Drivers and Barriers towards Circular Economy: A Systematic Review on Consumer Perspective in the Consumer Journey

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Abstract

Circular economy (CE) has received considerable attention from academia, practitioners and policymakers as a potential solution for the current context of social, food and economic crises, environmental pollution, the continuous decrease of non-renewable resources and continuous increase of the global population. Although the importance of consumer as an active agent to circular process success, studies that address consumer behavior in the context of CE are still limited. Thus, there are relevant gaps in the CE literature, as studies so far have largely neglected the unique customer perspective on the drivers and barriers to CE adoption, particularly in relation to each stage of the customer journey. In this context, through a systematic literature review, this study aims to identify drivers and barriers towards CE related to consumer and classify them in the consumer journey. As results, it was possible to analyze and classify the drivers and barriers towards CE related to consumer in the three phases in the consumer journey: pre-purchase, purchase and post-purchase. In the pre-purchase phase, it identified drivers and barriers related to consumer awareness, knowledge, perceptions, thrill, needs and interest, pressure from community, global climate and consumer' environmental awareness. The drivers and barriers classified on purchase phase are in regard to consumer behavior, preferences, interest, acceptance and demand, and also consumer behavior in the buying process, price, customer pressure and customer himself. Finally, in the post-purchase phase, only drivers were found, involving customer loyalty and satisfaction, reusing and recycling.

Keywords: circular economy, consumer, drivers, barriers, consumer journey

1. Introduction

Inserted in a context of social, food and economic crises, environmental pollution, the continuous decrease of non-renewable resources and continuous increase of the global population, there is growing awareness of social responsibility, sustainability and concern for the environment (FIBL & IFOAM, 2021), which pressures scholars and entrepreneurs to find new approaches to production and consumption (Lakatos, Dan, Cioca, Bacali, & Ciobanu, 2016). The actual consumption patterns are part of the roots of the environmental crisis, and the criticism of consumerism came to be seen as a contribution to the construction of a sustainable society (Portilho, 2010). In this way, the concept of circular economy (CE) has captured considerable attention from academia, practitioners and policymakers as a potential solution for the current competitive scenario (Govindan & Hasanagic, 2018). Adopting the CE allows for reducing the consumption of raw materials, improve the brand image, encourage the emergence of new demands for services and new potential markets, reduce the costs and risks of emissions and waste and increase the potential to attract new investors (Korhonen, Honkasalo, & Seppälä, 2018).

In this sense, CE keeps the resources in a closed-loop supply chain, replacing the traditional linear economy of 'take-make-consume-dispose of' into a circular system including reduction, maintenances, repair, reusing, refurbishing, remanufacturing and recycling to ensure little or zero generation of waste (Sehnem & Pereira, 2019; Esposito, Sessa, Sica, & Malandrino, 2020). This principle operates in the three economy levels: micro level (product, consumers), meso level (eco-industrial parks) and macro level (city, state, country). In this perspective, the present study focuses on consumers at the micro level. Ellen MacArthur Foundation (2019) mentions that all parties involved in the circular process have a role to play in the construction of a CE, and all principal actors need to contribute by working collaboratively. Borrello, Caracciolo, Lombardi, Pascucci and Cembalo (2017)

stress on the importance of the active participation of all supply chain actors to develop CE strategies. In this way, to circular process success, the consumer becomes an active agent very important (Kuah & Wang, 2020; Sijtsema, Snoek, Van Haaster-de Winter & Dagevos, 2020). Therefore, analysing the consumer perspective is very important for the dissemination of circular business models (Singh & Giacosa, 2019).

Studies address consumer behaviour in the context of CE (Lakatos et al., 2016; Muranko, Andrews, Newton, Chaer & Proudman, 2018; Confente, Scarpi & Russo, 2020; Kuah & Wang, 2020; Lehner, Mont, Mariani, & Mundaca, 2020; Sijtsema et al., 2020), but research in the area is still limited. There is a lack of research on consumption behaviour regarding CE (MacArthur, 2013). Consumer awareness, interest and involvement in CE are still low (Sijtsema et al., 2020). The need for change in production and consumption patterns, ensuring sustainable production and consumption patterns, is mentioned in one of the sustainable development goals of the Agenda 2030 (2015).

According to Camacho-Otero, Boks, and Pettersen (2019), researchers continue to work on understanding consumers and user acceptance factors in the context of CE. Singh and Giacosa (2019) suggest exploring consumer behaviour not considered yet in the CE literature Borrello et al. (2017) suggest that the knowledge about the willingness of consumers to participate in the CE is low. In this sense, the authors suggest studies investigating drivers and barriers of consumer choices to participate in a closed cycle. Several studies have already examined the drivers and barriers to CE adoption (Govindan & Hasanagic, 2018; Ranta, Aarikka-Stenroos, & Mäkinen, 2018b; Tura et al., 2019). However, these studies focus on the broad aspects of CE barriers and drivers rather than specifically on individual domains of consumer behaviour and understanding of their journey. In the past few years, the concept of consumer journey, the process the consumer goes through during the purchase process (Steinhoff & Zondag, 2021) has been widely adopted by both academics and practitioners, to understand complex customer behaviours and to improve the customer experience (Tueanrat, Papagiannidis, & Alamanos, 2021).

