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Investigating Circular Behavior Adoption across Gen Z: The Role of Perceived Value and Environmental Consciousness

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Abstract

This research explores Gen Z consumers in the context of the circular economy (Ce). Building on generational cohort theory (Gct), the study investigates to what extent Gen Z perceptions of circular products (Cps) and the level of their environmental consciousness influence their propensity to adopt circular behaviors. Primary data from 130 respondents through a structured web survey were collected across the main social media platforms. A factor analysis identifying the main Ce-related loops (i.e. *slowing*, *dematerializing*, *intensifying*) along with an Ols model was performed. The results exhibit a positive relationship between Gen Z perceptions of Cps and the *slowing* and *intensifying* loops, while environmental consciousness is positively related to *dematerializing* and *slowing* loops. The study suggests valuable insights for both managers and scholars operating in the Ce domain.

Keywords: Circular economy, circular products, Gen Z, consumer perceptions, circular behaviors.

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1. Introduction

Although the circular economy (Ce) is not a new concept, it has become more pressing in recent years (Geissdoerfer *et al.*, 2017; Testa *et al.*, 2022). The Ce paradigm involves a variety of areas, encompassing production (e.g. manufacturers), supply chain (e.g. logistics services) and consumption (e.g. customers) processes, as well as social actors, communities, and governments. The Ce advocates for an economic system that dissociates environmental pressure from economic growth through the replacement of linear production with circular production, such that waste becomes a resource (Belmonte-Ureña *et al.*, 2021). The Ce aims at extending resources' life, thus contributing to the move away from unsustainable resource-intensive production and consumption paradigms (Korhonen *et al.*, 2018).

In this regard, circular products (Cps) are those specifically designed and manufactured following the Ce philosophy, thus encouraging their longevity, their reuse, and the recirculation of resources (Bocken *et al.*, 2016; Hazen *et al.*, 2022). Cps conceptually differ from green products, in that they are characterized by a longer service life, at the end of which the constituent resources will be reused in new manufacturing cycles, to both create new value and decrease waste production (Bocken *et al.*, 2016; Nayal *et al.*, 2022).

Governments acknowledge that the Ce is one of the most promising avenues to steer the transitions needed to achieve the Un 2030 Agenda for Sustainable Development (Schroeder *et al.*, 2019) and associated Sustainable Development Goals (Sdgs). However, the transition from linear to circular business models and products can take place only if consumers are willing to purchase such products (Scarpi *et al.*, 2021).

The consumer role is therefore key in the shift to new circular business models. Specifically, customer involvement in the Ce is recognized as a determinant factor affecting the transition from a linear to a circular paradigm (Soh and Wong, 2021). Extant research shows how customers are paying more attention to environmental and social responsibility (D'Acunto *et al.*, 2020) and express their identity by consuming specific products and services (Berger and Heath, 2007; Chernev *et al.*, 2011). Particularly young consumers (i.e. Gen Z) are increasingly informed about and sensitive to issues related to climate change, and thus more careful about food and resources waste (Dabija *et al.*, 2019; Deloitte, 2022).

Gen Z consumers are often portrayed as the «green generation» (Ad Age, 2020), the most environmentally sensitive of all generational cohorts (Petro, 2021), because of their orientation toward more eco-

friendly choices and habits (Casalegno *et al.*, 2022; Giachino *et al.*, 2022). Gen Zers bring sustainability into their consumption practices (Dabija *et al.*, 2020), with 64% paying more to purchase an environmentally sustainable product versus 36% who would choose a cheaper product that is not as sustainable (Deloitte, 2022).

Despite the role consumers play in shaping the transition from a linear to a circular paradigm, and with specific regard to Gen Z consumers, few studies have explored Ces from the consumer angle, and research regarding consumption strategies related to the Ce remains scant (Guldmann and Huulgaard, 2020; Kirchherr *et al.*, 2018).

While Gen Z behaviors with regard to green products have been explored by recent literature, highlighting the particular sensitivity and propensity of such, research exploring Gen Z-specific behaviors toward Cps remains scant (Gazzola *et al.*, 2020). Given that Cps differ in nature compared to traditional green and sustainable products (Confente *et al.*, 2020), which are not manufactured to be circular, little is known so far on Gen Z perceptions and behaviors pertaining to Cps, representing a gap in the green marketing literature and consumer research.

Through the lens of generational cohort theory (Gct), this study aims at filling this gap by investigating how the perceived values of Cps and environmental attitudes of Gen Z relate to the adoption of specific circular behaviors.

The paper proceeds as follows: section 2 provides the theoretical background and the hypotheses development, section 3 outlines the methodology, section 4 describes the results, and section 5 offers a discussion and some concluding remarks.

