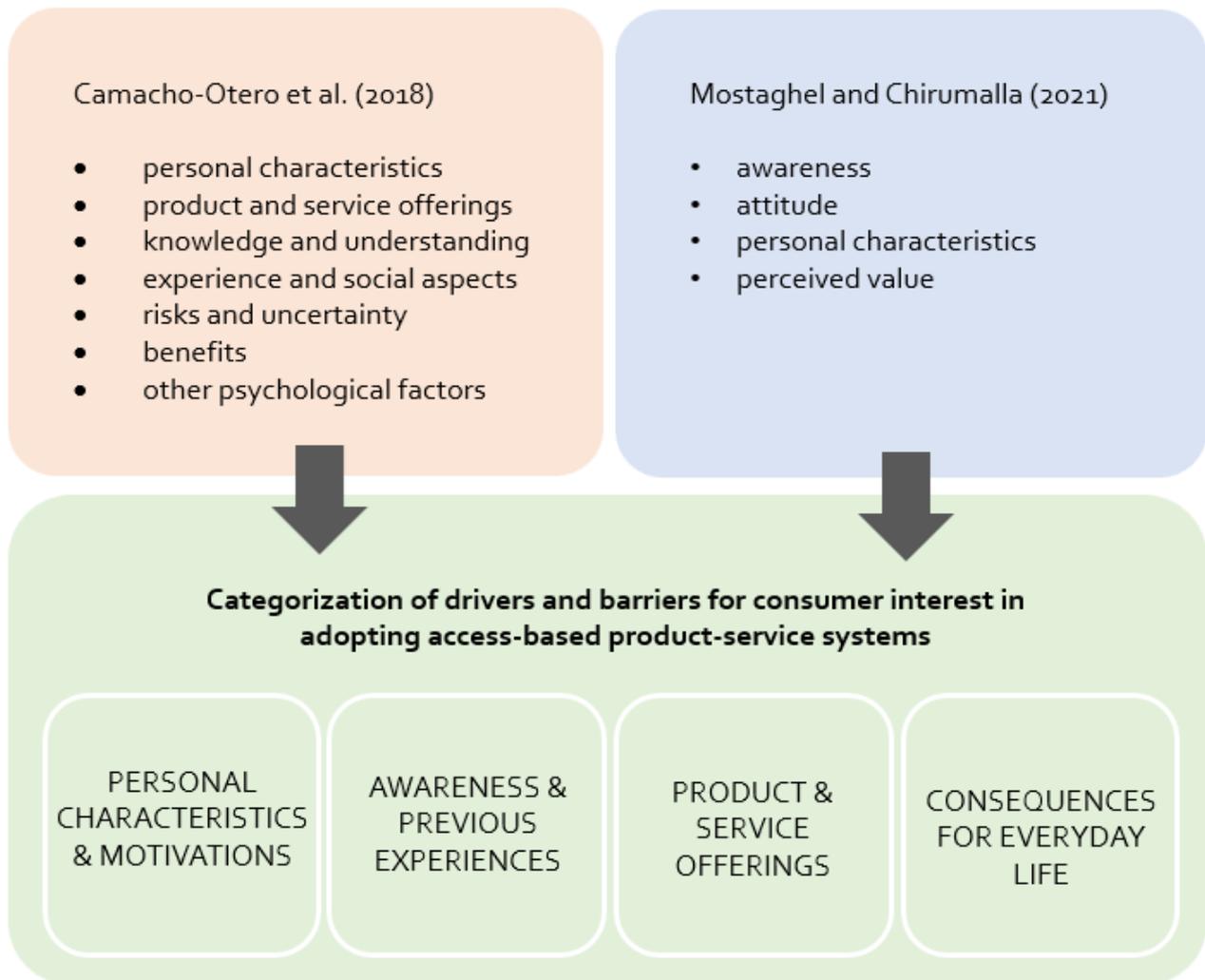


Figure 5. Categorization of barriers and drivers for consumer acceptance of product-service systems

Personal characteristics and motivations include factors like age, gender, and environmental awareness. Awareness and previous experiences are a theme that consists of factors of being familiar with PSS business models and previous experiences from them. Product and service offerings topic is about consumer perceptions and attitudes related to them. Consequences on everyday life refers to consumer perceptions on how using the service would affect their everyday life and related benefits of the service.

### 3.6.1 Barriers

#### Personal Characteristics and Motivations

Consumers' personal characteristics and motivations influence their willingness to adopt product-service systems. These include e.g., age, gender, environmental awareness, desire for uniqueness and newness and sense of ownership.

Consumer's age and gender influence their interest in product-service systems. Lang et al. (2016) state that older adults are less interested in in new sustainable retail models. According to them, younger people are often more openminded towards innovations than older people and as product-service systems are relatively new to the market, it can have an influence on older people's interest in them (Lang et al., 2016). Tung et al. (2017) found that gender influences intention to consume sustainable apparel. Men and women are motivated by different factors. Women use clothes to express their identity whereas men focus more on functionality. (Tung et al., 2017.) This could be applicable to interest in PSS a well.

Personal motivations also have a role to play. Ertz et al. (2017) state that adopting goods multiple life practices (GMLP) is explained by a broad range of motivations from ecological, protester and social contact motives. They also highlight that economic motives are not as important, and a company developing GMLP should focus on other motivations rather than in economic benefits (Ertz et al., 2017).

Consumers can have materialistic need to own things, which is referred in literature to the concept of ownership. The concept of ownership has been widely discussed by researchers and there are contradicting views on the subject. Earlier research (e.g. Rexfelt et al.,2009; Poppelaars et al., 2018) suggest that willingness to own hiders consumers' interest but more recent paper by Elzinga et al. (2020) contradicts this saying ownership doesn't seem to have an influence. It is possible that consumer views on ownership have changed over the recent years when access-based business models have become more mainstream in industries like music (Spotify) and television (Netflix).

Ownership is closely related to symbolic value that consumers attach to products. Products can be seen as status symbols to represent their place in the society (Camacho-Otero et al., 2018; Fokker et al., 2019). Consumers may want to express their individuality with unique and latest trend products (Camacho-Otero et al., 2018; Lang et al., 2016). People can also attach emotional value to products which represent or remind them of some special occasion in their life. Hence, symbolic value attached to products can hinder consumers' interest in PSS as they feel rental or lease products to be able to provide them with these benefits (Fokker et al., 2019).

### **Awareness and Previous Experiences**

Although access-based services have gained economies of scale in some business areas like streaming services, they are still relatively new in retail business. The fact that consumers are not familiar with access-based services influences their interest in them (Poppelaars et al., 2018). Lack of observable examples makes it difficult for consumers to get an idea on how the service actually works (Rexfelt & Hjort af Ornäs, 2009). References from friends, relatives and media would be important (Rexfelt & Hjort af Ornäs, 2009) but as the services still lack scale, these references remain few.

Rexfelt and Hjort af Ornäs (2009) found that consumers can feel uncertain when introduced with a product-service system. They state that the intangible offer may be hard to understand or previous negative experiences on similar offers influence consumer's attitude. Consumers may also be sceptical about the offers as they are used to companies trying to maximize profit. The researchers point out that potential win-win situation offered in PSS may be hard to imagine. Consumers often relate access-based service offerings with package deals of which they have negative experience. (Rexfelt & Hjort af Ornäs, 2009.)

Rexfelt and Hjort af Ornäs (2009) also highlight that when consumers face an unfamiliar service proposition, consumers often consider it through their earlier experiences. Previous experiences of the service provider (Poppelaars et al., 2018) or business field in general influence consumer perceptions (Rexfelt & Hjort af Ornäs, 2009). If they are not seen trustworthy, service offering is likely to be refused (Fokker et al., 2019). Service provider's competence to provide the service can

be compromised if business model is seen to significantly differ from the company's previous business model (Rexfelt & Hjort af Ornäs, 2009).

### **Product and Service Offerings**

The actual product and service offerings can set barriers for consumer interest on adopting PSS. These barriers include payment structure, product availability and accessibility (deliveries), warranty issues as well as inflexible and complex offers.

Elzinga et al. (2020) state that payment structure of the service and consumer habits have significant influence on consumer intention to use a product-service system. Different payment structure (monthly payments) in leasing and renting seems to be the biggest reason for low acceptance. In their study, respondents expected to encounter issues with paying per month model which affected respondents' interest in leasing business model. Consumers were not familiar with the pay-per month model and researchers suggest that to be the reason for negative attitudes. They also state that this can affect consumer interest in these models in the future. (Elzinga et al., 2020.) On the other hand, in Rexfelt and Hjort af Ornäs (2009) study fixed payments of PSS were found to be both appreciated (risk reduction), and as a negative financial obligation.

Rexfelt and Hjort af Ornäs (2009) point out that complexity of offers proposes major barrier for adopting PSS. Like stated before, the intangible offer may be hard to understand without previous experience. Customers may also be hesitant to engage in a long-time contract without possibility to make changes to the contract. Complex service agreements can cause rejection as consumers feel uncertain on their responsibilities and rights if terms and conditions are explained unclearly. (Rexfelt & Hjort af Ornäs, 2009.) Poppelaars et al. (2018) also highlight that consumers may have concerns on sustainability of the service. Sustainability is a complex concept and if service is promoted as an option for sustainable consumption, consumer can feel misled if the arguments to support that are not presented accordingly (Poppelaars et al., 2018).

Product responsibility, which is closely linked to service agreements, is addressed in many studies (Elzinga et al., 2020; Cherry & Pidgeon, 2018; Poppelaars et al., 2018; Rexfelt & Hjort af Ornäs, 2009). Consumers can feel anxiety about product care and maintenance if service does not include

maintenance deal (Elzinga et al. 2018). They may also fear damaging the products and then being forced to pay extra for the repair (Fokker et al., 2019). But there are also contradictory views on how consumers treat products in access-based services. Tunn and Ackermann (2020) state that customers may not be interested in maintaining leased and rented products or may even mishandle them which suggests that product responsibility would not be a barrier for consumer interest.