Thereby, even though in recent years there has already been an attempt to provide greater customer care in CE (Kuah & Wang, 2020; Ta, Aarikka-Stenroos, & Litovuo, 2022; Pasqualotto & Menezes, 2023) and to involve customers in CE implementation (Urbinati, Chiaroni, & Chiesa, 2017), the focus of studies on CE has been in business models and public policies, almost neglecting studies based on the customer's perspective, even recognizing the important role that the customer plays. Yet, Ta et al. (2022) indicates that the change from linear to circular systems changes the nature and many relevant characteristics of products and, consequently, alters the way the customer behaves. Thus, there are relevant gaps in the CE literature, as studies so far have largely neglected the unique customer perspective on the drivers and barriers to CE adoption, particularly in relation to each stage of the customer journey. In this sense, this study starts from a new theoretical lens, including the customer journey in the analysis of drivers and barriers to the adoption of CE. In this context, through a systematic literature review, this study aims to identify drivers and barriers towards CE related to consumer and classify them in the consumer journey.

This article makes the following contribution to the literature. First, it aims to contribute to the research of drivers and barriers to CE adoption from the customer's perspective. In a way, the studies already pointed to the importance of the consumer in the CE, however, few studies until now have focused exclusively on the drivers and barriers from the individual customer's perspective. Second, this study introduces the customer journey in an unprecedented way in this analysis of drivers and barriers to CE. As the customer behaves differently at each stage of the customer journey, understanding the drivers and barriers within the journey will make it easier for companies to take specific and differentiated actions to facilitate CE adoption. Thus, in the same line as Dellaert (2019), we understand that marketing can focus on new functions that can support active consumers in a CE business model, developing new consumer roles in CE and expanding the concept of the consumer journey. Finally, it proposes a categorization of the drivers and barriers identified in the customer journey. This study results can still help companies from different areas in the development and implementation of circular practices and processes, promoting sustainability. Also, enables greater consumer synergy within the circular chain. It also helps in the transition from linear economy to CE, more efficient in resources, generating greater competitiveness for the company and advancing towards sustainable economies (García-Quevedo, Jové-Llopis, & Martínez-Ros, 2020), meeting the Agenda 2030 (2015).

2. Literature Review

2.1 Circular Economy

The CE concept, created primarily by practitioners, the business community and policymakers, is currently promoted by the European Union, a number of national governments and various business organizations around

the world (Korhonen et al., 2018), and is paying attention a lot as potential solution for the current competitive scenario (Govindan & Hasanagic, 2018).

CE focuses on maintenance, reuse, redistribution, remanufacturing, recycling, circularity and resources optimization, the use of clean energy and process efficiency, following the basic premise of zero waste (Sehnem & Pereira, 2019). The concept involves careful management of two material flows, as described by McDonough and Braungart (2010): biological nutrients, designed to re-enter the biosphere safely and build natural capital, and technical nutrients, designed to circulate in high quality without entering the biosphere. CE emphasizes the biological cycle and technical cycle of materials (Sehnem & Pereira, 2019).

CE follows three principles: (1) designing waste and pollution, (2) keeping products and materials in use, and (3) regenerating natural systems (Ellen MacArthur Foundation, 2019). It makes sense to extract resources from nature to transform them into a product that can be used not just once, but many times, thus reducing the need for virgin input extraction and waste production (Korhonen et al., 2018). Designing waste, keeping products and materials in use, and regenerating natural systems create vital opportunities for economic growth, creating jobs and benefiting society (Ellen MacArthur Foundation, 2020).

2.2 Consumer in the Circular Economy Context

Consumers are at the center of the value chain, and in the main target of the product's supply chain and the starting point of the reverse supply chain (Maitre-Ekern & Dalhammar, 2019). Consumers are increasingly important in the CE (Pasqualotto, Menezes, & Souto, 2022; Sijtsema et al., 2020). Their engagement in the circular process is very important to be successful (Kuah & Wang, 2020). Moreover, "consumers can be seen as important agents in the change towards more sustainable consumption practices" (Cassol & Schneider, 2015, p.148), corroborating with Portilho (2010) when he affirms that consumers, individually or organized into associations, can be seen as one of the main actors for sustainable consumption. According to Testa, Iovino, and Iraldo (2020) and Sordi, Perin, Petrini, and Sampaio (2018), consumer understanding and engagement are needed to direct them to more environmentally conscious purchases.

In this sense, a new and active role is required from consumers (Sijtsema et al., 2020). Therefore, according to Agenda 2030 (2015), the consumption behaviour must be changed to encourage consumers to continue sustainable consumption. It is hoped that the CE can bring consumer changes (Maitre-Ekern & Dalhammar, 2019). The authors suggest that policy and legislation are required to encourage consumers and make them feel more confident about making more sustainable choices.

Many studies in the literature identify a series of drivers for the consumer which can encourage the adoption of a CE: consumers' environmental awareness (Govindan & Hasanagic, 2018; Barbaritano, Bravi, & Savelli, 2019), consumers' awareness of green initiatives (Moktadir, Rahman, Rahman, & Paul, 2018; Jia, Yin, Chen, & Chen, 2020) and consumers' preference and demand for circular products (Gue, Ubando, Promentilla, & Tan, 2019), which, in turn, end up putting pressure on organizations to develop CE (Govindan & Hasanagic, 2018). In addition, there is a global climate pressure and ecological scarcity of resources (Moktadir et al., 2018) and a community pressure to develop the CE (Moktadir et al., 2018; Jia et al., 2020).

