

Consumer behaviour in the context of circular economy: a systematic literature review

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Abstract

Circular business models (CBMs) focus on cycling, extending, intensifying, and/or dematerialising material and energy loops to reduce resource inputs and waste and emission leakage. We aim to explore consumer behaviour in circular economy through a systematic literature review to determine barriers and motivators to implementing CBMs, analysing twenty-eight articles. We identified internal motivations, such as economic and environmental concerns; and external factors facilitating engagement with circularity, such as better awareness, and products with design for circularity.

Keywords: *circular economy, human behaviour, business models, sustainability*

1. Introduction

Today, our economy is under a linear logic of extracting, producing, consuming and throwing away. More than a century of net greenhouse gas (GHG) emissions from energy use, land use, land use change, lifestyle, and patterns of consumption and production has led to climate change with damages in terrestrial, freshwater, cryospheric, coastal and open ocean ecosystems (Calvin *et al.*, 2023). Circular economy (CE) proposes a restorative system that relies on renewable energy, minimises tracks and eliminates the use of toxic chemicals; and eradicates waste by careful design (Ellen MacArthur Foundation, 2013). The goal is to maintain resources in use for as long as possible, exploiting the maximum of their value. Circular business models (CBMs) are businesses that are cycling, extending, intensifying, and/or dematerialising material and energy loops to reduce the resource inputs and the waste and emission leakage out of an organisational system. However, creating CBMs is not enough if they are not capable of engaging consumers. Consumer behaviour is important to get insight into decisions that involve the acquisition, use, and disposition of goods, services, ideas, or other offerings (Hoyer *et al.*, 2012). We aim to explore consumer behaviour in CE through a systematic literature review to determine barriers and motivators to the implementation of CBMs. This paper's contribution resides in the fact that it analyses consumer behaviour and CE globally, rather than other literature reviews that analysed specific cycles of the CE (reuse, repair, share, and recycle).

2. Context

Different kinds of CBMs can be categorised using the CE framework (Lopez *et al.*, 2023), which incorporates the concepts of shape degradation (Menu *et al.*, 2019) into the butterfly diagram's cycles (Ellen MacArthur Foundation, 2013). This results in the division of CMBs into main groups: life extension – reuse & redistribution, repair & maintenance, refurbish & remanufacture, sharing-, and life transformation – style upcycling & repurposing, refunctioning, recycling, downcycling- (Lopez *et al.*, 2023).

Economic factors seem a common attractive to CBMs. Paying cheaper is one of the motivations for buying remanufactured products (Gomes *et al.*, 2022). The search for repairs is higher during recessions, as economic saving is one of the reasons why consumers attempt to repair products by themselves instead of professionals (Sonego, 2022). Parallely, people resort to leasing because its costs are lower than acquisition (Gomes *et al.*, 2022). Yet, the cost is the reason behind almost 80% of non-implemented repairs: repair services prices have grown more than new products' prices due to improvements in outsourcing, while labour costs have increased (Sonego, 2022). Also, the perception of higher costs in sharing services prevents the adoption of access-based business models (Arekrans *et al.*, 2022). Regarding recovery for end-of-life, users are more motivated to participate when there are take-back systems with financial returns (Gomes *et al.*, 2022; Islam, 2021).

It is also important to consider social factors. While in developed countries repair is associated with a luxury of choice of those who have the skills and the free time; in developing countries repair is associated with poverty, once it is a necessity of those who can not afford to purchase (Sonego, 2022). In CBMs that propose a product being reused or shared, we notice disgust related to a fear of contamination concerning hygiene (Arekrans *et al.*, 2022; Gomes *et al.*, 2022; Kim *et al.*, 2021). Also, used-based business users have trust issues regarding other users, which comes from concerns about privacy and safety, a fear of sharing with strangers, and even discrimination towards minorities (Arekrans *et al.*, 2022). Ownership has its own prestige connected to hyper-consumption aspects of society, combined with social bonding over possessions resulting in emotional attachment (Arekrans *et al.*, 2022). Regarding the end-of-life of electronic waste, barriers include low awareness of recovery programs, unfamiliarity with waste classification, and hibernating behaviour, when people store waste instead of discarding it (Islam, 2021). Although social factors seem to be more of a barrier than a motivator for CBMs, there are also some positive leverages. For example, buying second-hand clothing becomes a way of self-expression (Kim *et al.*, 2021).