2. Literature review

2.1. Generational cohort theory and a focus on Gen Z

The concept of the cohort in the study of social change was first characterized by Ryder in 1965, with *generational cohort theory* coined by Inglehart in 1977.

Gct posits that a generation of individuals that share the same political, economic, and social events during the early stages of life will develop a similar set of beliefs, values, and behavior (Albayrak *et al.*, 2011; Ivanova *et al.*, 2019).

Being exposed to the same unique experiences leads individuals to distinct and permanent systems of patterns of perceptions, thoughts, and actions (Bourdieu, 1990). As a result, consumers in the same co-

hort act similarly when making decisions over their lifetimes (Fernández-Durán, 2016). This makes it possible to identify common traits among different generational cohorts (Ivanova *et al.*, 2019; Rindfleisch, 1994). Living in different spatial (Egri and Ralston, 2004), economic and social (Mannheim, 1952) situations affects consumers' behavioral patterns such that these differ among people according to the generation they belong to.

Extant consumer research shows how the values and beliefs acquired by different generational cohorts significantly influence purchase patterns and shopping behavior (Parment, 2013), which makes Gct useful for consumer segmentation (Schewe and Noble, 2000). The Gct framework is thus useful in marketing to identify consumer segments that share the same social, economic, political, and cultural events in early adulthood (Fernández-Durán, 2016), such as economic changes, wars, dominant political ideologies, technological innovations, and social upheavals (Noble and Schewe, 2003).

Gct also posits that each generation can be affected by unpredictable events (e.g. wars, terrorist attacks, pandemics) and is shaped by technological innovation (e.g. smartphones and social media). Thus, it is not possible to predict how future generations will behave according to the present or the past. Marketing research has witnessed increasing interest in generational analysis (Bourcier-Béquaert and de Barnier, 2010). Given Gct is a useful form of market segmentation that enables providing additional unique benefits, rather than merely focusing on demographic, psychographic, and/or geographic market segmentation schemes (Thach *et al.*, 2020), its popularity and adoption by marketing scholars has been growing (Thach *et al.*, 2020) and, more recently, by responsible consumption research (Ivanova *et al.*, 2019) and for the study of Gen Z (Thangavel *et al.*, 2022). With specific regard to responsible consumption (Kanchanapibul *et al.*, 2014), scholars acknowledge that additional theory-based research is needed to understand different generations' attitudes and behavior (Li *et al.*, 2013).

Building on Gct, this study investigates the role of Gen Z in the consumption of Cps, aiming at contributing to the body of knowledge on responsible consumption. Gen Z includes individuals born between 1995 and 2010 (Dimock, 2019). This generational cohort cares deeply about sustainability issues (Dabija *et al.*, 2019; Deloitte, 2022) and is interested in creating a positive impact and «doing something good» for the environment. Almost 40% of Gen Zers claim to have extensive knowledge of Ces and are actively participating in circular action (Dnv, 2022), resulting in them being the most engaged generational cohort.

Such values are often transferred to consumption choices and behaviors. For instance, Gen Zers are careful to express their identity by seeking eco-friendly choices (Seemiller and Grace, 2018) and tend to be reluctant to buy from, or even boycott, brands perceived as non-sustainable (Wee, 2019). Consistently, they are more likely to embrace brands if they recognize their commitment toward environmental and social responsibility. As a result, Gen Z is demanding a higher level of transparency from retailers (Gazzola *et al.*, 2020). While Gen Y (i.e. Millennials) has tended to focus on innovative economic models (i.e. on-demand services, sharing economy platforms), Gen Z is currently endorsing more of a sustainable/circular economic model, aiming at fighting climate change through the adoption of responsible consumption (D'Adamo *et al.*, 2022). Gen Z consumers tend to be more analytical, careful, and rigorous in their decision-making processes, showing a conscious intention to buy specifically products and services with some degree of inherent sustainability.

Despite the growing attention to understanding the youngest generational cohorts' habits and values, extant research has mainly focused on Gen Z's perception of green and sustainable products (Ad Age, 2020) rather than on Cps. Recent studies find that Gen Z has green sustainable behavior and pays greater attention to environmental and social issues than other generational cohorts (Giachino *et al.*, 2022). This translates from perception to behavior as some studies have found that this cohort is likely to be more committed to buying products that are sustainable and ethical (Casalegno *et al.*, 2022), with over 54% of Gen Zers willing to pay an additional 10% to buy sustainable brands (Kim *et al.*, 2021).