In this way, adopting CE allows companies to improve their relationship with their customers and create customer loyalty (Agyemang et al., 2019). It can also increase consumer satisfaction (Gusmerotti et al, 2019), improve brand reputation with consumers (Masi, Day, & Godsell, 2017), and increase their sales, especially among consumers aware of sustainability and related issues (Barbaritano et al., 2019).

However, it is still important to investigate the drivers behind consumer choice regarding their genuine commitment to closed loops (Borrello et al., 2017). Convincing the consumer to get involved seems to be the biggest challenge to CE development (Sijtsema et al., 2020). In this sense, the study results from Borrello et al. (2017) show how consumers could be involved in closed loops inspired by CE principles.

Conversely, consumers are not viewed as influential market players, being considered the weakest part of the contract by legislators, volatile and complex (Maitre-Ekern & Dalhammar, 2019). Furthermore, consumer awareness, their interest and involvement in CE are still considered low (Sijtsema et al., 2020).

If from one side, there are many studies in the literature showing drivers for the consumer that can encourage them to adopt the CE, many barriers are also mentioned by various authors. Govindan and Hasanagic (2018) and Mangla et al. (2018) discussed barriers from the perspective of the consumer in the supply chain and identified the following: consumers' knowledge and awareness to refurbishment, consumers' perception towards components that are reused is bad and therefore it is more difficult to implement CE, lack of the thrill of newness by consumers is high, and a lack of customer awareness and participation around customer circular supply chain.

Farooque, Zhang, and Liu (2019) also covered barriers to circularity in the supply chain. They mention lack of market preference and pressure from both customers and consumers as barriers to CE. De Jesus and Mendonça (2018), Campbell-Johnston et al. (2019) and Jabbour et al. (2020) mentioned consumer behaviour as a barrier, and Singh and Giacosa (2019) mentioned beliefs and attitudes. Also, there is a lack of interest, agreement to or awareness of the CE (Kirchherr et al., 2018; Mangla et al., 2018; Ormazabal et al., 2018; Kumar et al., 2019; Piyathanavong et al., 2019).

Consumers have roles to play in the CE like purchasers, supporters, repairers, sellers, sharers, collaborators, and waste disposers. Therefore, they can contribute significantly to the circular process by purchasing more durable goods, willing to repair items and disposing of waste properly (Maitre-Ekern & Dalhammar, 2019).

2.3 Consumer Journey

The consumer behaviour on purchase process has been focused on various studies, especially in the marketing area. To understand complex consumer behaviours and insights into their experiences, the consumer journey has become an increasingly important concept (Tueanrat et al., 2021).

Over several years, consumer behaviour research has investigated how consumers undergo the purchase decision process and the customer journey. In this way, the Marketing Science Institute (MSI) (2020) has defined understanding the customer journey as one of its top research priorities. In line with traditional definitions (Lemon & Verhoef, 2016), we refer to a customer journey as the process the consumers goes through during three stages of the purchase process (pre-purchase, purchase, and post-purchase) (Lemon & Verhoef, 2016; Grewal & Roggeveen, 2020) characterized by specific touchpoints that constitute the overall customer experience (Steinhoff & Zondag, 2021).

The pre-purchase stage encompasses all aspects that precede the purchase stage, including social norms, social and external pressures that the consumers face, like community pressure, global climate pressure, and ecological pressure. It also encompasses internal aspects like perceptions, interest, and awareness (Steinhoff & Zondag, 2021; Tueanrat et al., 2021). This stage includes the customer experience from the beginning of the impulse recognition to consideration of satisfying that impulse with a purchase (Lemon & Verhoef, 2016).

The purchase stage represents the period during which the customer evaluates and decides the core offering of the company, and encompasses the buying process, preferences, acceptance, aspects of decision, demand for products (Steinhoff & Zondag, 2021; Tueanrat et al., 2021). It is characterized by behaviour such as choice, and it has received a significant amount of attention in the marketing literature to influence the purchase decision (Lemon & Verhoef, 2016).

The post-purchase stage encompasses the aspects that follow the purchase stage, including satisfaction, loyalty, engagement, reusing, repurchase (Steinhoff & Zondag, 2021; Tueanrat et al., 2021).

3. Method

To achieve the objective of identifying drivers and barriers towards CE related to consumer and classify them in the consumer journey, the method of systematic literature review was used, as suggested by Snyder (2019). The method used consists of a content analysis of selected studies based on specific criteria defined by the authors. This study followed four stages according to Wolfswinkel, Furtmueller and Wilderom (2013) and Flores and Jansson (2022).

3.1 Stage 1- Selection of Database

The main objective of this paper is to identify drivers and barriers towards CE related to consumer and classify them in the consumer journey. As a starting point, we first identified the database to be used. Following Paul and Criado (2020), we decided to use Scopus, as it captures more articles than Web of Science and it includes the main journals, thus providing a more comprehensive and relevant set of articles that could potentially be relevant, even considering that this decision may have resulted in the unintentional exclusion of other pertinent papers listed in other databases. Scopus is a consolidated database that is widely used in systematic review studies (e.g., Masi et al., 2017; Govindan & Hasanagic, 2018; Galvão et al., 2020; Tueanrat et al., 2021; Pasqualotto, Shultz & Menezes, 2022; Pasqualotto, Callegaro-de-Menezes & Schutte 2023).