Environmental factors are the base CBMs proposition. In second-hand clothing, environmental value has a positive effect on product attitude (Kim *et al.*, 2021). People buy refurbished products because reusing products saves natural resources and reduces the amount of waste produced (Gomes *et al.*, 2022) even though they ignore the rebound effect of overconsuming second-hand clothing (“Mode de seconde main en ligne”, 2022). In addition, one of the motivations to participate in the recovery of end-of-life products is environmental awareness (Gomes *et al.*, 2022). Buying recycled clothing is also connected to their perceived environmental benefits (Kim *et al.*, 2021).

Some aspects are also intrinsically tied to product characteristics. In second-hand clothing, there is a concern with the discrepancies with the latest fashion trends (Kim *et al.*, 2021). Regarding repair, products seen as obsolete, with a cheaper purchase cost or a more integral design with unavailable spare parts -usually lacking repair information-, would be more easily replaced; meanwhile, products that are perceived as being high quality and with a modular design -which can result in easy repairs by the users-, have more chance of being repaired (Sonego, 2022). In addition, product characteristics such as design for repairability, extended product lifetime and easy maintenance increase consumer trust; ease of assembly and disassembly and reduced number of parts reduces risk perception; and the use of recycled products and materials increases value perception (Marcon *et al.*, 2022). Finally, some factors are related to the operations of the business activities. If the consumer perceives a high ability of the remanufacturer, they are more inclined to buy refurbished and remanufactured products (Marcon *et al.*, 2022). In repair, negative experiences with poor quality service, and long waiting times - that forces consumers to stay without their product-, push people to replace their product instead of fixing it (Sonego, 2022). Then, sharing businesses are damaged by the lack of tools to enhance social presence, the lack of convenience and accessibility, and the lack of information and guarantees resulting in reliability concerns (Arekrans *et al.*, 2022).

3. Methodology

We used the research string “consumer behaviour” AND (“barriers” OR “challenges”) AND “circular economy” in scientific bases Science Direct and Web of Science. Taking into account the impact of culture on people’s mindset, we decided to only consider studies that were done in Europe.

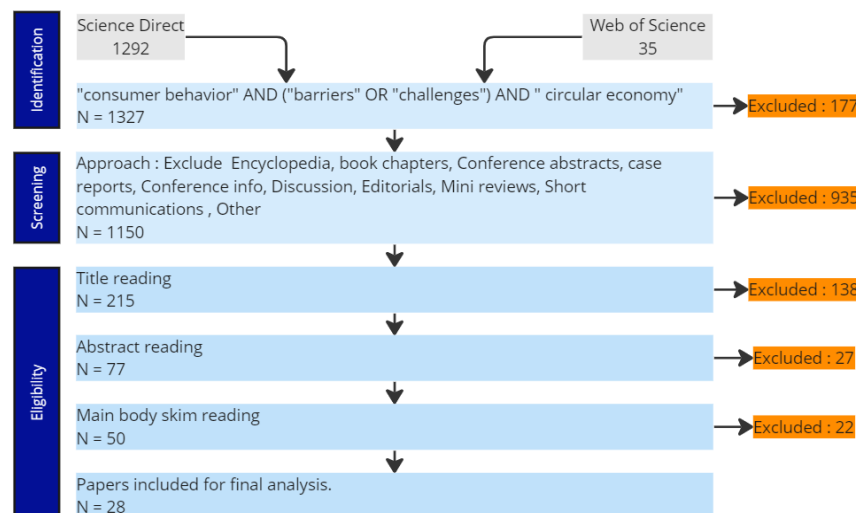


Figure 1. Systematic research steps

In Figure 1, we present the steps of the systematic research. We only found one study on sharing economy behaviour in Europe, so we considered two studies done in the Americas to have a more robust analysis. We categorized the articles according to the circular framework (Lopez *et al.*, 2023). Then, we decided to differentiate the factors impacting CBMs into internal (motivations and demotivations) and external (enablers and disablers).