2.2. Circular products in consumer research

Given the relative paucity of consumer-focused studies, the Ce and related products are still relatively new concepts in consumer research. Extant literature provides only an incomplete understanding of the relationship between consumers and Cps (Confente *et al.*, 2020), while most of the research has focused on sustainable and green products. Consumer awareness about the existence and benefits of Cps is still low since consumers have relatively low access to such information (e.g. recirculation status of a product), which in turn negatively affects purchase intentions and willingness to pay more for Cps (Harms and Linton, 2016; Potoglou *et al.*, 2020).

Extant research shows how consumers are differently oriented to products associated with the Ce, with women (Atlason *et al.*, 2017;

Harms and Linton, 2016) and young well-educated generations (Mugge *et al.*, 2017) more likely to evaluate Ce product options. Cultural traits also affect consumer relationships with the Ce; for example, country of origin plays a key role in affecting individuals' perception of Cp value (Potoglou *et al.*, 2020; Singh and Giacosa, 2019). Individuals' environmental attitudes and education level have also been considered by scholars as factors influencing preferences for Cps, both having a positive relationship with the consumption of refurbished products (Atlason *et al.*, 2017; Harms and Linton, 2016; Luceri *et al.*, 2021).

Green product innovation is recognized as a key factor in companies' growth and environmental sustainability (Xie *et al.*, 2019) with recycled, refurbished, and remanufactured products representing an increasingly researched phenomenon in Ce literature (Hazen *et al.*, 2017a; Mugge *et al.*, 2017). Accordingly, a rapidly growing and cross-disciplinary research literature has emerged (Hobson *et al.*, 2021) exploring multiple facets of the Ce and related products, including sustainable supply chain management (Sadrnia *et al.*, 2020), circular business model innovation (Guldmann and Huulgaard, 2020) and country-level enactments of the Ce (Ghisellini and Ulgiati, 2020).

Nevertheless, the consumer side has been under-investigated, and research on consumption and consumer-related aspects of Ces constitutes a smaller body of work compared to other topics (Confente *et al.*, 2020; Hobson *et al.*, 2021; Russo *et al.*, 2019). A possible explanation for this is that less than 20% of Ce definitions include the word «consumption» in its key factors of intervention (Kirchherr *et al.*, 2017).

Extant consumer research focuses mainly on individuals' willingness to undertake specific Ce-related consumption practices (e.g. Gaur *et al.*, 2018) and on the different barriers deterring the collective acceptance of products and services within the Ce paradigm in specific industries (Guldmann and Huulgaard, 2020). For instance, refurbished mobile phones are often rejected by consumers (Van Weelden *et al.*, 2016) due to a lack of knowledge on their availability together with concerns about the refurbishment process (Hazen *et al.*, 2017b), with consumers also reluctant to recycle their old phones because of data privacy concerns (Hobson *et al.*, 2018).

Among the most common consumer barriers toward Cp adoption, convenience, price, knowledge, confidence, and personal characteristics are predominant (Schallehn *et al.*, 2019). However, 35.8% of customers are still not aware of what a Ce is (Dnv, 2022). A current challenge is therefore how to engage and get consumers on board with the Ce paradigm, which is particularly relevant given the growing presence of Cps in various crowded markets and industries (Hobson *et al.*, 2021).

Consumers' education on the pillars of Ces (e.g. recycling practices, borrowing instead of owning, repairing and maintaining skills, knowledge on circular characteristics of products and services) and the development of specific Ce-related skills and knowledge are therefore key to enhancing acceptance and increasing Cp consumption in the near future.

Recent literature has started to explore consumers' perceptions of Cps and their willingness to buy (WtB), although literature to date is very much focused on a specific geographical area or a particular sector. In particular, the literature states that consumers' WtB may be different for Cps, especially in the case of products made from recycled or second-hand materials. Although these Cps offer significant pro-environmental attributes, consumers may consider them of lower quality (Magnier *et al.*, 2019) because their inputs are sourced from post-consumer waste introduced into the production process. For example, some circular clothes are made from used plastic bottles that are reprocessed to create plastic fibers. Due to their reprocessing, these fibers may be perceived as weaker or contaminated from their original production use (Russo *et al.*, 2019). Similarly, regarding reused or second-hand goods, consumers may perceive that second-hand clothes have a shorter life span because the fibers are more stressed than in a new product. However, benefits associated with Cps might enhance consumers' perceived value; for instance, certifications and transparent corporate communication can influence consumers' perception of value (Stanescu, 2021).