3.2 Stage 2 – Selection of Keywords and Search for Studies According to Clear Criteria

After selecting the database, we needed to determine the keywords for searching relevant papers. The expressions used when searching in the title, abstract, and keyword fields were "circular economy" AND "drivers" OR "barriers". We have not included synonyms, as they are well-established terms used in academia. We considered published papers and articles in press and limited the results to academic/scientific journals

(excluding conference proceeding), full paper format (excluding book chapter, review, and book), and English language articles only. This produced a list of 532 papers for further analysis.

3.3 Stage 3 – Selection of Articles

To select the articles to be reviewed and included in our paper, we applied the following criteria: (1) the abstracts of the 532 selected articles were analysed. As inclusion criteria, they should be theoretical or empirical articles that presented as a result some list of drivers and/or barriers. Based on this criterion, 435 articles were excluded, and 97 articles were selected (included). (2) The 97 articles were read in their entirety to verify that the list of drivers and/or barriers were related to the adoption of the circular economy, and not to adjacent fields that were not of interest to our study, such as recycling, sustainability, green marketing etc. Thus, 44 articles were excluded, and 53 articles were included. (3) Finally, the last criterion used was that the articles should have drivers and/or barriers with a focus on the consumer aspect and not company or organizational perspectives. Thus, articles that contained drivers and/or barriers related to consumer, customer, or user were selected. Based on this criterion, 29 articles were excluded, resulting in a final sample of 24 articles used in our paper, which included 15 drivers and 24 barriers.

3.4 Stage 4 – Classification and Categorization

From the final set of 15 drivers and 21 barriers related to the consumer, extracted from 24 articles, data was analysed using the content analysis technique (Bardin, 2016). Two analyses were applied, as follows.

In the first analysis (classification), each driver and barrier were analysed by two authors to classify the drivers and barriers in one of the three phases of journey consumer below, following Tueanrat et al. (2021):

•   **Pre-purchase phase** involves the awareness, external pressure, knowledge, perceptions, thrill and needs.

•   **Purchase phase** involves consumer behavior, preferences, interest, acceptance and demand. Also, include the consumer in the buying process, price, customer pressure and customer himself.

•   **Post-purchase** phase involves loyalty, satisfaction, reusing and recycling.

Even some limits of the drivers/barriers could be classified in more than one stage, the authors consulted the original papers to choose the stage more appropriate. The classification agreement level between authors was above 90%. For cases in which there were disagreements, the authors analysed jointly until reaching a consensus.

In the second analysis (categorization), based on the categories and groupings from the literature, according to Kirchherr et al. (2018), Kumar et al. (2019), Moktadir et al. (2018), and Agyemang et al. (2019), the drivers and barriers to CE on consumer perspective extracted from the analysed articles were categorized. Thus, four specific categories were organized for grouping the data, as follows:

•   **Consumer Awareness (CA):** include drivers and barriers related to the consumer awareness, considering the act of making sure the consumers are aware of the information about circular economy, circular chain, green products, green initiatives, environmental issues, refurbishment, and perceptions.

•   **Consumer Preferences (CP):** include drivers and barriers related to the consumer preferences, considering the fact of people liking or wanting one thing more than another, i.e., consumer prefers (or not) or has interest in (or not) or acceptance of (or not) circular and green products, environmental, reused, recycled or remanufactured products, and also consumer behaviour.

•   **Consumer Demand (CD):** include drivers and barriers related to consumer demand for goods and services that comes from individuals rather than companies. Consumer demand is defined as the willingness and ability of consumers to buy a quantity of goods and services in each period of time, or at a given time. Included in this category are consumer demand for sustainability and related issues, circular and green products.

•   **External (E):** include drivers and barriers related to the consumer that comes from the external context (external pressure) rather than individual one, for example, society, other consumers, global climate pressure, ecological scarcity of resources, price, brand, loyalty, satisfaction, reusing and recycling materials, and packing.

It should be noted that the limit between some categories to group the variables is very tenuous. When this occurred, the authors discussed each driver and barrier and reached a consensus on where to classify, based on the conceptual definition of each category.

The flowchart in figure 1 presents the research process.

4. Results

The results of the literature review of drivers and barriers are presented below.

Table 1 presents the 24 papers analysed in this study, indicating the context/sector and country/region in which they were conducted. Table 1 also shows the methods used and whether drivers and/or barriers were investigated.

It is observed in table 1 that there is a greater number of studies that analysed barriers compared to drivers. The studies were carried out in different contexts/sectors and in different countries/regions. It was not observed any author who predominated publications in the area. There is also no predominance of any methodology used.