4. Factors affecting consumer behaviour in CBMs

We analysed twenty-eight articles on consumer behaviour regarding CBMs that were conducted in Austria, Italy, Germany, Spain, the Netherlands, Norway, Portugal, Russia (western), Sweden, Spain, and the United Kingdom. Some of these studies analysed consumer behaviour in relation to specific products, being the most common ones clothing (Cesarina Mason *et al.*, 2022; Fuchs and Hovemann, 2022; Hur, 2020; Laitala *et al.*, 2021; Rogers *et al.*, 2021; Singh *et al.*, 2019; Terzioğlu, 2021), electronics -including smartphones - (Arman and Mark-Herbert, 2022; van den Berge *et al.*, 2023; Bigerna *et al.*, 2021; Bovea *et al.*, 2017, 2018; Martinho *et al.*, 2017; Ratay, 2022), household appliances (Bovea *et al.*, 2017, 2018; Gulserliler *et al.*, 2022; Kabel *et al.*, 2020; Laitala *et al.*, 2021; Rogers *et al.*, 2021; Terzioğlu, 2021), and bicycles (Arman and Mark-Herbert, 2022; D'Agostin *et al.*, 2020; Rogers *et al.*, 2021; Vafadarnikjoo *et al.*, 2018). As presented in Figure 2 below, most studies cover consumer behaviour in repair, followed by second-hand and take-back systems of recovery.

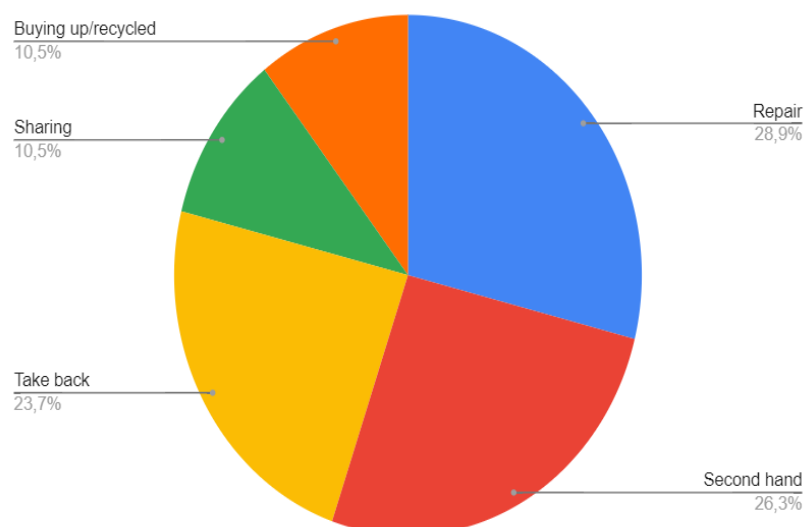


Figure 2. Distribution of CBMs covered in the consumer behaviour studies

4.1. Second-hand

Under the second-hand concept, we combine different kinds of CBM (Reuse & Redistribute and Refurbish & Remanufacture) because in some studies they mention second-hand without further detail. The common point between the two of them is the purchase of reused products, and they differentiate themselves on the existence of a reconditioning step. Regarding the profile of those who shop second-hand, a study on second-hand clothing (Hur, 2020) stated that young people are more likely to buy it.

4.1.1. Motivations and demotivations

The main motivation for people to buy second-hand is having a good value for money, which is usually connected to brand names and quality perception (Bovea et al., 2018; Hur, 2020; Kabel et al., 2020; Kannan et al., 2022; Vafadarnikjoo et al., 2018). There are also altruistic reasons (de Moraes et al., 2021), such as the feeling of helping charities and avoiding overconsumption (Hur, 2020), which is connected to environmental consideration (Kannan et al., 2022). Yet, in a study on remanufactured bikes, environmental impact was not regarded as one of the significant motivations (Vafadarnikjoo et al., 2018). When buying second-hand, there is also a dimension of treasure hunting, finding unique product options (Hur, 2020; Kannan et al., 2022). Nonetheless, users feel demotivated due to the perception of low product quality, related to performance, conformance, and aesthetics (Bovea et al., 2018; Hur, 2020; Kabel et al., 2020). For clothing and household appliances, there is a certain disgust with the perception of lack of cleanliness and also the price difference between second-hand and new ones that is not enough (Bovea et al., 2017). Regarding EEE products, users have safety concerns, and they fear they might waste their time, once their product requires more maintenance, presenting also a financial risk (Kabel et al., 2020; Kannan et al., 2022). In addition, buying second-hand might lack the thrill of newness (Kannan et al., 2022).