Both expected utility theory and prospect theory suggest that value judgments affect intentions. If a product is judged to be high in value, this reflects a more positive attitude and is expected to lead to a higher degree of purchase intention (Chang and Wildt, 1994). Indeed, perceived value is a primary antecedent to satisfaction and behavioral intentions (Dodds *et al.*, 1991). Extant research in green marketing provides evidence of how specific facets of value affect consumer preferences and behavior (Confente *et al.*, 2020). Five main dimensions of value perception have been identified as affecting the choice of green products over traditional counterparts: *i*) functional; *ii*) conditional; *iii*) social; *iv*) emotional; *v*) epistemic. However, research regarding the relationship between value and behavior in the context of Cps remains scant. Consistent with both prospect theory and prior research on purchase intention, we formulate the following hypothesis:

H1: *Consumer perceived value for Cps is positively related to consumer circular behavior adoption.*
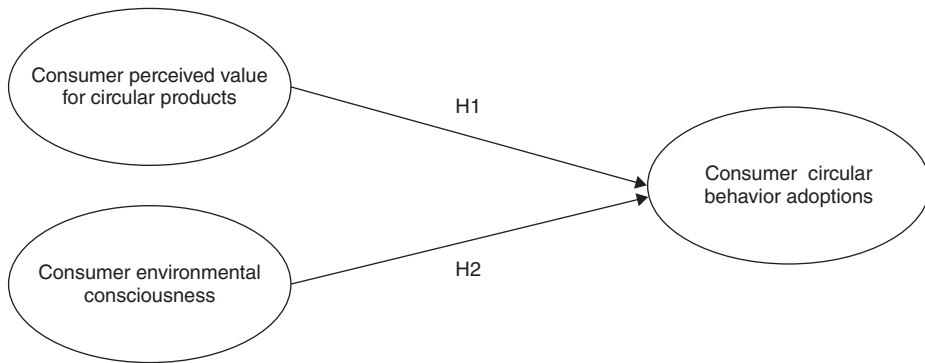
FIGURE 1. Conceptual model.

Extant research on green consumers shows that consumers' green consciousness plays a key role in the relationship between perceived value and WtB. Consciousness can be described as the understanding that the use of Cps, the recycling of used components, and the subsequent remanufacturing of the same are beneficial to the environment (Michaud and Llerena, 2011; Wang and Hazen, 2016). Furthermore, when consumers have information about processes and products, they seek to engage in value co-creation and contribute to the value proposition of companies engaged in Ce practices (Kuzmina *et al.*, 2019). Viciunaite and Alfnes (2020) point out that consumers are interested in solid value propositions that affect not only them but also the environment. Kuah and Wang (2020), through an exploratory study, argue that citizens in East and Southeast Asia may be inclined to buy recycled and remanufactured products in the future due to environmental and cost consciousness, but currently perceive recycled/remanufactured products as less reliable and of low quality. In the same vein, McCarthy *et al.* (2019), through interviews exploring consumers' propensity to buy Cps in the food sector, suggest that consumers are willing to buy circular food if they are aware of the consequences of food waste and that food waste prevention depends on the actions of citizens. On the contrary, if consumers do not have this kind of consciousness, they show no interest in circular food. Therefore, we formulate the following hypothesis:

H2: *Consumer environmental consciousness is positively related to consumer circular behavior adoption.*

3. Materials and methods

3.1. Data collection

The paper is based on primary data collected through a structured web survey across the main social media platforms (e.g. WhatsApp, LinkedIn, Facebook, Instagram). The survey was administered using Google Forms following the Cawi (Computer Assisted Web Interviewing) approach. Data were collected during October/November 2021 among Italian respondents. The overall number of respondents was 443.

The survey was structured in seven macro sections and included questions elaborated using a five-point Likert scale and dummy variables. The questionnaire was anonymous. The sections of the questionnaire were developed by the authors and the measures are validated by the existing literature.

Participants were invited to complete a form including, among others, the following topics: *i*) individual environmental consciousness; *ii*) Ce behaviors; *iii*) perceived value for Cps. The survey also included real examples of circular products/brands (e.g. Apepak, Perpetua, Bolt Threads, Orange Fiber) to facilitate respondents in understanding the concept of the Cp.

For the purpose of this research, we focused on a subsample of analysis composed exclusively of Gen Z respondents, consisting of 130 observations. The respondent pool comprised 51 (39.2%) males, 78 (60.0%) females, and 1 (0.8%) other. A majority of the sample (i.e. 127) (97.6%) were aged 18-25 years, while 3 (2.3%) were aged below 18. Detailed descriptive statistics are provided in the appendix. We tested our hypotheses using an Ols model, running the analysis with STATA software.