Poor service quality can also drive consumers to reject product-service systems. Although this is mainly problem in acceptance phase when consumers have already purchased the service, it should be considered when designing product-service systems. Reliability of the PSS is crucial and heterogenic service quality, technical and warranty issues as well as safety risks propose a threat to adoption and acceptance. (Poppelaars et al., 2018.) One sporadic yet important issue linked to safety is hygiene. Especially in rental products which are used by multiple consumers in a short time period, product hygiene is a concern to people (Fokker et al., 2019; Mukendi and Henninger, 2020). Covid-19 pandemic has yet increased consumers interest in companies' hygiene practices.

One important factor in service offerings is product availability and accessibility (Mukendi and Henninger, 2020; Fokker et al., 2019). Product availability refers to enough products being available for renting/leasing service. Consumers may reject the service if enough product models and sizes are available (Poppelaars et al., 2018). Especially apparel, in which different sizes play a significant role, this can become a bottleneck. Product accessibility refers to service locations and deliveries. Access to products offered by the service is crucial. (Mukendi and Henninger, 2020.) If service provider does not have wide network of pick-up locations, home deliveries are nowadays a must. Mukendi and Henninger (2020) also highlight the timeliness of service.

### **Consequences for Everyday Life**

Rexfelt and Hjort af Ornäs (2009) found in their study that consumers have concerns on how access-based services would change their everyday life. These changes can extend into activities beyond the service, so the change can be very radical to a customer. If consumers perceive these changes negatively, they are not likely to adopt the service. Having to change activities may also require skill-development from customer and that too can cause barrier for adoption of the service. (Rexfelt & Hjort af Ornäs, 2009.)

Incompatibility with current routines and activities is a theme that cross-section many the previous themes presented in his chapter. It is linked to consumer attitudes, ownership change, payments, service agreements, product availability and accessibility etc. Rexfelt and Hjort af Ornäs (2009) state that when designing PSS, implications to customers life must be studied through the consequences it has for customers activities and beliefs customer may have on those changes. Service should be designed so that the benefit of adoption extends the needed efforts (Rexfelt & Hjort af Ornäs, 2009). Next chapter addresses these drivers which are seen to promote consumer interest in adopting product-service systems.

### **3.6.2 Drivers**

#### **Personal Characteristics and Motivations**

Factors related to personal characteristics and motivations may be difficult to influence by the service provider at development stage. Targeted marketing communications can be used to promote the services to different customer groups, highlighting the benefits they value in access-based services (Tung et al., 2017). Tung et al. (2017) found that consumers with environmentally conscious self-identity are more interested in PSS and contribution to sustainable consumption can be highlighted for them. Customer desire for ownership and self-expression can be influenced with product related offerings. Poppelaars et al. (2018) state that consumers can be attracted with access to well-known brands and exclusive products. This can be especially attracting for consumers with lower purchasing power (Catulli & Dodourova, 2013). Lang et al. (2016) suggest that consumers are emphasized the possibility to keep up with latest trends and technology at relatively low cost. In sport retail, these present viable option as technology in sporting goods (textile and hardware) is constantly evolving. Access-based PSS can also offer consumers the possibility to try different products and especially in apparel to play with different styles and be creative without having to always buy a new product to pile up in the closet (Pedersen & Netter, 2015).

To address consumers' need for uniqueness, Fokker et al. (2019) suggest product customization can be introduced as part of the service offering. Acceptance increases if PSS can fulfil not only functionality needs, but also intangible needs. The researchers recommend that products for access-based PSS should be designed with options for add-ons, for example changes in product ap-

pearance. Customization in access-based PSS can also give consumers sense of ownership. Consumers take better care of the products and are willing to use them longer. But it is to be noted that the customization elements should be chosen carefully, so that they promote sustainability rather than cause environmental harm. (Fokker et al., 2019.)

Fokker et al. (2019) point out that downside of customization is that product can become too unique that it only fits one customer's preferences and therefore presents a barrier for more shared use. As a solution for this, the researchers suggest temporary customization in which the customized part is changeable. Even with this kind of customization, where a small feature of the product is customized, it is possible to change the personality of the product to match personal preferences. Contract time plays a significant role in customization. The longer the time-period, the better the possibility for customization should be. In short term rental, typical product features are enough. (Fokker et al., 2019.)

### **Awareness and Previous Experiences**

The paradigm shift from ownership to access based services will address some of the challenges that PSS business models face in this starting phase. As amount of access-based services increase, people become more familiar with the business model and are able to adopt them easier (Popelaars et al., 2018). Before scale of economies is reached in market, marketing communications play important role in raising consumer awareness on product-service systems. Influencer marketing could be a good way to promote these services. As Rexfelt and Hjort af Ornäs (2009) note, real-life examples are highly valued by consumers.

As stated before, consumers can have difficulties to understand the intangible offers if they lack trust in the service provider. Rexfelt and Hjort af Ornäs (2009) suggest that these uncertainties can be mitigated with proper communication on service competency, motives, and intentions as well as service terms and conditions. Easy to understand and transparent communication is important. Possibility to try the service without signing a long-term contract can also lower the barrier for consumers. (Rexfelt & Hjort af Ornäs, 2009.) Holtström et al. (2019) propose possibility for trial-periods to help reduce consumer uncertainty.

## Product and Service Offerings

To mitigate the barriers linked to product and service offerings, all-inclusive contracts, excellent service quality and digital solutions are presented as viable options. As complex offers seem a significant barrier for consumer acceptance of product-service systems, all-inclusive contracts are presented as a solution for the problem. Poppelaars et al. (2018) suggest providing all-inclusive, excellent service for the premium price of the service. Including repair and maintenance in the contract can help consumers to accept the fixed offers as no additional costs will occur. Elzinga et al. (2020) state that customers prefer the idea of outsourcing the repair and maintenance of products. Transparent contracts with clearly stated terms and conditions (Rexfelt & Hjort af Ornäs, 2009; Poppelaars et al., 2018) also reduce consumers' uncertainties on warranty issues as well as fear of damaging the products (Fokker et al., 2019). Consumers must be informed about their rights and responsibilities especially regarding repairs and replacements (Poppelaars et al., 2018).

Flexibility in altering service contracts and customization can act as a driver for consumers' interest in adopting product-service systems. Poppelaars et al (2018) state that flexibility in service agreements increases consumer's feelings of being safe and in control, not overpowered by the service provider. Customization is an element that can be used for both PSS elements, service and products. Customization of service elements allows for choosing the service elements customer needs or prefers and paying only for them (Fokker et al., 2019). This may sound contradictory to providing all-inclusive contracts. Yet, provided as an alternative for all-inclusive contract can also help to reduce consumer concerns on service providers' power over consumer (Rexfelt & Hjort af Ornäs, 2009).

Product availability and accessibility are central elements of access-based services. Limited availability of products proposes a threat to consumer interest and Poppelaars et al. (2018) suggest that service providers balance it with cost decreases. In accessibility, digital solutions play a major role as they influence on the practical aspect of the services (Rexfelt & Hjort af Ornäs, 2009). Mobile app to check product availability and accessibility can help consumers decision to choose the service. Possibility to order the products to be delivered at home or nearby pick-up point makes the service accessible to most customers.

## Consequences for everyday life

Unburdening consumers of their responsibilities is a theme which is addressed often in literature. Mostly it relates to all-inclusive contracts which unburden consumers on product maintenance (Elzinga et al., 2020; Poppelaars et al., 2018; Rexfelt & Hjort af Ornäs, 2009) but can also be considered from wider perspective. Rexfelt and Hjort af Ornäs (2009) refer to consequences adopting the service has to consumers' everyday life. As mentioned in previous chapter, changes can be radical to a customer. Hence, companies must investigate customer habits to be able to identify how different customers would react to a product-service system (Elzinga et al., 2020). Services should be designed based on those insights so that benefits of adoption extend the needed efforts (Rexfelt and Hjort af Ornäs, 2009).

Marketing communications should highlight the benefits of the service to the potential customers (Rexfelt and Hjort af Ornäs, 2009). For example, the new payment structure can be presented as attractive and convenient option (Elzinga et al., 2020) and not owning the products as a possibility to save space at home (Mukendi and Henninger, 2020). It is important to also influence on consumers' feelings and emotions, not just rational aspects (Poppelaars et al., 2018).

Rexfelt and Hjort af Ornäs (2009) describe an ideal PSS by answering to consumer needs in a way that is convenient for them and lacks too much effort. A product-service system should be flexible, easy to understand and match well with the habits and values of the consumer segment. It should offer carefree value by providing service that minimizes risks and uncertainties and takes over burdens of ownership. (Rexfelt & Hjort af Ornäs, 2009.) To conclude, PSS should be services that help customers in their everyday life (Poppelaars et al., 2018). According to Tunn et al. (2019) low customer effort, convenience, is the prerequisite for wider adoption.

## 4 Results

A total of 130 people responded to the survey. The vast majority of respondents were women (80%). Only 19% of the respondents were men and 1% reported their gender as "other / I don't want to answer". Most of the respondents (51%) were aged between 25 – 39 years and the second largest (40%) respondent group was aged between 40 – 55 years. Only few respondents reported their age as under 25 years (3%) or over 55 (9%) years.

All responses (completed questionnaires) were included in the analysis. Only one question (on different sports) was not mandatory and the response rate of that question is reported in connection with it. In the following, results are presented in relation to the three research questions.

#### 4.1 Consumer Interest in Renting, Leasing and Membership Subscription

Consumer interest in renting, leasing and membership subscription business models was examined with direct questions. These questions were designed to provide answers to the first two research questions:

- 1) Which of the three studied access-based product-service systems (renting, leasing, subscription-leasing), provided by a sporting goods retailer, consumers find feasible for sporting goods?
  
- 2) Which product categories and different sports, consumers would be interested in acquiring sporting goods via renting, leasing and membership subscription services provided by a sporting goods retailer?

##### 4.1.1 Consumer Interest in General

To find answer to the first research question, participants were asked about their interest in using renting, leasing and membership subscription services provided by a sporting goods retailer. Findings are presented in Table 1.

