

FROM ATTITUDES TO ACTION: CIRCULAR CONSUMPTION BEHAVIOR AMONG YOUNG CONSUMERS

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Abstract: *Against the backdrop of escalating environmental concerns and the imperative for structural shifts in economic activity, the circular economy has emerged as a promoted solution in recent years. Among the economic factors that contribute to the transition toward circularity, consumers play a crucial role, as the implementation of this concept's principles would be unattainable without their involvement. Starting from the Theory of Planned Behavior, the purpose of this study is to analyze the relationships between pro-circular attitude, perceived social norms, perceived control, circular consumption intention and total circular behavior among young consumers. Data was collected through a questionnaire applied to a sample of 132 high school students (grades IX–XII). The dimensions included in the study were measured by multi-item Likert scales (1–5), and total circular behavior was calculated as the mean frequency of practices associated with circular economy strategies. Analyses included descriptive statistics, assessment of internal consistency (Cronbach's α) and Pearson correlations between composite scores. The results indicate a relatively favorable attitude towards circular consumption, concomitant with a moderate level of reported circular behavior, suggesting a gap between declarative orientations and actual actions. All scales showed good to excellent internal consistency ($\alpha = 0.77$ – 0.91). Correlational analyses revealed significant positive associations between psychosocial determinants and circular consumption intention, as well as between intention and total circular behavior. Intention and perceived control showed the strongest associations with circular behavior. The findings suggest that, beyond favorable attitudes, perception of ability to act and support for intentions are essential for increasing circular consumption among young people.*

Keywords: *circular economy; young consumers; consumer behavior; Theory of Planned Behavior*

JEL Classification: *D12; Q01; Q56*

1. Introduction

Environmental and climate issues represent one of the primary concerns currently facing humanity, according to the latest findings. According to The World Meteorological Organization (WMO) (2026) the last three years have been identified

as the warmest within the 176-year record of instrumental observations. Furthermore, Arctic sea ice extent has reached a historic minimum due to the warming of the global ocean, a phenomenon that has consequently led to a rise in sea levels. These developments are attributed to an accumulation of excess energy within the Earth system, primarily driven by high concentrations of atmospheric greenhouse gases. Within this context, the global economy necessitates a radical transformation.

A society less dependent on primary resources, more prosperous and, at the same time, friendly with the environment can be achieved by using the principles underlying the circular economy (Barbu *et al.*, 2018). Ozden (2026) believes that this type of approach is a *critical pathway* to respond to the sustainability challenges facing humanity.

The idea behind the concept of *circular economy* is to replace the old linear business known as *take-make-dispose* (Lopes, Pinho and Gomes, 2023; Terra Dos Santos *et al.*, 2023) by a new model based on sustainability. The circular economy is conceptualized as a system focused on closing material loops, with the objective of retaining products, components, and materials within the industrial system for as long as possible and maximizing their value (Zink and Geyer, 2017). The role of this type of approach is to support a sufficient supply to meet the demand for products on the market without placing pressure on the environment and society (Patwa *et al.*, 2021).

The concept is inspired by nature where the water or nutrient cycles are based on the principle according to which elements that are useless to some become resources for others (Stahel, 2016). It was introduced as an official European Union Policy in 2015 (European Commission, 2015) and remains such until today. It tries to expand the lifecycle of products, mainly via 3R practices, preventing the waste of resources (Patwa *et al.*, 2021).

2. Theoretical background

According to Agarwal *et al.* (2025), despite the logistical complexity, the high implementation costs and the lack of consumer involvement, the circular economy practices contribute to closed-loop production systems and waste reduction, and also, bring forward marketing strategies that imply eco-aware customers.

One of the options for making the transition to circular business models is to encourage their emergence as a result of changing consumer habits towards collaborative consumption models (Barbu *et al.*, 2018).