4.1 Drivers for the Circular Economy on Consumer Perspective

Considering a consumer perspective, various studies have pointed out drivers to adopt the CE. Govindan and Hasanagic (2018) examined the drivers in their study to understand the motivational factors for implementing CE in the supply chain. Moktadir et al. (2018) call drivers a facilitator in their study. Motivations for CE practices and facilitating factors for the implementation of circular practices are raised in the study by Barbaritano et al. (2019). In the investigation by Jabbour et al. (2020), CE motivators and CE drivers were considered synonymous. In view of this, it is observed that there is no unanimous definition in the literature on drivers. What is known is that all expressions and nomenclatures used in the literature when it comes to drivers express driving forces leading companies and consumers to adopt CE. The boundaries between the definitions are not clear, there are intersections between the concepts.
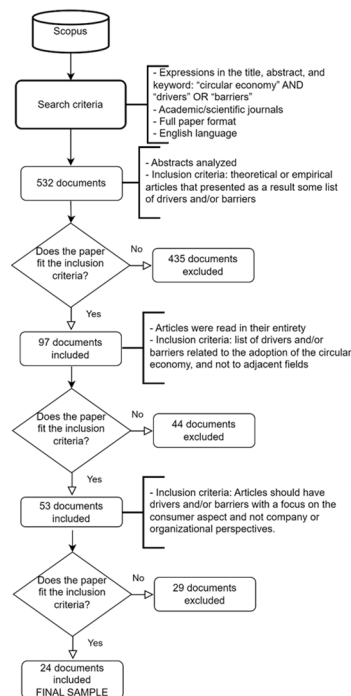

Figure 1. Flowchart of the research process

The results show a list of drivers to CE on consumer perspective that were analysed and classified in the consumer journey phases, and categorization. In the first phase, pre-purchase, it was observed, that there is consumer awareness regarding green initiatives (Moktadir et al., 2018; Jia et al., 2020) and to environmental issues (Barbaritano et al., 2019), and these aspects can place a pressure on the organizations to develop CE in supply chain (Govindan & Hasanagic, 2018). In addition, there is a global climate pressure and ecological scarcity of resources by consumers (Moktadir et al., 2018) and a community pressure to CE development (Moktadir et al., 2018; Jia et al., 2020).

Table 1. Studies analyzed: Drivers and Barriers to CE on consumer perspective

Authors	Context/Sector and/or Country/Region	Methodology	Drivers	Barriers
Govindan and Hasanagic (2018)	Supply Chain	Systematic review	X	X
Ranta et al. (2018a)	China, USA and Europe	Multiple-case research design		X
Moktadir et al. (2018)	Leather Industries in Bangladesh	Experts and academics. Then they have utilized GTMA for developing the module	X	
Agyemang et al. (2019)	Pakistan's Automobile Industry	Qualitative and quantitative methods using survey instrument and interviews	X	
Tura et al. (2019)	Firms from Finland	Qualitative method and multiple-case study approach		X
Barbaritano et al. (2019)	Italian luxury Furniture Sector	Qualitative multiple case study	X	
Jia et al. (2020)	Textile and Apparel Industry	Systematic review	X	
Jabbour et al. (2020)	Brazilian firms	Survey-based primary data was gathered from 86 Brazilian industrial companies	X	
Mangla et al. (2018)	Supply Chain in India	Interpretive Structural Modelling (ISM) and MICMAC approach		X
Scarpellini et al. (2019)	Spanish Region of Aragon	Case study and semi-structured (in-depth) interviews		X
Gue et al. (2019)	Business Sectors in the Philippines	Case study	X	
Mahpour (2018)	Construction and Demolition (C&D)	Experts in sustainable C&D projects. TOPSIS method was applied to prioritize the barriers		X
De Jesus and Mendonça (2018)		Literature review	X	X
Kirchherr et al. (2018)	European Union	Survey and semi-structured interviews		X
Ormazabal et al. (2018)	SMEs in Spain	Survey		X
Milios et al. (2019)	Scandinavian Maritime Sector	Semi-structured interviews		X
Gusmerotti et al. (2019)	Italian Manufacturing Companies	Survey and a cluster analysis.	X	
Camacho-Otero et al. (2019)	Fashion Sector	Literature reviews and case studies		X
Campbell-Johnston et al. (2019)	Netherlands	Document analysis and interviews		X
Farooque et al. (2019)	Food Supply Chains in China	Fuzzy decision-making trial and evaluation Laboratory (DEMATEL) method		X
Masi et al. (2017)	Supply Chain	Systematic literature review (n = 77)	X	X
Galvão et al. (2018)		Bbibliometric, networks and content analysis.		X
Shao et al. (2020)	Chinese Automobile Industry	The cross-case analysis. The data are collected from semi-structured interviews and documents		X
Kumar (2019)	Manufacturing Firms in UK and in EU	Survey		X

In the purchase phase, there is an increasing demand and purchase among consumers aware of sustainability and related issues (Barbaritano et al., 2019). In addition, there is a consumer preference (Jabbour et al., 2020) and a demand from the consumer for circular products (Gue et al., 2019). Consumer preferences are shifting (De Jesus & Mendonça, 2018). Consumers buy more green products due to brand reputation (Masi et al., 2017).

In the post-purchase phase, there is an opportunity to enhance the customer supplier relationship and to build loyalty with their customers (Agyemang et al., 2019), and increase customer satisfaction (Gusmerotti et al., 2019). Furthermore, consumers can help the circular process by reusing and recycling materials and packaging (Jia et al., 2020), corroborating with Sehnem and Pereira (2019).

Regarding categorization, the predominance of the CA category is observed in the initial stage (pre-purchase). In the purchase phase, the CD and CP categories stand out. Finally, in post-purchase, it is dominated exclusively by the E category.