4.1.2. Enablers and disablers

Social factors can play a positive role in enabling buying second-hand, through recommendations from family and friends (Hur, 2020; Kabel et al., 2020). It is also important to create an attractive shopping experience, with easy accessibility of second-hand retailers physically or online; better merchandising, window display with curated selection; and more product variability and availability (Hur, 2020; Kannan et al., 2022). In addition, access to information regarding product quality control and transparency through past user information can be a facilitator (Hur, 2020; Kannan et al., 2022; Selvefors et al., 2019; Vafadarnikjoo et al., 2018). Finally, a warranty for second-hand products is fundamental, especially when compared to new products (Kannan et al., 2022; Vafadarnikjoo et al., 2018; Wieser and Tröger, 2018).

The following factors enable second-hand in this scenario: detailed product information; commitment from the seller; access to smartphones for online transactions; possibility of payment upon delivery; logistics support; mobile banking service; sharing of happy photos with the second-hand products (Arman and Mark-Herbert, 2022). Ownership transfer should be easy to pass from one user to another (Selvefors et al., 2019). In this context, product design can also ease second-hand regarding its acceptability by customers. Products with the following characteristics are more suitable for second-hand: easy to clean; modifiable to fulfill different user's needs; long-term technical utility; performance and attractive appearance; easy maintenance and with the possibility of changing parts that are more prone to wear and tear (Selvefors et al., 2019). Some desirable traces of previous uses can be highlighted (Selvefors et al., 2019). In this context, retailer's reputation is valued, even though it is not as effective as quality, warranty, and price (Kannan et al., 2022). Regarding C2B2C, lack of personal time for shopping, and lack of accessibility and product variability (sizes, styles) were mentioned as disablers (Hur, 2020). We have not found specific disabling factors for C2C second-hand.

4.2. Repair

When profiling people who engage in repair, whether professional or in *do it yourself* (DIY), we notice that there are components regarding age and economic factors. Older people are more inclined to repair (Fachbach et al., 2022), which might be related to different values regarding consumption, *i.e.*,

preferring to extend the lifespan rather than resort to overconsumption. One study sees no significant results concerning the impact of income and education on the repair intention (Fachbach *et al.*, 2022). Another study on the repair of household appliances, mobile phones, and clothing, found that having lower income might be a characteristic of those who repair since they have fewer resources to purchase new products (Laitala *et al.*, 2021). In this case, students are more likely to repair expensive products (Laitala *et al.*, 2021), which could be due to lower income but also higher environmental awareness related to their age and education.

We can identify different profiles of those who perform DIY repair and those who do it through professionals. DIY repair can be a hobby for people who are part of craft culture (Rogers *et al.*, 2021; Terzioğlu, 2021), but also a necessity for those who have lower income (Terzioğlu, 2021). Regarding gender, a study stated that men were more prone to DIY repair electronic appliances. Women and people with low income would be more prone to repair if they knew someone in their own network who could do it for them (Laitala *et al.*, 2021). Yet, another study did not find gender-related differences regarding DIY repair difficulty (Fachbach *et al.*, 2022). Then, men seem more prone to lack trust in professional repair services, while women are more likely to use these professional services. Also, people with higher education are more inclined to use professional services, which can be related to higher income (Rogers *et al.*, 2021).

4.2.1. Motivations and demotivations

Consumers are motivated to repair because of environmental concerns to avoid waste generation by increasing the product lifespan (van den Berge *et al.*, 2023; Fachbach *et al.*, 2022; Rogers *et al.*, 2021). Yet, another reason is to save money they would spend on a new product (Bovea *et al.*, 2018; Fachbach *et al.*, 2022; Rogers *et al.*, 2021), especially when it comes to a low cost of repair for an expensive product (Bovea *et al.*, 2018; Laitala *et al.*, 2021; Terzioğlu, 2021). Last but not least, people tend to repair when they are emotionally attached to the object (Laitala *et al.*, 2021), which can be related to the consumer's fear of losing memories connected with the product (Ackermann *et al.*, 2018). On the other hand, there is a negative stigma that repair is a necessity for those who cannot afford to buy new products (Rogers *et al.*, 2021; Terzioğlu, 2021). Combined with it, there is an economic factor of the low replacement cost for buying a new product instead of repairing it (van den Berge *et al.*, 2023; Bovea *et al.*, 2018; Rogers *et al.*, 2021; Wieser and Tröger, 2018), and the perception of repair as inconvenient (Bovea *et al.*, 2017).