3.2. Variables

3.2.1. Dependent variables

We measured consumer orientation to circular practices as individual propensity to adopt circular behavior; specifically, we asked «How often do you adopt the following behaviors?», followed by a list of such. The construct was conceptualized, operationalized, and validated by the authors and measured with 15 items based on a five-point Likert scale (from 1 = «never» to 5 = «always»). These measures are detailed in Table 1.

TABLE 1. *Dependent variables construct measures*

_v19	Purchase a reconditioned/refurbished product
_v20	Purchase used clothing
_v21	Rent furniture
_v22	I bring bags from home when I go shopping instead of asking for single-use ones
_v23	I use electric scooters provided by the municipality in various cities
_v24	I rent a room (e.g., Airbnb) rather than going to a hotel
_v25	I store food in reusable plastic or glass containers (e.g., Tupperware) instead of plastic wrap or plastic bags
_v26	I share a car to go to university/work/on a trip
_v27	I give free products to co-ops that I no longer use
_v28	I return products I no longer use to stores in exchange for an incentive (discounts, shopping vouchers, cash)
_v29	I buy clothing made from recycled materials
_v30	I use apps like Vinted or Subito.it to sell used products online
_v31	I repair products I don't want to part with
_v32	I buy food that is close to expiring (e.g., Too good to go)
_v33	I do waste sorting

The term «circular economy» acts as an umbrella concept comprising five strategies: *closing*, *slowing*, *intensifying*, *narrowing*, and *dematerializing* loops (Hazen *et al.*, 2022). The closing loop refers to practices aimed toward reusing materials via processes (e.g. remanufacturing and recycling) (Bocken *et al.*, 2016). A slowing loop refers to extending the useful life of products through the design of durable goods and product life cycle extensions (Geissdoerfer *et al.*, 2018). An intensifying loop involves more intensive use of materials or products (Geissdoerfer *et al.*, 2018) (e.g. through resource pooling, sharing models). A narrowing loop refers to resource efficiency; that is, minimizing the use of resources necessary to make, sustain, and regenerate product value (Bocken *et al.*, 2016). Finally, dematerializing refers to resource consumption reduction by switching products for services and other alternative solutions (Geissdoerfer *et al.*, 2018) (e.g. servitization strategies).

Given the above, we proceed to run a factor analysis to make meaningful comparisons across the loops. Table 2 presents the factor analysis of the circularity orientation.

As shown, we obtained three factors that might be related to three of the five loops as follows:

• Factor 1 contains the variables «I buy clothing made from recycled materials» and «I repair products I don't want to part with». We rename this factor «*slowing* loop».

• Factor 2 contains the variables «I bring bags from home when I go shopping instead of asking for single-use ones», «I store food in reusable plastic or glass containers (e.g. Tupperware) instead of plastic

TABLE 2. *Factor analysis of the circularity orientation*

Variable	Factor 1	Factor 2	Factor 3	Uniqueness
_v19				0.7476
_v20				0.7494
_v21				0.8269
_v22		0.6025		0.6007
_v23			0.5537	0.6756
_v24				0.6916
_v25		0.5586		0.6524
_v26				0.8118
_v27				0.7025
_v28				0.7631
_v29	0.5821			0.5988
_v30				0.9078
_v31	0.6111			0.6150
_v32				0.6970
_v33		0.5622		0.6122

Note: Blanks represent abs(loading) < .5.

wrap or plastic bags», and «I do waste sorting». We rename this factor «*dematerializing* loop».

• Factor 3 contains the variable «I use electric scooters provided by the municipality in various cities». We rename this factor «*intensifying* loop».

3.2.2. Independent variables

In our model, we considered as independent variables the consumer perceived value for Cps and the level of consumer environmental consciousness.

The consumer perceived value for Cps was evaluated via nine items proposed by Scarpi *et al.* (2021) and Lin and Huang (2012). Sample items are «Circular products have consistent quality» and «Circular products would help me to feel more accepted in my community». We used a five-point Likert scale with «strongly disagree» and «strongly agree» as anchors.