Table 1. Consumer interest in renting, leasing, and membership subscription services

	Renting	Leasing	Membership subscription
Yes	78 %	42 %	47 %
No	22 %	58 %	53 %

As Table 1 shows, renting was considered the most interesting business model as majority (78%) of respondents were interested in it. Membership subscription received less interest, yet almost half (47%) of the respondents were interested in using it. Leasing was considered as the least interesting business model (42%).

#### 4.1.2 Consumer Interest Related to Different Sporting Goods Categories

Table 2 presents consumer interest in relation to different product categories. Sports equipment received most interest among participants and seem to have the most potential among different categories. Majority of respondents were interested in renting (85%) sports equipment and almost half (48%) would be willing to access them via membership subscription. The result is expected as many consumers are familiar with sport equipment rental, for example from ski resorts. Sport equipment leasing received a little less interest (44%) than membership subscription, but the result suggests that it could still be a viable product category for leasing. Sports gear, including technical devices like heart rate monitors and GPS devices, were considered somewhat interesting. Little over one-third were interested in renting (35%) sports gear and little under one-third were interested in leasing (30%) and using membership subscription (28%) service for acquiring them.

Table 2. Consumer interest in using renting, leasing, and membership subscription services for different sport product categories

	Sports-wear	Sports footwear	Sports equipment	Sports gear (heart rate monitors, GPS devices etc.)
<b>Renting</b>	9 %	19 %	85 %	35 %
<b>Leasing</b>	5 %	8 %	44 %	30 %
<b>Membership subscription</b>	8 %	8 %	48 %	28 %
<b>Not interested</b>	86 %	75 %	10 %	52 %

Sportswear category received least interest as majority of (86%) respondents are not interested in using renting, leasing, or membership subscription services for accessing them. Footwear also received only little interest as three out of four (75%) were not interested in using the services for acquiring them.

### **4.1.3 Consumer Interest Related to Different Sports**

To examine consumer interest in accessing products via the presented access-based services for different sports, the participants were asked to choose from the list the sports and services they would be interested in using them for. The list consists of most popular sports and the possibility to add "other sport, which?" was not given to keep the survey anonymous. If mentioned, a rare sport would compromise the anonymity of that respondent. This question was not mandatory, and respondents were able to choose only the sports and services they were interested in. 125 respondents out of the total 130 answered to the question. Percentages have been calculated from total amount of respondents in the question (n. 125).

Table 3. Consumer interest in renting, leasing, and membership subscription by different sports

	Renting	Leasing	Membership subscription
Cross-country skiing	70 %	31 %	34 %
Alpine skiing, snowboarding	81 %	22 %	24 %
Bicycling, mountain biking	62 %	40 %	34 %
Golf	36 %	10 %	13 %
Ice sports	44 %	12 %	17 %
Running	17 %	6 %	9 %
Gym, fitness classes	24 %	15 %	20 %
Home excersing	30 %	27 %	29 %
Yoga	17 %	8 %	12 %
Tennis, badminton, padel, squash	57 %	22 %	24 %
Football	11 %	3 %	4 %
Basketball, volleyball	10 %	3 %	4 %
Floorball	15 %	6 %	7 %
Finnish baseball	21 %	9 %	11 %
Hunting, fishing	22 %	10 %	14 %
Horseback riding	27 %	7 %	8 %
Backpacking, hiking	42 %	22 %	34 %
Swimming	11 %	4 %	8 %
Water sports (sup boarding, paddling etc.)	61 %	21 %	32 %
Climbing, bouldering	40 %	14 %	19 %

As shown in Table 3, respondents preferred renting as a service for most of the sports included in the questionnaire. Participants were especially interested in renting products for winter sports and outdoor sports. Over two-third of respondents were interested in renting products for cross-country skiing (70%), and three out of four participants were interested in renting products for alpine skiing and snowboarding (81%). Renting was considered also an interesting option for acquiring products for bicycling and mountain biking (62%), racket sports like tennis, badminton, padel, and

squash (57%) and for water sports (61%). Significant number of participants would be willing to rent products for climbing and bouldering (40%), backpacking and hiking (42%) and ice sports (44%). Football (11%) and swimming (11%) were sports for which received least interest among respondents.

Leasing was considered as a viable service for only few sports. Two out of five respondents (40%) found leasing as an interesting service for bicycling and mountain biking and nearly one-third (31%) found cross-country skiing products suitable for leasing. Respondents showed slight interest for leasing alpine skiing and snowboarding products (22%), home exercising products (29%), tennis, badminton, padel, and squash products (22%), backpacking and hiking products (22%) and for water sports products (21%). Only few respondents would use leasing for football (3%) and basketball and volleyball (3%) products.

For membership subscription, respondents' opinions were divided across many sports and no single sport received especially high interest. Cross-country skiing, bicycling and mountain biking, and backpacking and hiking were the most popular sports for membership subscription as little over one third of respondents (34%) were interested in using the service for accessing products for those sports. Little less than one-third of respondents would use membership subscription for home exercise products (29%) and close to one out of five of survey respondents considered membership subscription for alpine skiing and snowboarding (24%), gym and fitness classes (20%), tennis, badminton, padel, and squash (24%) and for climbing and bouldering (19%). The least interesting sports for membership subscription were the same as in leasing: football (4%), and basketball and volleyball (4%).

## **4.2 Factors Influencing Consumer Interest**

The third research question sought to find out which factors influence positively on consumer interest in adopting access-based services. Factors influencing consumer interest was studied in two ways. In general, consumer motivations and service-related factors were examined through statement questions in the last section of the questionnaire. Background questions from first part of the questionnaire including demographics and questions on purchase behavior were used for cross-tabulation to examine the influence of personal characteristics, awareness, and previous experiences.

#### 4.2.1 Personal Characteristics and Motivations

**Age.** Results show some differences between age groups but due to low number of respondents in the youngest and oldest age groups, results must be analyzed with caution. For the analysis, four age groups were converted into two groups: 1) under 40 years and 2) over 40 years. As Table 4 in next page shows, respondents under 40 years are more interested renting and leasing than respondents over 40 years. Majority (83%) of respondents under 40 years were interested in renting whereas respondents over 40 years were somewhat less (74%) interested in it. In leasing the difference is even bigger as nearly half (49%) of under 40-year-olds showed interest for the service compared to only little over one-third (34%) of over 40-year-olds. For interest in membership subscription service, the difference between the two age groups is smaller and seems that older respondents (49%) are little more interested in it than the younger age group (45%).

Table 4. Consumer interest in renting, leasing, and membership subscription according to age

<b>Renting</b>	<b>Under 40 years</b>	<b>40 years or older</b>
Yes	83 %	74 %
No	17 %	26 %
<b>Leasing</b>	<b>Under 40 years</b>	<b>40 years or older</b>
Yes	49 %	34 %
No	51 %	66 %
<b>Membership subscription</b>	<b>Under 40 years</b>	<b>40 years or older</b>
Yes	45 %	49 %
No	55 %	51 %

*According to Pearson's r test the differences are not significant: renting ( $r= 0,07$   $p=0,41$ ), leasing ( $r= 0,13$   $p=0,15$ ), membership subscription ( $r= -0,08$   $p=0,35$ ).*

**Gender.** Cross-tabulation shown in Table 5 presents the results for interest based on gender. Women seem to be more interested in the services than men, but the differences are not big. For example, in interest for renting, four out of five women (80%) are interested in it, but little less (76%) men show interest. Similar difference can be seen in interest for leasing and membership subscription.

Table 5. Consumer interest in renting, leasing, and membership subscription according to gender

<b>Renting</b>	<b>Female</b>	<b>Male</b>	<b>Other / I do not want to answer</b>
Yes	80 %	76 %	0 %
No	20 %	24 %	100 %
<b>Leasing</b>	<b>Female</b>	<b>Male</b>	<b>Other / I do not want to answer</b>
Yes	43 %	40 %	0 %
No	57 %	60 %	100 %
<b>Membership subscription</b>	<b>Female</b>	<b>Male</b>	<b>Other / I do not want to answer</b>
Yes	48 %	44 %	0 %
No	52 %	56 %	100 %

According to Pearson's  $r$  test the differences are not significant: renting ( $r= 0,10$   $p=0,28$ ), leasing ( $r= 0,05$   $p=0,56$ ), membership subscription ( $r= -0,06$   $p=0,49$ ).

**Family situation.** In retail, consumers' family situation is often inquired in surveys as it influences their purchase behavior. Parents also purchase for their children. Hence, the question was included in the survey to find out whether there are differences between households. As response rates for groups for "single parents" and "children don't live at home anymore" were very low, groups were combined based on whether there are children in the household or not. The results in Table 6 shows that respondents from households without children (82%) are somewhat more interested in renting than households with children (73%). Interestingly, for membership subscription service, households with children (51%) show more interest than households without children (44%). For leasing, the interest is very similar between both groups.

Table 6. Consumer interest in renting, leasing, and membership subscription according to family situation

<b>Renting</b>	<b>No children</b>	<b>With children</b>
Yes	82 %	73 %
No	18 %	27 %
<b>Leasing</b>	<b>No children</b>	<b>With children</b>
Yes	42 %	41 %
No	58 %	59 %
<b>Membership subscription</b>	<b>No children</b>	<b>With children</b>
Yes	44 %	51 %
No	56 %	49 %

According to Pearson's  $r$  test the differences are not significant: renting ( $r = -0,06$   $p = 0,53$ ), leasing ( $r = -0,05$   $p = 0,61$ ), membership subscription ( $r = -0,10$   $p = 0,25$ ).

**Income.** Similar to family situation, household annual gross income is often inquired in surveys as it influences purchase behavior. This cross-tabulation also needed adjusting due to low response rates in some respondent groups. Results based on combined respondent groups are shown in Table 7. In general, respondents whose households' annual gross income is less than 40 000€ are less interested in all the services. For renting, the interest is high in all respondent groups, and it is also the only service in which respondents from low-income households show significant interest (64%). Leasing seems to be preferred by respondents from income groups 40 000-69 999€ (52%) and 70 000-99 999€ (52%) whereas only one out of five (20%) respondents in income group "over 150 000€" reported interest for it. For membership subscription, the results were interesting as respondents from two higher income groups seem to prefer it more than others. Well over half of respondents from household income groups 120 000-149 999€ (64%) and over 150 000€ (60%) showed interest for the service.