Regarding the differences between DIY and professional repair, we see that they are complementary. We see that what demotivated consumers to repair themselves is the fear of violating warranty conditions and the fact that repair operations are time-consuming and effort-demanding (Fachbach *et al.*, 2022; Laitala *et al.*, 2021; Terzioğlu, 2021). Meanwhile, they look for professionals because they can not identify their product problem, and they lack knowledge and ability (van den Berge *et al.*, 2023). Yet, the high cost of professional services is a demotivation (Fachbach *et al.*, 2022; Rogers *et al.*, 2021) that can result in the consumer trying DIY or just replacing their product with a new one.

4.2.2. Enablers and disablers

Products that are high quality and durable have a better chance of being repaired, especially if there is only a small part that is damaged (Laitala *et al.*, 2021; Rogers *et al.*, 2021; Terzioğlu, 2021). Also, if the manufacturer provides a warranty, consumers are more inclined to repair the products (Terzioğlu, 2021), which could be because they do not have to expend from their economies, but also because the warranty itself might call attention to the product repairability. Additionally, visible repairs can be a form of activism (Terzioğlu, 2021).

Less durable products with lower quality, mainly small appliances, are usually replaced because of fear of damage repetition (Laitala *et al.*, 2021; Rogers *et al.*, 2021; Terzioğlu, 2021). The product condition also counts a lot: if they are seen as obsolete, old, unfashionable, and lag behind technological trends, they are probably not going to be repaired (van den Berge *et al.*, 2023; Laitala *et al.*, 2021; Terzioğlu, 2021; Wieser and Tröger, 2018). Besides, there is a sceptical view of products people assume not to be repairable (Laitala *et al.*, 2021; Wieser and Tröger, 2018) due to a lack of information (van den Berge *et al.*, 2023). Conditions such as having leisure time and confidence in their abilities enable consumers

to participate in DIY repair (Rogers *et al.*, 2021). Also, if the repair is super simple and people can apply interesting methods using new technologies, they can feel more eager to try (Terzioğlu, 2021). Yet, consumers face obstacles such as the unavailability of spare parts and repair manuals, and the need for special tools (Laitala *et al.*, 2021; Rogers *et al.*, 2021; Terzioğlu, 2021); which could be much harder in the case of products with complex design (Rogers *et al.*, 2021; Terzioğlu, 2021). Designing a product with modularity might make the product easier to repair and allow the consumer to have an update to trends (Wieser and Tröger, 2018)

However, product repairability was one of the least important attributes noted by consumers in the case of a sports jacket (Fuchs and Hovemann, 2022). In another study, conducted with university students, it was demonstrated that younger generations were willing to pay more for smartphones with ecolabels attesting durability and repairability; nonetheless, durability was always preferred to repairability (Bigerna *et al.*, 2021). Parallely, in the case of professional repair, it is easier when consumers have a greater choice of repair service and a lower travel time to arrive at the workshop (Fachbach *et al.*, 2022). However, there is a lack of awareness of professional repair services (Bovea *et al.*, 2017; Rogers *et al.*, 2021) or sometimes there are no competent personal repair professionals in their region (Laitala *et al.*, 2021). Yet, even when they do exist, the waiting time for the repair can make consumers give up on repairing (Fachbach *et al.*, 2022), because they need to stay without their product, so it is more convenient to purchase a replacement one.

4.3. Sharing

As mentioned before, we only found one article on consumer behaviour regarding sharing business models, like short-term rental or long-term subscriptions, in Europe. In these circumstances, we decided to accept studies worldwide. According to a study on the adoption of use-oriented product-service systems, women are more prone to sharing, due to variables associated with a sustainable and healthy lifestyle (D'Agostin *et al.*, 2020).

