

# Consumer preferences in the circular economy: A conjoint analysis

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## Extended abstract

Global consumption, resource extraction and waste production have reached unsustainable levels, leading to environmental degradation (Velenturf et al., 2019). According to Circle Economy (2023), more materials have been extracted from virgin sources in the last 6 years than in the entire 20th century. Society is therefore under pressure to find alternative ways of producing and consuming. One such promising alternative is the transition to a circular economy (CE). The circular economy aims to decouple economic growth from the consumption of finite resources (Ellen MacArthur Foundation, 2015) by preserving the value of materials for as long as possible (Den Hollander, Bakker & Hultink, 2017). This can be achieved through prolonging product life, redistribution/reuse, remanufacturing/refurbishment and recycling (Urbinati, Chiaroni & Chiesa, 2017).

Implementing these principles may require innovations in business models, shifting from selling products to providing services (Cherry & Pidgeon, 2018), or even from ownership to access (Ferasso et al., 2020). Despite the potential of these CE strategies, challenges to their adoption remain (Antikainen et al., 2021; Circle Economy, 2023). An important piece of the puzzle is consumers and their willingness to engage in CE (Mugge, 2018). It has been called for extending the knowledge in the area of consumer behaviour and decision-making in relation to CE (Vidal-Ayuso, Akhmedova & Jaca, 2023). This might be even more crucial in countries such as the Czech Republic, whose transition to CE is lagging behind compared to many Northwestern European countries (INCIEN & Direct People, 2018; Mazur-Wierzbicka, 2021).

This study aims to investigate consumer preferences for different CE strategies (renting, refurbishment, maintenance) and their combinations, using the case of a washing machine,

through the means of a choice-based conjoint survey experiment. The value proposition is inspired by a circular business model developed and tested by Gorenje within the ReCiPSS project<sup>1</sup>. For this aim, the following research questions have been proposed:

**RQ1: What are consumer preferences for product-service configurations and how do they differ according to the ownership context?**

This question focuses on the importance of selected attributes (mode of acquisition, appliance condition, price, repairs, maintenance services, installation and delivery), their preferred levels and potential differences in these preferences in the context of renting and buying. As suggested in the literature (see e.g. Tunn et al., 2021), the absence of ownership is an important barrier to access-based consumption. This study aims to shed light on the conditions under which, i.e. in exchange for what level of product and service, consumers would be willing to give up ownership. At the same time, it identifies other value-preserving strategies and their desirable combinations for those who are not ready to adopt ownerless consumption.

An important issue in this context is the acceptance of refurbishment. It has been shown that one of the most important barriers related to refurbished products is concerns about functional quality (Van Weelden, Mugge & Bakker, 2016; Badhotiya et al. 2022). However, as pointed out by Štangová (2022), consumer perspectives on refurbished products have so far mainly been studied in the context of purchase. It might therefore be worth investigating whether shifting the responsibility for the product to the service provider in the access-based business models could make refurbished options more acceptable.

**RQ2: What is the importance of appearance in consumer acceptance of refurbished appliances?**

The presence of visual signs of wear and tear is an important topic in refurbishment, but there is no clear consensus on the issue (Štangová, 2022). While some authors (Mugge, Safari & Balkenende, 2017) argue that in the case of utilitarian products, signs of previous use should not be so important, others suggest that it is not just a matter of appearance and these signs can inspire distrust (Ratering, 2020) and doubts about the functional state (Snel, 2021).

**RQ3: Do the preferences for refurbished products change when information about positive ecological impact is provided?**

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<sup>1</sup> <https://www.recipss.eu/>

In general, willingness to pay for refurbished products is lower than for new products (Akkucuk, 2011; Harms & Linton, 2016) suggesting they are perceived as somewhat inferior. However, Harms & Linton (2016) showed that eco-certification can increase willingness to pay, although it is still inferior to new products. Boyer et al. (2021) investigated the impact of the Circular economy score (indicating the proportion of a product made from reused or refurbished parts). They found that the willingness to pay for a slightly circular product is even higher than for a new one. Based on these results, it can be assumed that communicating the sustainability benefits helps frame refurbishment as something desirable, at least for some consumer segments.

To assess consumer preferences, a choice-based conjoint survey experiment was conducted on a representative sample of the Czech population. The survey was created using Sawtooth software (2024). The table below summarizes the attributes and their levels. Respondents were asked to select the most preferred options from sets of profiles composed of these attributes. The levels were determined based on online searches and comparisons of available products/services and their prices, as well as consultations with industry experts.

**Table 1 – Attributes and levels – washing machine**

Attribute	Levels
Mode of acquisition	Buying Renting
Purchasing price <i>Alternative specific - buying</i>	7 500 CZK <sup>2</sup> 10 000 CZK 12 500 CZK 15 000 CZK
Monthly fee <i>Alternative specific - renting</i>	350 CZK 450 CZK 550 CZK 650 CZK
Condition	New Refurbished, looks like new Refurbished, scratches on the top, back, or side Refurbished, scratches on the front
Repairs	Within 30 days (standard warranty) Within 5 business days Within 48 hours
Installation and delivery	Not included Included
Maintenance every 6 months	Not included Included

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<sup>2</sup> 1 EUR = approx. 25 CZK

Respondents were randomly assigned to two versions of a choice-based conjoint exercise, one with additional information explaining why refurbishment is more sustainable than producing a new appliance in the introductory section and the CO2 reduction information next to each 'refurbished' option in the choice set.

Preliminary results suggest that the mode of acquisition is the most important in consumers' decision-making, followed by purchase price, condition, monthly fee, installation and delivery, maintenance and waiting time for repair. Although buying was the preferred acquisition mode and new was the most preferred condition, the interaction effect showed that the combinations of refurbished appliances with the rental option were preferred over the combinations of refurbished appliances and buying. The appearance of a refurbished product also seems to play a role, judging by the difference in part-worth utilities of an as-new product and products with various scratches, even though this difference was smaller than that between a new product and a refurbished product that looked as new. Regarding the influence of the information about the positive environmental impact of refurbishment, while the order of average importance of the attributes was the same in both groups, the importance of the condition of the appliance (new or refurbished) was slightly lower in the group that had received the information.

This research project contributes to the literature on consumer decision-making in the circular economy, shedding light on how to overcome some of the barriers to consumer acceptance and how to configure product-service offerings aimed at extending product life to meet consumer preferences.

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## Keywords

Circular economy, consumer preferences, refurbishment, access-based consumption, conjoint analysis

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