De Pascale *et al.* (2023) identify the following barriers to a circular economy: technological, market, institutional, and social. Although all of them are of particular importance, the paper will focus on social and market barriers, and more precisely on the consumer behavior of young generations.

New generations have consumption habits that lean towards sustainability, as research in the field shows. Contreras-Masse *et al.* (2024) highlight Generation Z's involvement in the use of sustainable fashion and the importance it places on transparency and accountability from brands. Also, Gazzola *et al.* (2020) remark the new generation's increased attention to sustainability issues in the fashion industry. That is because they are concerned about climate change, social issues, ethical issues, and have increased environmental awareness (Palomo-Domínguez, Elías-Zambrano and Álvarez-Rodríguez, 2023). There are differences between

generations regarding the environmental situation, younger generations tend to be more concerned about the environment (Rodrigues, Proença and Macedo, 2023). Moreover, among the younger generation, environmental awareness and concern are considered essential factors for increasing trust and attitude towards circular goods, which leads to increased commitment to these goods and ultimately affects their purchase intention (Yang, Chuang and Chen, 2024).

Thus, consumers' attitude toward products is an important factor for switching behavior towards circular ones (Hazen, Mollenkopf and Wang, 2017). Intrinsic motivation (feeling good about oneself and caring for the environment) was found to be a key factor in adopting circular behavior, based on a study on Gen Z tourists and their behavior when travelling (Jacob *et al.*, 2026).

Another aspect affected by environmental concern is the need to seek more information before buying, to avoid greenwashing (Szilagyi *et al.*, 2022) or other misleading marketing tactics regarding the sustainability of a product. This is where communication comes in. Communication strategy differs by generation. Piochi *et al.* (2026) believe that new generations, such as Gen Z, are more influenced by platforms like TikTok, through short videos, while older generations respond more to traditional digital channels, such as Facebook, or offline channels. The same authors propose as solutions the integration into dedicated food waste reduction apps of functions that favor visual entertainment and gamification elements, and, in addition, offering of various economic rewards or elements that bring social recognition.

The Theory of Planned Behavior - TPB – is a model that has been widely applied to predict behaviors, particularly in relation to the circular economy regarding recycling or green purchasing (Ozden, 2026). Specifically, the model attempts to establish interrelationships between the circular economy indicators or other constructs and its determinants and factors (Adabre *et al.*, 2023).

The model conceived by Ajzen (1991) focuses around intention as an intermediate determinant of the occurrence of a certain behavior, the stronger the intention, the more likely the behavior will occur. According to the author of the theory, intention consists of the motivational factors or determinants that lead to a certain behavior, highlighting the effort that the individual invests in the behavior.

Initially, three conceptually independent factors of intention (Beck and Ajzen, 1991) or antecedents of intention (Ham, Jeger and Frajman Ivković, 2015) were included in the model: attitude, subjective norm, and perceived behavioral control. These variables have a central role in influencing consumer behavior (D'Souza *et al.*, 2026).

Personal attitude reflects the individual's evaluation of the behavior and is related to the question *Do I want to do that?* If the attitude is positive, the behavior is perceived as desirable (Ham, Jeger and Frajman Ivković, 2015).

Subjective norms refer to social pressure, composed of the approval that those around the individual may or may not offer (injunctive normative belief), but also the possibility that those around the individual may also exhibit the desired behavior (descriptive normative belief) (Ajzen, 2020). It relates to the perception of the individual regarding social expectations and it is captured by the response to the question *Do other people want me to do that?* (Ham, Jeger and Frajman Ivković, 2015). Therefore, consumer behavior is influenced by the attitude that society has towards certain products. If a product is socially approved, it will have positive effects by encouraging the consumption of that product. This leads to a more

sustainable lifestyle and well-being among those who consume it, creating a sense of self-worth and contribution to the common good (Kumari *et al.*, 2026).