4.3.1. Motivations and demotivations

People choose to share usually because the rental price is lower than the purchase, and they expect to have only a temporary use of the product (D'Agostin *et al.*, 2020). So, sharing gives them a sense of freedom. Additionally, there is a sense of convenience once users do not have to deal with repair and maintenance or with end-of-life management (Gulserliler *et al.*, 2022). Last, users note that sharing has a less solid waste generation and greenhouse emission (Gulserliler *et al.*, 2022). One of the reasons that prevent customers from adopting sharing is the pride of ownership (Gulserliler *et al.*, 2022). Also, in a study that analysed bicycles, baby clothing, cars, furniture, books, and housing, researchers noticed disgust regarding the idea of sharing, associated with the unawareness of whom they would be sharing the product with (D'Agostin *et al.*, 2020). Yet, a study showed that consumers have strong preferences for either buying or leasing, based more on strongly held beliefs (on disgust, pride of ownership, and convenience of leasing) than economic concerns. Pricing alone is unlikely to be effective in shifting substantial consumer demand from buying to leasing (Gulserliler *et al.*, 2022).

4.3.2. Enablers and disablers

Some product characteristics can facilitate the adoption of sharing once they give a better consumer experience: easy to clean; modifiable to fulfill different user's needs; high quality with long-term technical utility; performance and attractive appearance; easy maintenance with the possibility of changing parts that are more prone to wear and tear; highlights of previous use and product history; easy to package, carry, and transport; easy to use without extensive practice or experience, counting with the support of manuals; and easy to (re-)install and uninstall (He *et al.*, 2021; Selvefors *et al.*, 2019). In the case of peer-to-peer (P2P) sharing platforms, there are enabling factors, such as having consistent communication between lessees and lessors, and clear payment responsibility (He *et al.*, 2021). Parallely, environmental education with better commercial and non-commercial communication is fundamental, making younger people more sensitive to external stimuli influencing adoption, such as Facebook, Instagram, commercials, and news (D'Agostin *et al.*, 2020). All these elements should be combined with a better offer of use-oriented product-service systems (D'Agostin *et al.*, 2020). However,

consumers encounter difficulty in finding the service in their region (D'Agostin *et al.*, 2020). In the P2P platform context, some situations can discourage users, *e.g.*, incorrect product information, receiving incompatible products regarding plugs and ports, deficient arrangement on time and location, difficult communication, unpunctuality, and limited social interaction on online platforms (He *et al.*, 2021).

4.4. Take-back systems for product end-of-life

Economically active respondents demonstrate greater environmental awareness and are more likely to engage in disposal for recycling, which is probably explained by their cultural and living conditions, rather than income level (Ratay, 2022). Another study aimed to understand the correlation between green shopping and consumer participation in recycling (Cesarina Mason *et al.*, 2022). The results showed that among millennials, only individuals with high environmental concerns had their participation in recycling reinforcing the intention-behaviour link with socially responsible consumer behaviour.

4.4.1. Motivations and demotivations

People engage with take-back systems mostly due to altruistic motivations (de Morais *et al.*, 2021), mainly motivated by environmental concerns (Ratay, 2022). Yet, they can be motivated by wanting to declutter their homes or getting financial returns (*e.g.* vouchers) (Martinho *et al.*, 2017; Ratay, 2022). However, in a study in Germany, giving economic rewards had no effects; it suggested that in countries with tight norms but internalised recycling norms, in order to engage people, we must highlight free choices and avoid the impression of control (Yang, 2022). On the contrary, forgetfulness, laziness, and seeing no point in their actions are factors that disengage people from participating in take-back systems (Ratay, 2022). In addition, emotional attachment to the product can prevent the owner from disposing it (Bovea *et al.*, 2018). Some people also keep unused products to be able to have spare parts for the new equipment (Bovea *et al.*, 2018) and to use them as an alternative device (Martinho *et al.*, 2017; Wieser and Tröger, 2018). While one study said people seem to prefer to give their old products, such as smartphones, to their personal network rather than discard in the recycling take-back points (Martinho *et al.*, 2017), another study said the opposite (Wieser and Tröger, 2018).