The summary of drivers to CE on consumer perspective classified in the consumer journey phases and the categorization is presented in table 2.

4.2 Barriers to the Circular Economy on Consumer Perspective

The literature has pointed out several barriers to CE adoption from a consumer perspective. Kumar et al. (2019) and Masi et al., (2017) treat barriers as inhibitors to CE implementation, and Ranta et al. (2018a) consider CE barriers as CE implementation difficulties.

The results show a list of barriers to CE on consumer perspective that were analysed and classified in the consumer journey phases and categorized. In the pre-purchase phase, it was observed that there is a lack of consumer awareness (Kirchherr et al., 2018; Mangla et al., 2018), interest in the environmental (Ormazabal et al., 2018) and participation on circular supply chain (Mangla et al., 2018). Govindan and Hasanagic (2018) mention also that the lack of the thrill of newness by consumers is high. According to Tura et al. (2019), the consumer needs are uncertain. Consumers' knowledge and awareness of refurbishment, and consumers' perception towards components that are reused is not good, and therefore it is more difficult to implement CE as mentioned by Govindan and Hasanagic (2018). In this sense, Shao et al. (2020) also mention consumer perception of the quality of remanufactured products.

In the purchase phase, the price increase is not appreciated by consumers (Scarpellini el al., 2019), the consumer behaviour is rigidly (De Jesus & Mendonça, 2018), the green buying behaviour by consumers is uncertain (Masi et al., 2017), and the customer himself is considered a barrier to CE implementation (Galvão et al., 2018).

Still in the purchase phase, contradicting with Ellen MacArthur Foundation (2019; 2020), that mentions keeping products and materials in use, customers prefer new products, instead of reused or remanufactured components (Milios et al., 2019), user prefers new construction materials over reused/recycled ones (Mahpour, 2018), customers prefer new products (Ranta et al., 2018a), there is a low customer acceptance of remanufactured products (Kumar et al., 2019), there is a cultural barrier regarding consumer behaviour towards secondary/circular products and a lack of consumer and user acceptance of circular offerings (Camacho-Otero et al., 2019). Kirchherr et al. (2018) and Kumar et al. (2019) say that there is a lack of customer interest in the CE, and a lack of pressure from both customers and consumers according to Farooque et al. (2019).

There are no barriers classified on the post-purchase phase in the study results.

Table 2. Summary of Drivers yo CE on Consumer Perspective Classified in the Consumer Journey Phases and Categorization

Authors	Drivers	Consumer Journey Phases			Category
		Pre-purchase	Purchase	Post-purchase	
Govindan and Hasanagic (2018)	Consumers' environmental awareness places a pressure on the organizations to develop CE in supply chain	X			CA
Moktadir *et al.* (2018); Jia *et al.* (2020)	Customer awareness to green initiatives	X			CA
Barbaritano *et al.* (2019)	Adequate degree of awareness about environmental issues among consumers	X			CA
Moktadir *et al.* (2018)	Global climate pressure and ecological scarcity of resources by consumers	X			E
Moktadir *et al.* (2018); Jia *et al.* (2020)	Community pressure	X			E
Barbaritano *et al.* (2019)	Increasing demand and purchase among consumers aware of sustainability and related issues		X		CD
Gue *et al.* (2019)	Demand from the consumer for circular products		X		CD

Jabbour *et al.* (2020)	Consumer preferences	X		CP
De Jesus and Mendonça (2018)	Shifting consumer preferences	X		CP
Masi *et al.* (2017)	Consumers buy more green products due to brand reputation	X		E
Agyemang *et al.* (2019)	Opportunity to enhance the customer supplier relationship and to build loyalty with their customers		X	E
Gusmerotti *et al.* (2019)	Increase customer satisfaction		X	E
Jia *et al.* (2020)	Reusing and recycling materials and packaging		X	E

Note. CA=consumer awareness; CP=consumer preferences; CD=consumer demand; E=external.

Regarding categorization, there is a predominance of the CA category in the pre-purchase phase and the CP category in the purchase phase.

The summary of barriers to CE on consumer perspective classified in the consumer journey phases and categorization is presented in table 3.

5. Discussion

The literature on drivers and barriers to CE adoption from a consumer perspective is currently fragmented. This study aimed to present these drivers and barriers and position them in the customer journey. Our review provides an overview of what we currently know and what we need to advance in future research. We demonstrate that there is a lack of focus on the consumer aspect of CE adoption, highlighting the need for more studies on what motivates and what prevents consumers from participating in CE. Considering the list of drivers and barriers from the analysed articles, it was possible to analyse them and classify them in the three phases in the consumer journey: pre-purchase, purchase and post-purchase (Tueanrat et al., 2021).