Table 7. Consumer interest in renting, leasing, and membership subscription according to household income

<b>Renting</b>	<b>Under 40 000 €</b>	<b>40 000- 69 999 €</b>	<b>70 000- 99 999€</b>	<b>100 000- 119 999 €</b>	<b>120 000- 149 999 €</b>	<b>Over 150 000€</b>
Yes	64 %	84 %	77 %	85 %	82 %	80 %
No	36 %	16 %	23 %	15 %	18 %	20 %
<b>Leasing</b>	<b>Under 40 000 €</b>	<b>40 000- 69 999 €</b>	<b>70 000- 99 999€</b>	<b>100 000- 119 999 €</b>	<b>120 000- 149 999 €</b>	<b>Over 150 000€</b>
Yes	14 %	52 %	52 %	46 %	27 %	20 %
No	86 %	48 %	48 %	54 %	73 %	80 %
<b>Membership subscription</b>	<b>Under 40 000 €</b>	<b>40 000- 69 999 €</b>	<b>70 000- 99 999€</b>	<b>100 000- 119 999 €</b>	<b>120 000- 149 999 €</b>	<b>Over 150 000€</b>
Yes	29 %	39 %	58 %	54 %	64 %	60 %
No	71 %	61 %	42 %	46 %	36 %	40 %

According to Pearson's  $r$  test the differences are not significant: renting ( $r= 0,01$   $p= 0,89$ ), leasing ( $r= 0,05$   $p= 0,56$ ), membership subscription ( $r= -0,10$   $p= 0,16$ ).

**Purchase frequency.** Survey participants were asked to report how often they purchase sporting goods. For analysis, five groups were combined into three groups due to low response rates in both ends of the response options. Cross tabulation presented in Table 8 shows that purchase frequency seems to have an influence on consumers interest in the services. Respondents who buy sporting goods once every month or more, are more interested in all the services than respondents who buy sport products less frequently. Very high number (89%) of frequent buyers are interested in renting whereas the interest is significantly lower (65%) for participants who buy sporting goods 1-2 times a year or less. Results for leasing are somewhat similar. Two third (64%) of frequent buyers show interest in leasing whereas less frequent buyers (32%) show much less interest. Differences in interest for membership subscription are not as great but the same tendency can be seen there as well.

Table 8. Consumer interest in renting, leasing, and membership subscription according to respondent's purchase frequency related to sporting goods

<b>Renting</b>	<b>Once every two months or more</b>	<b>3-4 times a year</b>	<b>1-2 times a year or less</b>
Yes	89 %	80 %	65 %
No	11 %	20 %	35 %
<b>Leasing</b>	<b>Once every two months or more</b>	<b>3-4 times a year</b>	<b>1-2 times a year or less</b>
Yes	64 %	35 %	32 %
No	36 %	65 %	68 %
<b>Membership subscription</b>	<b>Once every two months or more</b>	<b>3-4 times a year</b>	<b>1-2 times a year or less</b>
Yes	56 %	45 %	41 %
No	44 %	55 %	59 %

According to Pearson's  $r$  test the differences are not significant: renting ( $r= 0,18$   $p= 0,04$ ), leasing ( $r= 0,25$   $p= 0,00$ ), membership subscription ( $r= 0,10$   $p= 0,28$ ).

**Money spent on sporting goods.** Respondents were asked to estimate how much money they spend on average for sporting goods annually. Also for this cross-tabulation, five groups were combined into three groups due to low response rates in both ends of the response options. The results show differences between respondent groups, and it seems that money spent in sporting goods can influence consumer interest. Respondents who use 800 € or more for sporting goods annually are more interested in renting and leasing than respondents who use less money. As seen from Table 9, majority of respondents using 800€ or more, are interested in renting (86%) and well over half of them are also interested in leasing (64%). Difference to other respondent groups is not as big for renting as they are for leasing. Renting is also the service that respondents who use 300€ or less in a year are very interested (77%). For membership subscription service, the relationship is not linear as participants from group using 400-700€ (54%) are most interested in it.

Table 9. Consumer interest in renting, leasing, and membership subscription according to the amount of money spent yearly on sporting goods

<b>Renting</b>	<b>300 € or less</b>	<b>400-700 €</b>	<b>800 € or more</b>
Yes	77 %	78 %	86 %
No	23 %	22 %	14 %
<b>Leasing</b>	<b>300 € or less</b>	<b>400-700 €</b>	<b>800 € or more</b>
Yes	39 %	41 %	64 %
No	61 %	59 %	36 %
<b>Membership subscription</b>	<b>300 € or less</b>	<b>400-700 €</b>	<b>800 € or more</b>
Yes	40 %	54 %	50 %
No	60 %	46 %	50 %

According to Pearson's  $r$  test the differences are not significant: renting ( $r = -0,09$   $p = 0,30$ ), leasing ( $r = -0,16$   $p = 0,08$ ), membership subscription ( $r = -0,14$   $p = 0,12$ ).

**The influence of environmental sustainability to purchasing behavior.** To examine how environmental awareness influences consumer interest for the services, respondents were asked about whether environmental sustainability (products or company operations) influence their purchasing behavior on sporting goods. Based on results, it seems that environmental sustainability is not very important aspect for respondents. As Table 10 shows, majority of respondents reported that environmental sustainability influences their sporting goods purchases only somewhat (43%) or rather a little (27%).

Table 10. The influence of environmental sustainability to purchase decisions (sport products)

	<b>Very much</b>	<b>Rather a lot</b>	<b>Some-what</b>	<b>Rather a little</b>	<b>Not at all</b>
<b>How much does environmental sustainability influence your purchase decisions when buying sportswear, sports footwear or sports equipment?</b>	4%	11%	43%	27%	15%

Respondents interest in the services (data in Table 1) and the influence of environmental sustainability to their purchasing behavior (data in Table 10) were cross-tabulated. Table 11 shows this contingency table. Based on results, it seems that environmental sustainability in purchasing behavior has the greatest influence on interest in leasing. Respondents reporting environmental sustainability influencing their purchasing behavior “rather a lot” or “very much” (70%) were more interested in leasing than respondents reporting environmental sustainability to influence their purchasing behavior “rather a little” or “not at all” (30%). For renting and membership subscription, the influence is somewhat similar, yet the differences are smaller. For renting, it should also be noted that respondents who reported environmental sustainability influencing their purchasing behavior “somewhat” (86%) were the most interested in the service.

Table 11. Consumer interest in renting, leasing, and membership subscription services according to the influence of environmental sustainability on purchasing behavior

<b>Renting</b>	<b>Rather a lot or very much</b>	<b>Somewhat</b>	<b>Rather a little or not at all</b>
Yes	80 %	86 %	70 %
No	20 %	14 %	30 %
<b>Leasing</b>	<b>Rather a lot or very much</b>	<b>Somewhat</b>	<b>Rather a little or not at all</b>
Yes	70 %	45 %	30 %
No	30 %	55 %	70 %
<b>Membership subscription</b>	<b>Rather a lot or very much</b>	<b>Somewhat</b>	<b>Rather a little or not at all</b>
Yes	55 %	55 %	35 %
No	45 %	45 %	65 %

*According to Pearson’s r test the differences are not significant: renting ( $r= 0,07$   $p= 0,42$ ), leasing ( $r= 0,28$   $p= 0,00$ ), membership subscription ( $r= 0,15$   $p= 0,08$ ).*

**Activeness in sport.** Respondents were also asked how many sports they do in average as it could have an influence on their interest in the services. Based on results shown in Table 12, activeness in different sports can influence consumer interest in renting and leasing. Majority of respondents

(89%) who actively do 5 or more sports were interested in renting services and over half of them (56%) are also interested leasing. Participants who reported to actively do only 1-2 sports, the interest in renting and leasing was significantly lower. For membership subscription, the results show a different case as respondents who engage regularly on 3-4 sports were most interested in it.

Table 12. Consumer interest in rental, leasing, and membership subscription according to active-ness in sports

<b>Renting</b>	<b>1-2 sports</b>	<b>3-4 sports</b>	<b>5-6 sports or more</b>
Yes	68 %	88 %	86 %
No	32 %	12 %	11 %
<b>Leasing</b>	<b>1-2 sports</b>	<b>3-4 sports</b>	<b>5-6 sports or more</b>
Yes	33 %	50 %	56 %
No	67 %	50 %	44 %
<b>Membership subscription</b>	<b>1-2 sports</b>	<b>3-4 sports</b>	<b>5-6 sports or more</b>
Yes	38 %	59 %	33 %
No	62 %	41 %	67 %

*According to Pearson's r test the differences are not significant: renting ( $r = -0,22$   $p = 0,01$ ), leasing ( $r = -0,19$   $p = 0,03$ ), membership subscription ( $r = -0,10$   $p = 0,25$ ).*

**Motivations.** Respondents were asked five motivational factors drawn from literature. Table 13 presents the statements, which participants were asked to rate based on their influence on their interest. The results were analyzed based on answers from opposite ends of interest to follow the set research question. As it is to be expected that many respondents would see the statements to have somewhat importance, the analysis focuses especially on statements that respondents found to influence their interest "rather a lot" and "very much", or "rather a little" and "very little, or not at all". Out of the six statements, only one seems to have less influence on respondents interest for the services. This was "I can have access products from exclusive brands at lower price" which less than half (44 %, 25+19) of the survey participants considered important.