The level of consumer environmental consciousness was evaluated via four items proposed by Mugge *et al.* (2017) and Kim and Choi (2005). Sample items are «I do not buy ecological products because I am not interested in these issues» and «I avoid buying a product because it has potentially harmful effects on people and/or the environment». It is constructed as a dummy variable that takes a value of 0 if respondents chose «I do not buy ecological products because I am not interested in these issues» or «I do not buy ecological products because

TABLE 3. *Independent variables construct measures*

Construct (source)	Items	Type
Consumer perceived value for Cps (Cp_Cpv) Adapted from Scarpi *et al.* (2021), and Lin and Huang (2012)	• Circular products have consistent quality • Circular products seem to be well made • Circular products would help me to feel more accepted in my community • I would buy circular products instead of a conventional (linear) product where there are discount rates for circular products or promotional activity • Circular products have an acceptable standard of quality • I am willing to seek out novel information about circular products • I would buy circular products instead of a conventional (linear) product under worsening environmental conditions • Circular products perform consistently • Buying circular products would improve the way that I am perceived by others	Likert scale 1-5
Degree of consumer environmental consciousness (Env_Cons) Adapted from Mugge *et al.* (2017) and Kim and Choi (2005)	• I do not buy ecological products because I am not interested in these issues (0) • I do not buy ecological products because I am skeptical and do not trust them (0) • I avoid buying a product because it has potentially harmful effects on people and/or the environment (1) • I have changed the products I use for sustainability reasons (1)	Dummy variable

I am sceptical and do not trust them», and value 1 if respondents chose «I avoid buying a product because it has potentially harmful effects on people and/or the environment» or «I have changed the products I use for sustainability reasons». In other words, we created a threshold where 0 implies a total lack of consumer consciousness about ecological products and 1 otherwise.

Table 3 provides additional details about the items used.

3.2.3. Control variables

In our model, we controlled for several consumer characteristics.

Gender: this variable assumes value 1 for «woman», 2 for «man», and 3 for «other». We control for gender because researchers have found that women are more environmentally friendly and are more likely to act in a ecologically responsible manner than men (Liobikienė *et al*., 2017).

Education: this variable assumes value 1 for «secondary school», 2 for «high school», 3 for «bachelor's degree», 4 for «master's degree», and 5 for «none of the above». We control for education because «education is the key intervention for bringing change in knowledge, values, behaviours and lifestyles [...] required to achieve sustainable development» (Pandey and Vedak, 2010, p. 3; see also Berryman and Sauvé, 2016).

Employment: this variable assumes value 1 for «student», 2 for «working student», 3 for «part-time and full-time worker», 4 for «entrepreneur», and 5 for «unemployed». Previous research has noted that consumers with prior knowledge and skills in business are more susceptible to adopting circular practices than others (Del Vecchio *et al.*, 2021).

Annual Income: this variable assumes value 1 if annual income is less than € 10,000, 2 if annual income is greater than € 60,000, 3 if annual income is between € 10,000 and € 20,000, 4 if annual income is between € 20,000 and € 40,000, 5 if annual income is between € 40,000 and € 60,000, and 6 if the respondents have no income. Personal income may influence adoption of circular behavior, and implementing circular behavior may affect consumer income. In particular, circular practices can lead to cost savings via, for example, preferring second-hand products to new ones or repairing to buying (Ng and To, 2020).

Civil Status: this variable assumes value 1 if the respondents are single, 2 if they are engaged, and 3 if they are married or separated. The literature has shown that, in general, those who are married are less likely to adopt circular behavior than others (Ki *et al.*, 2021).

Table 4 reports the descriptive statistics of the variables presented above.

As can be seen from Table 4, the dependent variables «slowing loop», «dematerializing loop», and «intensifying loop» range between −1.7 and 2.29, −3.84 and 1.07, and −.94 and 1.97 respectively; this is because these items represent the three latent variables of our factor analysis, and their value explains some of the observed variables (as shown in Table 2), which are instead measured through a Likert scale. «Intensifying loop» is the latent variable with the highest mean, followed by «dematerializing loop» and «slowing loop». Turning to the independent variables, we see that Cp_Cpv has a mean of 3.33; as this is measured through a Likert scale between 1 and 5, we can say that the responses are above the median value. The same is true for Env_ Cons, which is a dummy variable with a mean of .82.

TABLE 4. *Descriptive statistics*

Variable	Obs	Mean	Std. Dev.	Min	Max
Slowing loop	130	−.0640281	.7903141	−1.762547	2.29859
Dematerializing loop	130	.0246527	.7479713	−3.846223	1.077673
Intensifying loop	130	.1425369	.6778022	−.9455982	1.97872
Cp_Cpv	130	3.338462	.5665343	1.666667	5
Env_Cons	130	.8230769	.3830798	0	1
Gender	130	1.407692	.508778	1	3
Education	130	2.707692	.8393995	1	5
Employment	130	1.630769	.9245863	1	5
Annual income	130	3.853846	2.286162	1	6
Civil status	130	1.561538	.528327	1	3

4. Results

Table 5 presents the correlation matrix for the dependent, independent, and control variables used in this study. Several significant associations among the dependent and control variables can be identified; for example, the *slowing* loop has a significant correlation with gender (−0.3432***) and *intensifying* loop has a significant correlation with education (0.1982**). However, the correlation values among explanatory and control variables are relatively low; thus, no serious collinearity problems are expected. This is further supported by measuring the variation inflation factors (Vifs) for each model (see Table 6), which indicate this was not a problem, with Vif values below the cut-off point of 5 (O'Brien, 2007).