Table 3. Summary of Barriers to CE on Consumer Perspective Classified in the Consumer Journey Phases and Categorization

Authors	Barriers	Consumer Journey Phases			Category
		Pre-purchase	Purchase	Post-purchase	
Govindan and Hasanagic (2018)	Consumers' knowledge and awareness to refurbishment	X			CA
Govindan and Hasanagic (2018)	Consumers' perception towards components that are reused is bad, and therefore it is more difficult to implement CE	X			CA
Govindan and Hasanagic (2018)	Lack of the thrill of newness by consumers is high	X			CP
Tura *et al.* (2019)	Lacking or uncertain customer needs	X			CD
Mangla *et al.* (2018)	Lack of customer awareness and participation around customer circular supply chain	X			CA
Kirchherr *et al.* (2018)	Lacking consumer awareness	X			CA
Ormazabal *et al.* (2018)	Lack of customer interest in the environmental	X			CP
Shao *et al.* (2020)	Local consumer perception of the quality of remanufactured products	X			CA
Scarpellini *et al.* (2019)	Price increase not appreciated by consumers		X		E
Milios *et al.* (2019)	Customers prefer new, instead of reused or remanufactured components		X		CP
Mahpour (2018)	User preference for new construction materials over reused/recycled ones		X		CP
Ranta *et al.* (2018a)	Customers prefer new products		X		CP
Kumar *et al.* (2019)	Low customer acceptance of remanufactured products		X		CP
Camacho-Otero *et al.* (2019)	Cultural: consumer behavior towards secondary/circular products		X		CP
Camacho-Otero *et al.* (2019)	lack of consumer and user acceptance of circular offerings		X		CP
De Jesus and Mendonça (2018)	Rigidity of consumer behavior		X		CP

Kirchherr *et al.* (2018)	Lacking consumer interest	X	CP
Kumar *et al.* (2019)	Lack of customer interest	X	CP
Masi *et al.* (2017)	Green buying behavior by consumers is uncertain	X	CD
Farooque *et al.* (2019)	Lack of pressure from both customers and consumers	X	E
Galvão *et al.* (2018)	Customer	X	CP

Note. CA=consumer awareness; CP=consumer preferences; CD=consumer demand; E=external.

The first results of the study show that it identified more barriers in the literature than drivers towards CE related to consumers, and more drivers and barriers inserted in the purchase phase the consumer journey.

Secondly, the results were summarized by phase in the consumer journey. In the first phase in the consumer journey – the pre-purchase phase – it was identified drivers related to the consumer awareness to green initiatives and environmental issues (Moktadir et al., 2018; Barbaritano et al., 2019; Jia et al., 2020), pressure from community (Moktadir et al., 2018; Jia et al., 2020), and global climate and consumer' environmental awareness (Govindan & Hasanagic, 2018; Moktadir et al., 2018). As barriers, it was identified lack of consumer awareness, interest in the environmental and to participate on circular supply chain, and thrill of newness (Govindan & Hasanagic, 2018; Kirchherr et al., 2018; Mangla et al., 2018; Ormazabal et al., 2018). The consumer needs are uncertain (Tura et al., 2019), and there is not a positive perception by consumers regarding refurbishment, reused and remanufactured products (Govindan & Hasanagic, 2018; Shao et al., 2020).

In the second phase in the consumer journey – the purchase phase – drivers regarding increasing demand and purchase among consumers aware of sustainability and related issues (Barbaritano et al., 2019), consumer preference and shifting preferences (De Jesus & Mendonça, 2018; Jabbour et al., 2020), demand for circular products (Gue et al., 2019) and green products due to brand reputation (Masi et al., 2017) was identified. From the other side, barriers also were seen in the literature to the purchase phase related to price increasing (Scarpellini et al., 2019), rigidity and uncertain consumer behaviour in the buying process (Masi et al., 2017; De Jesus & Mendonça, 2018), lack of customers interest and pressure from them (Kirchherr et al., 2018; Farooque et al., 2019; Kumar et al., 2019). Contradicting Ellen MacArthur Foundation (2019; 2020), consumers prefer new products and materials instead of reused, remanufactured or recycled (Mahpour, 2018; Ranta et al., 2018a; Milios et al., 2019). Furthermore, there is not a good consumer acceptance of remanufactured and circular products (Camacho-Otero et al., 2019; Kumar et al., 2019).

In the third phase in the consumer journey – the post-purchase phase – drivers relate to enhance the customer supplier relationship, to build loyalty with their customers, and increase customer satisfaction (Agyemang et al., 2019; Gusmerotti et al., 2019). Additionally, consumers can help the circular process by reusing and recycling materials and packaging (Jia et al., 2020). Barriers were not classified in this phase.

Despite the various studies that have investigated CE drivers and barriers (Govindan & Hasanagic, 2018; Ranta et al., 2018b; Tura et al., 2019), our study is the first to have as a central objective to investigate the drivers and barriers for CE adoption solely from the customers' perspective. Thus, our findings provide a new perspective on micro (customer) level drivers and barriers rarely investigated in CE studies that present a concentration of studies at a meso (business models) or macro (culture, policies and environment) level (Ta et al., 2022; Ranta et al., 2018b; Kuah & Wang, 2020).

In addition, our study contributes to the positioning of drivers and barriers in the customer journey. Our results explain, in an unprecedented way, how each driver and each barrier is positioned at each stage of the customer journey, developing a new understanding of how customers experience these drivers and barriers throughout their shopping experience in CE models.

Furthermore, our study categorizes the drivers and barriers to CE on consumer perspective. Four categories were identified: consumer awareness (CA), consumer preferences (CP), consumer demand (CD), and external (E). A summary of the predominance of categories of drivers and barriers at each stage of the customer journey is presented in figure 2.