Table 13. Motivational factors influencing consumer interest

	Very little or not at all	Rather a little	Some-what	Rather a lot	Very much	No views
I can try out a new sport without buying a new product for it	1 %	1 %	7 %	32 %	55 %	4 %
I can try a new product without commitment	1 %	5 %	18 %	33 %	38 %	5 %
I can have access to products by exclusive brands at a lower price	9 %	16 %	26 %	25 %	19 %	5 %
I can save space at home by getting access to it only for as long as I need it	2 %	6 %	14 %	35 %	39 %	3 %
The service makes my everyday-life easier	1 %	6 %	17 %	35 %	30 %	11 %
The service helps me to consume less and more sustainably	3 %	5 %	33 %	27 %	25 %	7 %

The most important motivational factor for respondents was possibility to try out a new sport without buying a new product for it. More than half of the respondents (55%) thought it would have very much influence on their interest in trying out the services and almost a third of respondents (32%) considered it to influence “rather a lot”. Possibility to try out a new product without commitment was also seen important as more than two-thirds (71%, 33+38) found it to influence their interest. Similarly, survey participants valued the possibility to save space at home. Three out of four (75%, 36+39) reported it would influence their interest in the services.

Positive motivational factors for respondents were also the possibility to consume less and sustainably, and the service making everyday life easier. More than two third of respondents (65%, 35+30) thought they would be interested in the services if it would help make their everyday-life easier. Possibility to consume less and more sustainably was not as important for respondents yet little over half of the respondents (52%, 25+27) thought it would be relevant for their interest in the services.

#### 4.2.2 Awareness and Previous Experiences

**Awareness.** To examine consumers awareness of renting, leasing and membership subscription related to sporting goods, participants were asked if they are familiar with the presented services

provided by sport retailers. The results in Table 14 show that renting (69%) is quite familiar service to respondents whereas leasing (5%) and membership subscription (2%) in turn are very unknown services for sporting goods.

Table 14. Consumers' awareness on renting, leasing, and membership subscription business models for sport products

	Renting	Leasing	Membership subscription
Yes	69 %	5 %	2 %
No	31 %	95 %	98 %

To examine whether awareness of the services increase interest for the services, a contingency table shown in Table 15 was conducted. In the table, "yes" responses to the question "Are you familiar with the following services related to sportswear, sports footwear, or sports equipment?" (Table 14) were cross tabulated with interest in the services (shown in Table 1). Due to low awareness of leasing (5%, n=6) and membership subscription (2% n=3), the contingency table needs to be analyzed with caution. Based on the data, it seems that awareness on renting increases interest for all the services compared to awareness on leasing and membership subscription. Almost all the respondents (91%) who are familiar with renting are also willing to use rental services and over half of them are also willing to use leasing (51%) and membership subscription (54%) as well. The percentages are significantly bigger for renting than for the other two services, with only one exception. The table shows 100% interest for renting from respondents who are aware of membership subscription, but it is to be noted that only three respondents were familiar with membership subscription services for sporting goods. Although the contingency table indicates correlation for all these, Pearson's r test shows significant correlation ( $r=0,46$   $p=0,00$ ) only for awareness on rental x interest in rental.

Table 15. Consumer interest in renting, leasing, and membership subscription according to consumer awareness on the services

Interest in renting	Awareness on renting	Awareness on leasing	Awareness on membership subscription
Yes	91 %	50 %	100 %
No	9 %	50 %	0 %
Interest in leasing	Awareness on renting	Awareness on leasing	Awareness on membership subscription
Yes	51 %	33 %	33 %
No	49 %	67 %	67 %
Interest in membership subscription	Awareness on renting	Awareness on leasing	Awareness on membership subscription
Yes	54 %	17 %	33 %
No	46 %	83 %	67 %

According to Pearson's  $r$  test the differences are significant only for awareness on renting  $\times$  interest for renting ( $r = 0,46$   $p = 0,00$ ), others were not significant, leasing ( $r = -0,15$   $p = 0,08$ ), membership subscription ( $r = 0,08$   $p = 0,36$ ). Awareness leasing: renting ( $r = 0,27$   $p = 0,00$ ), leasing ( $r = -0,04$   $p = 0,65$ ), membership subscription ( $r = -0,03$   $p = 0,75$ ). Membership subscription: renting ( $r = 0,23$   $p = 0,01$ ), leasing ( $r = -0,13$   $p = 0,13$ ), membership subscription ( $r = -0,04$   $p = 0,64$ ).

**Experience.** Consumers previous experience was examined by asking if they have ever used renting, leasing, or membership subscription for sporting goods, provided by sport retail company or other service provider. The results in Table 16 show that renting is the business model that most respondents (73%) have experience related to sporting goods. Only few (2%) have experience on leasing and none of the respondents (0%) have used membership subscription service for sporting goods.

Table 16. Consumers previous experience on renting, leasing and membership subscription of sporting goods provided by any kind of service provider

	<b>Renting</b>	<b>Leasing</b>	<b>Membership subscription</b>
<b>Yes</b>	73 %	2 %	0 %
<b>No</b>	27 %	98 %	100 %

The influence of previous experience to consumer interest in the services were studied with contingency table shown in Table 17. In the table, “yes” responses to the question “Have you used the following services related to sportswear, sports footwear, or sports equipment?” (Table 16) were cross tabulated with interest in the services (Table 1). Similar to awareness contingency table, this contingency table needs to be analyzed with caution as response rates for experience in leasing (2%, n=3) and membership subscription (0%, n=0) are low. Based on the results, experience on renting influences more on interest for renting (87%) and leasing (49%) than experience from leasing (67% and 33%). For interest in membership subscription, it seems that experience from leasing (67%) influences it more than experience on renting (53%).

Table 17. Consumer interest in renting, leasing, and membership subscription according to previous experiences on the services

Interest in renting	Experience on renting	Experience on leasing	Experience on membership subscription
Yes	87 %	67 %	0 %
No	13 %	33 %	0 %
Interest in leasing	Experience on renting	Experience on leasing	Experience on membership subscription
Yes	49 %	33 %	0 %
No	51 %	67 %	0 %
Interest in membership subscription	Experience on renting	Experience on leasing	Experience on membership subscription
Yes	53 %	67 %	0 %
No	47 %	33 %	0 %

According to Pearson's  $r$  test the differences are not significant. Experience renting: renting ( $r=0,36$   $p=0,00$ ), leasing ( $r=-0,04$   $p=0,62$ ), membership subscription ( $r=0,00$   $p=1,00$ ). Awareness leasing: Renting ( $r=0,24$   $p=0,01$ ), leasing ( $r=-0,03$   $p=0,75$ ), membership subscription ( $r=0,00$   $p=1,00$ ). Membership subscription: Renting ( $r=0,19$   $p=0,03$ ), leasing ( $r=0,06$   $p=0,49$ ), membership subscription ( $r=0,00$   $p=1,00$ ).

Table 18. The influence on recommendations for consumer interest

	Very little or not at all	Rather a little	Some-what	Rather a lot	Very much	No views
Friends or acquaintance recommend the service to me	2 %	2 %	18 %	38 %	38 %	2 %

**Recommendations.** The influence of recommendations from friends and acquaintance was studied with a question in which participants were asked to rate the statement based on its influence

on their interest. As Table 18 reveals, recommendations have significant influence on interest for the services. Majority of respondents (76% 38+38) considered recommendations from friends or acquaintances important.

#### 4.2.3 Product and Service Offering

Participants views on which service features influence on their interest in adopting the services were asked with statement questions. Participants were asked to rate how much each presented features influence their interest in the service. Statements were drawn from the drivers of product and service offerings presented in chapter 3.6. Table 19 shows the results.

The results were analyzed based on answers from opposite ends of interest to follow the set research question. As it is to be expected that many respondents would see the statements to have somewhat importance, the analysis focuses especially on statements that respondents found to influence their interest “rather a lot” and “very much”, or “rather a little” and “very little, or not at all”.

Table 19. The influence of service features on consumer interest

	Very little or not at all	Rather a little	Some-what	Rather a lot	Very much	No views
The service provider is a company I know	9 %	13 %	38 %	26 %	13 %	1 %
Prices and terms of the service are easy to understand and displayed well	0 %	1 %	2 %	30 %	65 %	2 %
Different price ranges are available for the service	0 %	6 %	29 %	38 %	20 %	6 %
Price of the service covers damage to the product which is not caused by my own negligence	0 %	1 %	9 %	42 %	43 %	5 %
I can influence on the duration of the contract	0 %	0 %	5 %	45 %	47 %	3 %
I can make changes to the contract during the contract period	1 %	4 %	29 %	35 %	20 %	10 %
I can easily extend the contract if I need the product longer	1 %	4 %	25 %	36 %	28 %	5 %
I have the opportunity for a trial-period of the service without commitment	0 %	5 %	21 %	32 %	37 %	5 %

I can get the products from both the brick-and-mortar store and via postal service	4 %	19 %	25 %	27 %	19 %	7 %
I can use the service with a mobile application	5 %	9 %	32 %	29 %	20 %	5 %
I can choose to pay for only the products for the sports I'm interested in (membership subscription)	1 %	0 %	13 %	38 %	38 %	10 %
I can have the product customized, optional or added feature	7 %	16 %	36 %	19 %	9 %	12 %
Price of the service includes a maintenance contract (leasing)	3 %	8 %	25 %	30 %	22 %	12 %
I do not need to wash or otherwise maintain the product before returning it	1 %	12 %	31 %	28 %	22 %	5 %

Respondents found many of the presented service features to influence in their interest in adopting renting, leasing, and membership subscription services. The most important service features for interest were transparent service contracts, possibility to influence contract duration and insurance issues. Almost all respondents (95%, 30+65) considered well displayed, easy-to-understand terms and conditions to be important for their interest in adopting the services. Clear majority (92%, 45+47) also saw the possibility to influence on contract time to be essential. Contracts including insurance for covering damage to products was seen very influential by more than three out of four (85%, 42+43) of those surveyed.

Results show that flexibility in contracts is especially valued. Survey participants appreciated possibility for trial-period (69%, 32+37) and the possibility to choose only the product groups of interest (76% 39+38) in membership subscription. In addition to these, different price ranges in the services (59%, 39+20), possibility to make changes to the contract during the contract period (55%, 35+20) and extending the contract time if needed (64%, 36+28) were also found influential. Unexpectedly, maintenance deal to be included in the service contract did not seem to be as important for respondents as literature has highlighted. Just over half (52%, 25+30) of respondents considered it have great influence on their interest.