Table 6 presents the Ols model for the three types of circularity orientation: *slowing*, *dematerializing*, and *intensifying* loops. The results reveal a significant and positive relationship between consumer perceived value for Cps (Cp_Cpv) and consumer propensity to adopt *slowing* and *intensifying* loop circular practices. Furthermore, there is also a positive and significant relationship between the level of consumer environmental consciousness (Env_Cons) and consumer propensity to adopt *slowing* and *dematerializing* loop circular practices. Moreover, looking at the coefficients and their significance level, we note that the relationship between the level of consumer environmental consciousness and consumer propensity to adopt *slowing* loop circular practices (0.358**) is greater than that between consumer perceived value for Cps and consumer propensity to adopt *slowing* loop circular practices (0.221*).

Gender is negatively and significantly related to adopting *slowing* loop circular practices. In line with the literature, it appears that women are more sensitive to adopting circular behavior. It is also positively and significantly related to adopting *intensifying* loop circular practices, although the significance level is lower.

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TABLE 5. *Correlation matrix*

	slowing loop	dematerializing loop	intensifying loop	Cp_Cpv	Env_Cons	Gender	Education	Employment	Annual income	Civil status
Slowing loop	1.0000									
Dematerializing loop	0.1726**	1.0000								
Intensifying loop	0.2451***	0.0806	1.0000							
Cp_Cpv	0.2652***	0.2226**	0.2435***	1.0000						
Env_Cons	0.2949***	0.2879***	0.1405	0.3296***	1.0000					
Gender	−0.3432***	−0.1132	0.1082	−0.1239	−0.2236**	1.0000				
Education	0.1339	−0.0018	0.1982**	0.0829	0.0549	0.0271	1.0000			
Employment	−0.0055	−0.0015	−0.0152	0.0267	−0.0327	0.0588	0.1995**	1.0000		
Annual income	−0.1037	0.0435	−0.1589*	−0.0327	0.0411	0.0383	−0.0184	−0.3301***	1.0000	
Civil status	0.0124	0.0393	0.0112	0.0076	−0.0032	−0.1085	0.2332***	0.1421	−0.1305	1.0000

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

TABLE 6. *Ols regressions*

Variables	(1) Slowing loop	(2) Dematerializing loop	(3) Intensifying loop
Cp_Cpv	0.221*	0.192	0.253**
	(0.114)	(0.136)	(0.0971)
Env_Cons	0.358**	0.453**	0.178
	(0.167)	(0.209)	(0.144)
Gender	−0.448***	−0.0596	0.219*
	(0.122)	(0.117)	(0.114)
Education	0.132	−0.0359	0.161**
	(0.0920)	(0.0763)	(0.0730)
Employment	−0.0377	0.0190	−0.0960
	(0.0781)	(0.0621)	(0.0600)
Annual income	−0.0396	0.0175	−0.0609**
	(0.0309)	(0.0315)	(0.0261)
Civil status	−0.0910	0.0674	−0.0345
	(0.131)	(0.115)	(0.108)
Constant	−0.468	−1.011*	−1.146**
	(0.569)	(0.601)	(0.473)
Observations	130	130	130
R-squared	0.222	0.108	0.157
Max Vif	1.18	1.18	1.18
Mean Vif	1.13	1.13	1.13

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Education is positively and significantly related to adopting *intensifying* loop circular practices, and annual income is negatively and significantly related to adopting *intensifying* loop circular practices.

5. Discussion

This study was motivated by the scant research investigating Cps from a consumer perspective, with specific regard to Gen Z perceptions and behaviors. The primary aim is to provide an in-depth analysis of consumer perceived value for Cps and its role in shaping circular behavior adoption among Gen Z. Furthermore, the study highlights the role that consumer environmental consciousness plays in affecting circular behaviors. The results, in line with extant literature (Chang and Wildt, 1994; Dodds *et al.*, 1991), confirm the positive relationship between consumer perceived value for Cps and two of the loops considered (i.e. *slowing* and *intensifying*), while this relationship is not significant with regard to the *dematerializing* loop.

In addition, our results indicate that environmentally conscious Gen Zers are more likely to adopt circular behaviors relating to the *slowing* loop and the *dematerializing* loop, while no significant effect was observed concerning the *intensifying* loop.