As expected, there is a predominance of both the drives and the barriers of the CA category in the pre-purchase phase. Some consumers are not aware of CE, which makes it necessary to take actions to increase the number of people familiar with CE and its importance. The greater the consumer awareness, the more perceived value and greater chance of the consumer participating as an important link in the CE. In the purchase phase, there is a predominance of the CP category in the drivers and barriers, indicating the need to develop preferences for

products derived from CE (recycled, reused, and remanufactured products), modifying the current preference for new products. In this purchase stage, the CD category also stands out as a driver for the CE, indicating greater demand for circular products and greater consumer awareness of environmental issues. Regarding the post-purchase stage, the predominance of the driver E category indicates that there is an opportunity for companies to increase consumer satisfaction, loyalty and engagement, which is also related to awareness of environmental issues and external pressure from social groups, and the consumer's understanding of their importance in CE.
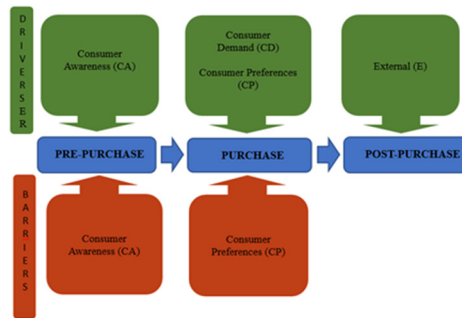
Figure 2. Predominance of categories of drivers and barriers at each stage of the customer journey

The result of this study through understanding drivers and barriers towards CE related to consumer and classifying them in the consumer journey can help companies from different areas in the development and implementation of circular practices and processes, promoting sustainability. The consumer engagement has a great importance in the circularity process to have success (Kuah & Wang, 2020). Therefore, analysing a consumer perspective on CE can help them to become more active in the circular chain and provide greater consumer synergy within the circular chain. It also helps to achieve the goals of CE through consumer involvement (Maitre-Ekern & Dalhammar, 2019).

To encourage customer participation within the circularity, differentiated strategies are suggested at each stage of the customer journey, taking advantage of drivers and overcoming barriers. Thus, for example, in the pre-purchase stage, companies should increase their knowledge of the market and make consumers aware of the importance of CE for environmental and sustainability issues. In the purchase stage, companies can take advantage of the greater demand for more sustainable and circular products, seeking to strengthen the brand and seek to interfere with consumer preferences. In the post-purchase stage, companies should take advantage of the association of a more environmentally friendly company and strengthen the relationship with the customer.

Marketing can contribute to supporting customer participation in the CE by establishing clear rules of engagement and formally clarifying the customer's importance in circularity, and eventually rewarding the customer financially as customers perform important and sometimes costly tasks in the CE. To do so, companies could think of ways to evaluate customers. Companies can also train the activities that customers need to perform and show the importance of these activities in the final result, generating greater engagement and pride in customers. It is important to think about this, after all, there are also potential costs for consumers when they participate in the CE. There are, for example, costs related to the additional effort they have to exert when they become active in the CE that can decrease consumer well-being compared to traditional models (Dellaert, 2019). Although, the study by Machado et al. (2019) shows that consumers tend to view their CE membership in a positive light, it is unclear how customers assess the cost of their membership (Dellaert, 2019). Thus, the successful implementation of CE practices also requires indispensable support from customers, as consumers are the end users and therefore play a key role in closing the CE cycle (Kuah & Wang, 2020).

As suggestions for future research agendas, we point out the following investigations that would help to deepen knowledge. First, we understand that it would be relevant to empirically investigate CE drivers and barriers associated with the consumer at each stage of the customer journey. In addition, because we understand that the customer journey is not in a linear format, but in loops (circular), it would be important to investigate how each step of the customer journey affects the others and what would change in the drivers and barriers. Along the same lines, it would be important to understand how drivers and barriers interact in CE adoption. We also suggest that future studies analyse differently the drivers and barriers that exist in different business models and in different cultures, since there are important cultural differences in how the CE is understood and evaluated and,

therefore, the comparisons between drivers and barriers in the cross-country customer journeys can provide a better understanding of how to increase CE adoption and which strategies would be most relevant in each country or region. Finally, we suggest performing a meta-analysis of the results for each driver and barrier identified to quantify the effects on CE adoption as more studies become available.

The main limitations of this research refer to the number of bases used. Just the Scopus database was used to collect data. In this way, it is suggested in future studies to also use other databases. In addition, the study lacks empirical support, does not consider the interaction between drivers and barriers or between stages of the customer journey, disregards the differences in business models and cultures in the identification of drivers and barriers. Moreover, as the results only mentions drivers in the post-purchase stage and does not address the corresponding barriers, this may result in a limited understanding of the barriers in the post-purchase stage. In this sense, it is suggested in future studies focus on barriers in the post-purchase stage.

Finally, we hope that our study will help companies better understand the role of consumers within the CE by identifying key drivers and barriers in their customer journey. This study can help in the transition from linear economy to CE, more efficient in resources, generating greater competitiveness for the company and advancing towards sustainable economies (García-Quevedo et al., 2020), meeting to Agenda 2030 (2015). With the growth of CE, companies and marketing need to think beyond the boundaries of traditional business models, identifying new opportunities and new understanding of this customer in their new role in creating value.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal and publisher adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

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