Only four service features or service-related factors were found not as important compared to the others. Familiar service provider did not seem to be important for respondents as less than two

out of five (39%, 26+13) reported it to influence their interest in the services. Ability to use the service with mobile application and the possibility to get customized products were also seen less important. Under half of the respondents (49%, 29+20) considered the possibility to use the service with mobile application to influence their interest and almost one-third (28%, 19+9) stated it to have only little or no importance at all. Possibility for product customization divided respondents' opinions. Less than one third of respondents (28%, 19+9) considered it to have importance, as nearly the same number of respondents (23%, 7+16) did not see it would add their interest. Most respondents (37%) thought it to somewhat influence on their interest.

Another service feature that participants found not that important is the possibility to get products from brick-and-mortar store and via postal service. Under half of the respondents (45%, 27+18) considered it to be rather or very important, and almost one out of four (23%, 4+19) consider it to have only little importance or not at all. It is to be noted that the wording in the statement could have had double meaning for respondents and therefore the result should be considered with extra caution.

## **5 Conclusions**

This chapter focuses on summarizing and discussing the main findings of the thesis. Conclusions are presented through the three research questions presented in chapter 1. To address research problem, managerial implications and a summary of each business model, based on results, is presented.

### **Consumer Interest in General**

The thesis studied consumer interest in access-based product-service systems in sport retail. First research question sought to find out consumers general interest for renting, leasing and membership subscription services provided by a sporting goods retailer. Research findings show that consumers view renting as an attractive business model for sport retail as majority of respondents were interested in using rental services provided by a sporting goods retailer. Interest for leasing and membership subscription was lower but at a level that suggests that they too have potential. The result is consistent with the current scale of the business models in sport retail. Renting ser-

vices are already available but leasing and membership subscription are only just gaining awareness as business models. Consumers are familiar with renting of sporting goods and have previous experiences of it. This was reflected also in survey results when respondents were asked about their awareness and previous experiences of the services. Majority of respondents were familiar with renting and had experience on renting related to accessing sporting goods. The findings support Poppelaars et al. (2018) views on awareness and previous experiences increasing interest for access-based services. Based on results, it can be stated that renting has significant potential for sport retail industry because there is market demand for the service.

Interest for membership subscription was surprisingly high, especially compared to leasing which received little less interest among survey participants. Leasing is more well-known business model for tangible goods than membership subscription, and therefore the author expected that leasing would be considered more interesting than membership subscription. The importance of the finding is underlined by the fact that when inquired about awareness and previous experiences on the service, respondents lacked both. It could be that membership subscription services provided by other industries like music (Spotify) and television (Netflix), have made the business model more familiar to consumers. Electric scooters and city bikes which can be rented in city centers also have similar membership subscription monthly fee offering on side of one-off rental, and this too may have increased consumer awareness on the business model. This suggests that membership subscription can have potential as a business model and its viability and suitability for different sporting goods should be examined further.

Lower interest in leasing compared to membership subscription could be explained by consumers finding it difficult to envision sport products for which leasing is a suitable business model, whereas it is easier to envision products to be subscribed. As car leasing is the most well-known form of leasing, sporting goods can be seen too small or inexpensive products to be leased compared to cars. This reflects REXfelt and Hjort af Ornäs (2009) finding that lack of observable examples can hinder consumer interest. Companies interested in leasing, could study consumer interest in the business model in more detail by providing examples of products or product packages to find out whether tangible examples raise consumer interest.

## Consumer Interest - Product Categories

Second research question concerned consumer interest in using the services for different product categories and different sports. The results show clear interest in using access-based services for sport equipment and sport gear, whereas the idea of using the services for footwear and apparel is resented. This was expected as most of sport equipment and gear are products which are especially suitable for access-based services. Many of these products do not need to be fitted (compared to apparel and footwear) and high purchasing price of the products may influence consumer interest in acquiring them via access-based services. The result for equipment and gear may also be due to the technical aspect of the products. New functions, materials and features are introduced yearly, and the products age quickly in the eyes of consumers. Like Poppelaars et al. (2018) stated about mobile devices, people can be eager to update their sports equipment and gear often, but the high price of the products hinder their ability to purchase them as often as they would like to. Lang et al. (2016) actually suggest this to be used as a marketing asset; consumers can be emphasized the possibility to keep up with latest trends and technology at relatively low cost.

As stated before, most survey participants reject the idea of using the services for footwear and apparel. The lack of interest towards sportswear is even bigger than in research of Heikkilä et al. (2021) who studied clothing-as-a-service business models. According to their findings, less than 30 % of Finnish respondents were interested in using the services for sportswear. Results of the thesis survey could indicate that respondents consider apparel and footwear very personal items. Then it would be consistent with findings of Camacho-Otero et al. (2018) Fokker et al. (2019) who state that symbolic value of products can act as a barrier for adoption of PSS. Consumers can also be worried about the hygiene issues related to apparel which Fokker et al. (2019) and Mukendi and Henninger (2020) mention as a barrier for adoption. Especially apparel that is worn close to skin may be rejected by consumers in these kind of services (Holtström et al., 2019). Hence, apparel worn close to skin (base-layers, apparel for running and training) may be difficult products for access-based services even when the service includes washing service. On the other hand, shell layer outdoor products (jackets and pants) would be quite suitable products for access-based services, and it is a little surprising that this was not reflected in the survey results. The ongoing outdoor trend could have increased consumer demand for these products. High quality, functional shell

layers are expensive products which consumers could be willing to rent for their once or twice a year camping or hiking trips.

For footwear, the reason can also be about personal fit. Footwear adjusts to feet when used and shoes worn by other people may not fit one's feet. For this reason, many types of footwear are not even suited for access-based services, running shoes for example. Yet, some footwear types still allow for access-based use, and these include shoes that are worn more rarely or are for special sports. These include for example hiking boots that could be rented to consumers going for short trips or climbing/bouldering shoes which many climbing centers already rent for beginners.

### **Consumer Interest - Different Sports**

Sports which are popular in Finland, and sports which are currently trendy, received most interest among survey participants when asked for which sports they would be willing to acquire products via access-based services. Winter sports like cross-country skiing, alpine skiing, snowboarding and ice sports were among the most popular for all the three services. Currently trendy outdoor sports like cycling and mountain biking, water sports, hiking and climbing were also highlighted in the answers. Racket sports like tennis and padel were popular for the services and many were interested in using the services also for home exercising equipment.

The results show clear interest in sports which the market already provides rental services, indicating that respondents' awareness of rental services for those products can increase their interest towards them. Similarly, lack of interest in using rental, leasing and membership subscription services for other sports could be explained by lack of observable examples. Like stated before, Rexfelt and Hjort af Ornäs (2009) note that lack of observable examples is a significant barrier for adopting a PSS. Consumers can have difficulties in imagining how the service would work for those sport products.

There were also some differences between the services in relation to different sports. The differences could again be explained with respondents' awareness and previous experiences on the business models from other industries. Interest for leasing was targeted at sports which require large and expensive equipment suggesting that awareness on car leasing could have influenced on

respondents' interest. For membership subscription, interest was spread between many sports. As there is no such service yet in the market for sports products, participants may be more open to using it for different kinds of products than the ones they would have had examples of.

### **Factors Influencing Consumer Interest**

The objective of the research was also to find factors which positively influence on consumer interest in access-based services presented to them. Factors examined included age, gender, family situation, household income, purchase frequency, money spent on sporting goods, activeness in sports, awareness and experience on the services and perceived influence of environmental sustainability to purchasing behavior. Service features and motivational factors were also examined. Although influencing factors were found from some personal characteristics, the most relevant findings arise from service features and motivational factors. In the following, main findings on each theme are presented.

**Personal Characteristics.** Personal characteristics influence consumer interest in the services varying. Generally, more interest towards all the services showed women, frequent buyers of sporting goods and respondents who use more money on sporting goods annually. One unanticipated finding was that over 40-year-old respondents were more interested in membership subscription than younger adults. The result is somewhat contradictory to Lang et al. (2016) findings on older adults being less interested in new sustainable retail models. The uneven age structure of respondents may explain the difference and therefore the case should be examined again with a bigger sample with better representation of all age groups. Family situation also influenced interest for membership subscription. Respondents from households with children were more interested in membership subscription than respondents from households without children. This result could be explained with parents' considering using the service for their children. Children grow out of their sport equipment fast, just like they grow out of their clothes and footwear. Parents could see membership subscription as a solution to this problem as it would be possible to change equipment whenever needed.

Household income level divided interest for leasing and membership subscription whereas interest for renting was quite similar between income groups. Higher income households preferred

membership subscription over leasing and medium income households were more interested in leasing than other respondent groups. Renting was the only service for which low-income households showed significant interest. Low interest for leasing in higher income group is somewhat surprising and one explanation could be that respondents from higher income households have the possibility to purchase the (higher priced) products they wish to use longer and therefore leasing is not needed. Lower income group's low interest in leasing and membership subscription could be explained not just with less money available to use for the services, but also with unwillingness to commit to a monthly fee contract which Rexfelt and Hjort af Ornäs (2009) state as a significant barrier for consumer interest in adopting the services. This fear of unwanted commitment may override the possibility to get access to more exclusive products at lower price which was suggested as a driver for adoption by e.g. Catulli and Dodourova (2013).

Activeness in sports also divided respondents' interest in the services, although in general it seems that respondents active in many sports are more interested in the services. Respondents active in five or more sports were more interested in renting and leasing but were less interested in membership subscription than other groups. Interestingly, membership subscription was preferred by respondents doing actively 3-4 sports. It is difficult to find a clear reason for these differences which suggests that it should be studied more.