5.1. Theoretical contribution

This study contributes to the marketing literature on consumer adoption of circular behaviors and Cps. Extant research has mainly focused on the antecedents and barriers to green or sustainable product adoption (Ad Age, 2020), with no studies investigating Cps and related behavior in the same vein.

This study contributes to consumer research on Gen Z, confirming the role of the desire for information (Priporas *et al*., 2017) and awareness of global phenomena, trends, and discoveries (Dabija *et al*., 2020) for this cohort. Environmental consciousness has a greater effect on circular practices adoption than the perceived value for Cps with regard to the *slowing* loop, and a positive effect on the *dematerializing* loop, confirming the sensitivity of Gen Z to environmental issues (Harms and Linton, 2016). Our results also contribute to the body of knowledge investigating the role of personal characteristics (e.g. gender, education level) on the propensity to adopt circular behaviors (Atlason *et al*., 2017; Mugge *et al*., 2017; Scarpi *et al*., 2021).

We contribute to Gct (Albayrak *et al*., 2011; Ivanova *et al*., 2019) by providing empirical evidence on Gen Zers and their relationship with the Ce and related products. With the larger Gen Z population entering the labor market and generating demand for highly sustainable products, services, and places of work, their preferences and behavior will have a critical impact on consumer culture in the near future.

5.2. Managerial implications

Gen Z preferences and behaviors regarding Cps identified in this study should be of value to marketing managers operating in the Ce domain because they provide new information that can be used toward the development and promotion of Cps.

Consumers' perceptions of Cps are positively related to the *slowing* loop and *intensifying* loop. Since the *slowing* loop aims at prolonging the use and reuse of goods and material resources over time, while emphasizing the ease of maintenance, repair, and upgrade as well as product life cycle extensions (Hazen *et al*., 2022), our findings highlight the importance for private and public organizations operating in the Ce of effectively communicating with Gen Z. For instance, creating incentives to promote value propositions related to longer product life cycles and supporting them with end-user activities, along with promoting reusing durable parts and components within new products.

Intensifying loops refer to intensive and more efficient use of underused goods through the adoption of sharing practices (e.g. sharing models, pooling, peer-to-peer). Similarly, companies and service providers operating in this segment of the Ce should communicate with Gen Z to build trust and encourage them to change their end-user attitudes and behaviors regarding shared-use models.

Gen Zers that are more environmentally conscious are more willing to adopt circular behaviors relating to the *slowing* and *dematerializing* loops of the Ce. *The dematerializing* loop includes both process digitalization and/or product servitization. Servitization as a business model can help implement a Ce through the fact that consumers need specific functionality, but not necessarily to own the product or materials to achieve such functionality (e.g. reading an ebook instead of a physical book). Thus, Ce providers of long-lasting, reusable, repairable, and/or repurposed products (i.e. embracing the *slowing* loop) and operating with business models based on the digitalization/servitization of their offer (i.e. *dematerializing* loop) should target Gen Zers with high environmental consciousness with their communication. Policymakers are also advised to work to increase Gen Z environmental consciousness, thus contributing to the successful transition toward the Ce paradigm; for instance, engaging them by offering incentives to switch from green/sustainable products to Cps.

Finally, thanks to digital technologies, it is necessary to involve the consumer in the co-creation of the characteristics of circularity of the products and of the behaviors adopted by consumers in the use and post-consumer phases, from reuse to repair, from sharing to a separate collection. Given that consumer identity and acceptance within their community also play a key role in shaping perceptions of Cps, companies should encourage their customers to discuss online (e.g. on social media and review platforms) such topics, to exploit the effects of positive eWOM.

5.3. Limitations and avenues for future research

The study relies on a relatively limited sample size of Italian respondents. Data from other countries could extend actual findings, given that cultural traits (e.g. country of origin) might also influence the relationship with Cps (Potoglou *et al.*, 2020; Singh and Giacosa, 2019). In addition, results might be affected by social desirability bias.

Future research should extend these findings via other means of data collection such as actual data and direct observation of Gen Z cir-

cular behaviors, considering for instance the role of firms' communication on Cps. Moreover, future avenues might consider looking at causal relationships with an experimental design to determine, for instance, Gen Zers' switching intentions or their willingness to pay more for Cps.

Another avenue might consider investigating the presence of a Gen Z attitude–behavior gap in the context of Cps (D'Acunto and Filieri, 2022). Furthermore, examining the way consumers select Cps based on their brand image and how they report their experiences online through user-generated content would be of benefit. Furthermore, future research could account for the main cognitive mechanisms and aversive states that are responsible for unintended negative side-effects (Acuti *et al.*, 2022) resulting from the main Ce-related loops.

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