4.4.2. Enablers and disablers

Convenience is essential to help people to pass from intention to action, which means pick-at-home options and dedicated recovery stations (Ratay, 2022). Also, helping people to realise that a product is not being used enough and should be passed on is crucial (Selvefors *et al.*, 2019). However, there is a lack of knowledge of return options (Martinho *et al.*, 2017; Ratay, 2022) associated with cultural factors and living conditions (Ratner *et al.*, 2021), related to not having the necessary infrastructure for application (*e.g.* collection points) (Ratay, 2022). Promoting better communication and the offer of discounts/cashback for old devices when buying new ones can be an enabler to incentive collection (Martinho *et al.*, 2017). Besides, products that are in bad condition have a lower chance of being taken to the collection points (Ratay, 2022). For example, household appliances and electronics are usually discarded in the domestic waste bin (Bovea *et al.*, 2018).

4.5. Upcycling and recycling

In this subsection, we discuss together the consumer behaviour on buying upcycled and recycled products due to the small number of articles that were found using the defined criteria.

4.5.1. Motivations and demotivations

Consumers who buy upcycled or recycled products do so because of altruism and a positive attitude towards circular products (de Morais *et al.*, 2021; Testa *et al.*, 2022). However, both upcycled and recycled products might be seen as low quality or substandard (Ratner *et al.*, 2021; Singh *et al.*, 2019). Also, in the case of upcycled products, customers see them as too expensive (Singh *et al.*, 2019), while recycled products might be impacted by high plastic concerns, *i.e.*, people avoid buying plastics in general, including recycled products (Testa *et al.*, 2022).

4.5.2. Enablers and disablers

Regarding upcycled products, it is important to raise awareness about upcycling, but also provide a better purchasing experience, for example, having a better availability of upcycled goods (Singh *et al.*, 2019). Finding affordable upcycled products today is an obstacle for consumers today. Concerning recycled products, clients are more inclined to buy them when they have a positive quality perception of the product (Testa *et al.*, 2022). Environmental awareness is also fundamental to incentivize people towards this direction. Yet, in a study about sports goods, researchers found that even though “recycled material” was the most significant green attribute (excluding durability, which might be related to the idea of quality rather than sustainability), it comes in the second plan after other attributes, such as functionality, price, and quality (Fuchs and Hovemann, 2022).

5. Conclusion

In this paper, we conducted a systematic literature review on consumer behaviour in the context of circular economy, mainly in Europe. We identified twenty-eight relevant articles, and we categorised them using a framework of circular strategies (Lopez *et al.*, 2023). Then, we defined what were the internal (motivations and demotivations) and external (enablers and disablers) factors impacting consumer behaviour. There are common factors in consumer behaviour that affect CBMs independently of their type. Motivations are mostly economic and environmental. Consumers will opt for circular alternatives when they are cheaper than purchasing a new product in the traditional linear economy logic; whereas they also aim to avoid overconsumption and increase the product lifespan.

Yet, external factors, such as lack of accessibility to circular services, complex processes, lack of information, unfit products to circularity, and bad product conditions, discourage consumers engagement with circularity. On the other hand, awareness and information, seamless and convenient business processes, and products with design for circularity (for durability, for repair, for sharing, for disassembly, for recycling) have an enabling effect. Design for circularity can impact the activity of designers and engineers. Considering the importance of integrating consumer behaviour in the development of a product, some challenges are presented as different CBMs require different product characteristics related to consumer behaviour. For example, one of the repair’s enablers is product attachment, while CBMs with multiple usage cycles and end-of-life take-back systems require design that prevents emotional attachment so that the product can be reintroduced into the circular loops. Considering that ideally, the product should pass by all circular loops to enjoy the most of its value (being reused/shared, repaired, and recycled), how should we deal with these contradictory requirements?

This paper provides a better view of consumer behaviour as a whole in the circular economy. It provides a tool for governmental and private initiatives to develop circular services and products that are more adapted to the human perspective, being able to act upon the external factors, as they better understand the internal aspects that are subjective to people. In future works, it would be interesting to test this transversal approach to consumer behaviour in circular economy on the field, for example, in an industry that integrates different product types (textiles, hard equipment, electronics), such as the sports industry.

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