**Awareness and Previous Experiences.** The results indicate that consumer awareness on renting can increase consumers' interest in all the services. Like stated before, the overall results for awareness and experience follow the prevalence of the business models in sport retail. Many outdoor resorts have sport equipment rental services and outdoor retailers have started rental services of camping and hiking equipment. Leasing is only starting to gain interest among sport retail companies in Finland after it become possible to provide leasing of employee bicycles for commuting. Membership subscription is a business model which sport retailers in Finland are not offering to consumers currently, yet consumers may know it from companies providing it for apparel. The findings are also in line with Poppelaars et al. (2018) who state that familiarity of the services influence consumer interest in them.

**Service Features.** For service features, contract transparency and flexibility were appreciated the most. Respondents considered easy to understand terms and conditions of the service, possibility

to influence on the duration of the contract and contract to include insurance for damage to be the most influential service features. The results are clearly in line with Rexfelt and Hjort af Ornäs (2009) suggestions on all-inclusive, transparent, and easy-to-understand contracts which include insurance for product damage as well as with Poppelaars et al. (2018) recommendations for contract flexibility. The findings suggest that these service features have an important role in relieving consumer uncertainty and perceived risk which Camacho-Otero et al. (2018) state as significant barriers for consumer acceptance for PSS. Rexfelt and Hjort af Ornäs (2009) also state that consumers resent the feeling that service provider has power over them and including these features in service contract can reduce consumers concerns on the matter.

Trial periods, different price ranges and possibility to make changes to the contract were also considered important. The findings confirm not only Holtström et al (2019) suggestions on trial-periods made possible for consumers but also Rexfelt and Hjort af Ornäs (2009) and Poppelaars et al. (2018) views on making the contracts as convenient as possible for consumers. Possibility to customize service contract to meet one's needs can act as a significant driver for consumer interest in the services. This may require significant effort for the business model to be financially viable but is also crucial for consumers to adopt the services (Tunn et al., 2019).

Contrary to literature, maintenance deals and customization were not considered as important service features. Leasing contracts usually include repair and maintenance deals for the customer to be able to keep the product in good condition. For some reason, survey respondents did not consider it such an important issue. This finding is not in line with Elzinga et al. (2020) who state that consumers prefer outsourcing maintenance. It could be that consumers are used to maintaining their sport product themselves or do not see the possibilities of the deal. Despite the result, it would be recommendable to include maintenance for leasing contracts for bicycles, skiing equipment and other sporting goods that require constant maintenance to keep them in excellent condition throughout the contract period and after it. From sustainability and profitability point of view, this is an important action to extend product lifetime (Tunn et al., 2020).

Unexpectedly also possibility to customize products did not increase respondents' interest in the services. This is somewhat contrary to Fokker et al. (2019) who propose customization for addressing consumers' need for uniqueness. One explanation could be that product customization is not

important in adoption phase (trying out the new service) but becomes more important when the services have gained economies of scale, and there are one or more service providers and their different offerings for customers to choose from. Considering this, customization can later become an asset to build competitive advantage over other service providers. Hence, possibility for customization should be considered when designing product range for the service. Designing or choosing products which can later be customized with moderate effort is recommendable.

**Motivational Factors.** Motivational factors were examined to provide preliminary insights which sport retailers could use for planning marketing communications. Motivational factors which were shown to increase consumer interest in the access-based services were possibility to try out new sport, to try a new product and possibility to save space at home. These are all in line with previous literature. Pedersen and Netter (2015) have highlighted access-based services to provide customers a way to try out new without having to buy new product to pile up in storage and Mukendi and Henninger (2020) the possibility to save space at home. The results suggest that economic and pragmatic motives can influence consumer interest in PSS. Purchasing new sport products just to try out a new sport is perhaps considered not to be reasonable from economic or consumption point of view. It is also possible that economic and reduced consumption motives are somewhat intertwined. Minimalism trend introduced by Marie Kondo (KonMari) has awakened people to prune unnecessary goods from home to have more space. As these seem important for consumers, they can be used for planning marketing communications. Consumers can be emphasized these possibilities.

Based on literature, consumers can be attracted to try out the services by highlighting the possibility to get access to products from well-known and exclusive brands with less money (Poppelaars et al., 2018) and consume more sustainably (Tung et al., 2017). Findings of this research do not undisputedly support these views. Less than half of the respondents viewed access to exclusive products to be important and just over half of respondents considered possibility to reduce consumption to have influence in their interest. Considering that respondents were interested in using the services for equipment and gear, the result for the first statement is unexpected. Latest technology and well-known brands play an important role in these product categories. Another explanation could be that respondents think that using the services does not actually save money as monthly payments will end up costing more for them. For result in consuming sustainably, it is

possible that respondents did not see clearly how the services help them to consume sustainably as it was not explained in survey. Respondent were also asked about how much environmental sustainability influences their purchasing behavior towards sporting goods and results show it to have only some influence. These two findings may be linked, indicating that sustainability in sporting goods is less important than other factors like functionality and fit.

## 5.1 Managerial Implications

Main findings of the research were discussed in previous subchapter. To further summarize findings for managerial purposes, four main conclusions can be drawn:

- Consumers are interested in using rental services for sporting goods.
- Consumers are interested using access-based services for sport equipment and gear.
- Consumers are interested in using access-based services for winter and outdoor sports.
- Consumers perceive transparent and flexible contracts and possibility to try out new to most influence their interest towards access-based services in sport retail.

The most relevant finding for sport retailers considering access-based services in their business model, is that consumers perceive renting as an attractive service for sporting goods. This is a positive result as renting is also the least complex of the three business models studied in this thesis. Although establishing rental service sets new demands for the business and requires investments, it is a business model which can be started and tested in small scale. Pieroni et al. (2019) point out that it is common that companies choose to implement less-complex circular economy business models as a starting point to be able to communicate about them to consumers and through that gain immediate wins. It also allows companies to gradually gain new capabilities required for circular economy business models and help convincing all stakeholders that CE business models can generate results/revenue. Using less-complex models as steppingstones it is possible to expand into more sophisticated CE business models. (Pieroni et al., 2019.)

In sport retail, repair services and take-back management initiatives have been the less-complex initiatives by now but as stated before in this paper, rental services are gaining momentum. Hence, rental services could be the next steppingstone for the industry. The results of the thesis highlight the opportunity which lies in renting as a business model. High consumer interest in the

model shows the potential of the business model. With renting, it is possible to start gradually from one or two product categories or sports (e.g. listed in the main findings) and expand the service to other categories and sports as time goes by. It allows for listening to consumer needs (motivations, service features) and further study, and develop the aspects mentioned in the findings of this research. The demand for other business models can also be examined on the side. Consumers using rental services often can for example be inquired on interest for leasing these products.

Using renting as steppingstone can be recommended because servitization approaches are usually not clear-cut. Instead, different sustainability initiatives are often introduced simultaneously, and the initiatives intertwine in company strategy. (Hvass, 2014.) Business model can be a combination of new product sales, access-based services, repair and maintenance services and re-commerce (Tukker 2004). A variety of business models can be implemented to achieve sustainable consumption and circular economy (Tunn et al., 2019). Each company must examine and consider what is the best combination for them.

## **5.2 Summary and Suggestions for the Business Models**

To address business model developer's needs, the findings related to each business model are presented next. Summary on key points related to each model can be found in Figures 6, 7, and 8, starting from next page.



Figure 6. Summary and suggestions for renting



Figure 7. Summary and suggestions for leasing



Figure 8. Summary and suggestions for membership subscription

The summaries presented here provide a starting point for business model developers in sport retail industry. The figures show best suited product categories and sports for each access-based service. It also includes recommendations for target consumers and motivational factors to be used for marketing communications. For service features, the figure presents only the feature which is especially important for that service.

## 6 Discussion

Climate change is gradually transforming consumer behavior and businesses must look for ways to meet customer expectations of more sustainable practices and products. Consumers are becoming increasingly aware that in order to preserve the planet we must look for ways to not only buy sustainable products but also reduce overall consumption. In sport retail, Covid-19 pandemic contributed to the rising outdoor trend and through that to consumer awareness on preserving natural resources. Access-based services in which consumers pay for product use, not to own them, has been recommended as one solution for reducing consumption levels (Tunn et al., 2019). Despite the great potential, access-based services are still emerging business models (Xin et al., 2017) and only few sport retail companies have introduced them into their business portfolio.

One reason for hesitation can be uncertainty on consumer's willingness to adopt the services. As stated in the introduction of this thesis, literature lacks sport retail specific research on consumer interest in access-based services. Consumer perspective has generally received less attention in literature although it has been stated to be critical for PSS business model design (Mostaghel & Chirumalla, 2021). More research on consumers' willingness to participate in product-service systems is needed to understand demand side of these business models. Understanding the importance of knowledge on consumer interest for the development of access-based PSS, this thesis has aimed at contributing to the literature by providing insights on consumer interest and factors influencing it on access-based PSS for sport retail.

The objective of the thesis has been to chart consumer interest for access-based PSS in sport retail and act as starting point for sport retail companies in examining the feasibility of the business models for their purposes. An online survey was conducted to gather the needed data. Focus of the survey was not only to examine whether consumers are interested in the access-based services but also to find out for which product groups and for which sports consumers are interested in using the services. Factors influencing consumer interest were also examined to provide insights on possible target groups and on important service features for business model developers. The survey was exploratory in nature and aimed at generating basic knowledge on consumer interest for access-based services provided by sport retail. The research allows for sport retail companies to examine whether the business models are suitable for their business and what aspects need to be studied more.

Theoretical background of the thesis in chapter 3 introduced general information on product service systems for circular economy. It provided a review on characteristics and different categories of PSS. It also focused on insights from literature on business model design of product-service systems. Business model design of PSS was addressed through sustainable circular business model innovation framework. Focus was especially on aspects that need to be considered and which differ from linear business models. The chapter aimed at increasing understanding on special characteristics of PSS as business models for managers developing them. Theoretical background also addressed drivers and barriers to consumer acceptance of product-service systems. It gathered insights from literature increase knowledge on aspects that influence consumer interest and PSS developers should look into. The focus of the review was specifically to examine insights from literature that would be relevant to access-based services in sport retail industry.

Insights from the survey were presented in Chapter 5. Based on theoretical background and survey results, managerial implications and a summary of each business model was presented. Managers in sport retail can use them as a starting point or platform on which to base their considerations for possible development of access-based services for their companies. However, it is clear that more detailed research on each business model and their financial viability is needed. The thesis can also be used to identify these issues. Some suggestions for future research agenda are provided in chapter 6.2. at the end of the paper.

The thesis contributes to raising the awareness of sport retailers that changes in business models are needed in the near future. Change from linear economy into circular economy is already happening. Early adopters (consumers and companies) are driving the change, but laws and regulations play a significant role in pushing the whole industry to take action. European Union has taken big steps towards transition to circular economy. European Commission (2022) presented in March 2022 new European Green Deal proposals which are part of EU's Circular Economy Action Plan. The new proposals include proposal for a Regulation on Ecodesign for Sustainable Products to make all physical goods on EU market environmentally friendly, circular and energy efficient throughout their whole lifecycle. Special focus is on product longevity, Ecodesign, which is boosted with requirements for durability, reparability, reusability, and recyclability. When approved by the European Parliament, these new EU regulations will shape also sporting goods industry. It is to be expected that the new regulation will accelerate the development of access-based services.

## 6.1 Reliability, Validity and Research Ethics

The credibility of scientific research is examined with two credibility concepts: reliability and validity. Reliability means consistency and stability of the research, that when the research is replicated, it produces the same results. Validity refers to correct things being studied and to credible results. Validity of research can be ensured with correct research approach, operationalization of concepts to variables and correct analysing methods. (Kananen, 2015, pp. 272-273.)

Judgement sample, online implementation and survey design affected reliability and validity of this research. Judgement sample used for collecting the data affected external validity of the research by limiting generalizability. Although training centre members represent sport retail consumers, they also represent target group of the training centre. This means that they represent a specific target group which may be more limited than a target group of a sport retail company. Customer base of a sport retail company would have been a more representative sample but unfortunately that option was not possible for the thesis. Restrictions of judgement sample was seen in the survey results as the group of respondents was skewed in terms of age and gender. Therefore, generalizations made from the results should be considered with caution. Online implementation of the survey is closely linked to the issues in sampling. Respondents were invited to answer the survey via a link in Facebook page. With this approach, it is not possible to know whether all potential respondents were reached. Facebook algorithms affect how different people see the posts. It may be that only members active in that Facebook page have seen the posts which further narrows the sample.

Questionnaire design has a significant impact on reliability and validity of quantitative research. The relevance and consistency of the variables are prerequisite for research validity and reliability (Kananen, 2015, p.141). Hence, operationalization of concepts into variables and further into questions plays significant role in research validity (Kananen, 2015, p.272-275). Due to careful preparation, the questionnaire proved to be good and measured what was intended. Only one question, in the last section's statements, had issues with wording as multiple meanings remained in the sentence. This became apparent in analyse phase when results indicated that respondents could have understood the statement in different ways. The question was not highlighted in results and analysed further, and therefore it does not affect the validity and reliability of the research.

Validity and reliability of research can be ensured not only with mindful operationalization of concepts to variables but also with correct research approach and correct analysing methods (Kananen, 2015, p.273). Quantitative approach was chosen for the thesis as it is recommended as a tool for examining consumer interest, awareness and attitudes to new products and concepts (Hague, 2021, pp. 8-9). The thesis is a kind of market research, for which quantitative data is needed to gain some level of accuracy (Hague 2021, p. 9). Rules of analysing quantitative data were followed in the thesis which ensured the reliability of the results. Analysis was made using Webropol software for cross-tabulation and examining correlations and their significance. Data was transferred to Excel software only to visually enhance their readability.

The thesis has been conducted following JAMK's guidelines on research ethics. The author has acquired permission, via email, from the three Training for Warriors training centers to post the survey link in their Facebook page. Survey respondents were informed about the purpose of the research, handling of the data and contact information of the researcher in the research invitation (Facebook post). To follow GDPR legislation, survey was designed to be anonymous, and no personal data was collected from the respondents. Anonymity was further ensured with the use of structured questions so that indirect identifiers would not compromise anonymity. The author has stored the collected data in a folder which can be accessed only with the author's personal password. Data was used only for the thesis and has not been shared with third parties. The collected data is destroyed after the thesis has been approved. The author has written the thesis according to JAMK's reporting instructions, following proper use of sources. Copyrights were also considered, and the original source is mentioned in all figures. Research process is described in the thesis to ensure credibility and responsible conduct of research.

## **6.2 Future Research Agenda**

This research has been a preliminary review on consumer interest in adopting circular economy access-based services in sport retail and provided a starting point for further research. Future research could focus on each of the business models individually to provide deeper consumer insights in sport retail context. As understanding consumer demand is the prerequisite for business model innovation/development process, future research could study the following aspects individually: consumer motivations to use the services, different service features, and product offerings. For a multifaceted picture, quantitative research should be complemented with deeper insights

from qualitative research. Service design approach, which also Rexfelt and Hjort af Ornäs (2009) recommend, could be useful for gaining understanding on consumer perspective. As consequences for customers' activities is central for acceptance, service design methods provide a feasible tool for examining how the services affect consumers' every-day life.

Reduced consumption is a controversial and counterintuitive endeavor for retail sector. Promoting sufficiency-oriented consumption and shareholder demand for increasing profits may seem an impossible equation. (Gossen & Heinrich, 2021.) Therefore, research on financial viability of the business models would be a relevant research agenda. Although product-service systems are considered as the business models of the future, clear evidence on long-term financial viability is lacking. Hence, research on profitability of each business model in sport retail context would benefit the industry.

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## Appendix

### Appendix 1. Questionnaire

#### Survey on consumer interest in new circular economy services for sporting goods retailers

 Mandatory questions are marked with a star (\*)

Welcome to a survey which examines consumer interest in rental, leasing and membership subscription services provided by sports specialty stores. Survey is part of a thesis, which aims at gathering information on which of the services in question are of interest to sports retail customers, and which factors influence their interest.

The survey is completely anonymous and individual respondents cannot be identified based on the responses. It takes about 8 minutes to answer the survey.

#### 1. Age \*

- under 25 years
- 25-39 years
- 40-55 years
- over 55 years

#### 2. Gender \*

- Female
- Male
- Other/I do not want to answer

**3. What is your living/family situation? \***

- Living alone
- Married/cohabitation, no children
- Married/cohabitation, children
- Single parent
- Married/cohabitation, children do not live at home anymore
- Other

**4. What is the average annual gross income (before taxes) of your household?**

If you do not know the exact number, you can estimate.

- less than 15 000 €
- 15 000-19 999 €
- 20 000–39 999 €
- 40 000–69 999 €
- 70 000–99 999 €
- 100 000–119 999 €
- 120 000–149 999 €
- over 150 000 €
- I do not want to answer

**5. How often do you buy sportswear, sports footwear or sports equipment from a brick-and-mortar or online sports specialty store? \***

- Once a month or more
- Once every two months
- 3-4 times a year
- 1-2 times a year
- Less than once a year

**6. How much money do you spend on sportswear, sports footwear and sports equipment on average per year? \***

- under 100 €
- 100-300 €
- 400-700 €
- 800-1000 €
- over 1000 €

**7. How much does environmental sustainability influence your purchase decisions when buying sportswear, sports footwear or sports equipment? \***

In this context, environmental sustainability refers to the sustainability of both, the individual product and of the company operations.

- Very much
- Rather a lot
- Somewhat
- Rather a little
- Not at all

**8. On average, how many different sports do you do? \***

- 1-2 sports
- 3-4 sports
- 5-6 sports
- More than 6 sports

**9. Are you familiar with the following services related to sportswear, sports footwear or sports equipment? \***

	Yes	No
Renting (for short term use)	<input type="radio"/>	<input type="radio"/>
Leasing (for long term use with montly fee)	<input type="radio"/>	<input type="radio"/>
Membership subscription (access to x amount of products in a month with monthly membership fee)	<input type="radio"/>	<input type="radio"/>

**10. Have you used the following services related to acquiring sportswear, sports footwear or sports equipment? \***

You may include in your answer services purchased from both, a sports specialty store and another service providers (e.g. ski resort rental)

	Yes	No
Renting (for short term use)	<input type="radio"/>	<input type="radio"/>
Leasing (for long term use with montly fee)	<input type="radio"/>	<input type="radio"/>
Membership subscription (access to x amount of products in a month with monthly membership fee)	<input type="radio"/>	<input type="radio"/>

**11. Are you interested in using the following services offered by a sporting goods retailer? \***

	Yes	No
Renting (for short term use)	<input type="radio"/>	<input type="radio"/>
Leasing (for long term use with montly fee)	<input type="radio"/>	<input type="radio"/>
Membership subscription (access to x amount of products in a month with monthly membership fee)	<input type="radio"/>	<input type="radio"/>

**12. What services, provided by a sporting goods retailer, would you be interested in using for the following sporting goods? You can select one or more options. \***

Renting = for short term use

Leasing = for long term use with montly fee

Membership subscription = access to x amount of products in a month with monthly membership fee

	Renting	Leasing	Membership subscription	Not interested
Sportswear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sports footwear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sports equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sports gear (heart rate monitors, GPS devices etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**13. For which of the following sports would you be interested in renting, leasing or using a membership subscription service from a sporting goods retailer? You can choose the sports and services you are interested in.**

Renting = for short term use

Leasing = for long term use with montly fee

Membership subscription = access to x amount of products in a month with monthly membership fee

	Renting	Leasing	Membership subscription
Cross-country skiing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alpine skiing, snowboarding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bicycling, mountain biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ice sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Running	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gym, fitness classes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Home excersing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yoga	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tennis, badminton, padel, squash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Football	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Basketball, volleyball	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floorball	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finnish baseball	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hunting, fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Horseback riding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backpacking, hiking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swimming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water sports (sup boarding, paddling etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climbing, bouldering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