Finally, perceived behavioral control is illustrated by the individual's response to the question *Do I have the necessary ability to do that?* (Ham, Jeger and Frajman Ivković, 2015). It captures the individual's assessment of how easy or difficult it is to perform a specific behavior (Ajzen, 1991). Among the influencing factors of the perception of control, the belief that a facilitating or inhibiting factor may appear, are: the existence of resources and money, the availability of time, and the possession of the necessary skills and abilities (Ajzen, 2020).

The relevance of these factors is strongly emphasized. In their study, Koay *et al.* (2024) identify the following as critical factors for the formation of purchase intention: attitudes, injunctive norms, and perceived control, with descriptive norms not being considered essential. Also, the TPB can be extended to establish the possibility of other behaviors, such as the intention to recycle, for which Wardani *et al.* (2025) argue that attitude, control, and subjective norms play a significant role.

This paper integrates circular economy with attitudes, subjective norms, and perceived behavioral control, part of the TPB, as determinants of intention regarding circular consumer behavior.

The central research question of this study is: To what extent are attitude, perceived social norms, perceived control, and intention associated with the total circular behavior of young people?

Therefore, the following hypotheses were formulated:

H1: Pro-circular attitude is positively associated with circular consumption intention.

H2: Perceived social norms are positively associated with circular consumption intention.

H3: Perceived control is positively associated with circular consumption intention.

H4: Circular consumption intention is positively associated with total circular behavior.

H5: Perceived control is positively associated with total circular behavior.

H6: Attitude and social norms are positively associated with total circular behavior.

3. Research methodology

3.1. Sample

In order to answer the formulated research question, we have collected responses from young consumers. The sample consists of high school students (grades IX–XII), who are part of Generation Z (b. 1996-2010), respectively Generation Alpha (b. 2011-2025), who study at Partenie Cosma Economic College in Oradea. For this research, we used a survey with a questionnaire as an instrument. The questionnaire was elaborated in Google Forms and disseminated to respondents, with the collection period being the beginning of April 2026. The questionnaire was conducted anonymously, all participants provided informed consent, and the study's purpose was clearly explained.

Table 1: Socio-demographic characteristics of the sample (N = 132)

Variable	Category	n	%
Gender	Female	70	53
	Male	60	45.5
	Prefer not to say	2	1.5
Residence	Urban	72	54.5
	Rural	60	45.5
High school class (level of study)	9th grade	33	25
	10th grade	34	25.8
	11th grade	41	31
	12th grade	24	18.2
Age group	15-16	32	24.2
	17-18	69	52.3
	19-20	31	23.5

Source: Authors 'processing

The sample consists of 132 respondents, with a relatively balanced distribution by gender (53.0% female, 45.5% male) and area of residence (54.5% urban, 45.5% rural). The age of the respondents varies between 15 and 20 years, with the majority falling in the 17–18 age range.

3.2. Data measurement

The study used a structured questionnaire to measure psychosocial determinants of circular consumption (attitude, perceived social norms, perceived control, intention) and the frequency of consumption behaviors aligned with the circular economy (total circular behavior).

Attitude towards circular consumption

Attitude was assessed using a 3-item scale (e.g., importance of choosing sustainable/repairable products, preference for *less but better*, perception that the circular economy can reduce environmental problems). Items were measured on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The attitude score was calculated as the arithmetic mean of the 3 items, with higher values indicating a more favorable attitude towards circular consumption.

Perceived social norms

Social norms were measured by 3 items assessing respondents' perceptions of expectations and social acceptance of circular behaviors (e.g., encouraging recycling/reuse, accepting second-hand shopping in one's social circle, importance of reducing waste among friends). Items were measured on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The social norms score was calculated as the arithmetic mean of the 3 items, with higher values indicating more pro-circular perceived social norms.

Perceived control

Perceived control was assessed through 3 items that capture the perception of the ease of adopting circular behaviors (e.g., accessibility of circular alternatives, knowledge of correct recycling methods, possibility of making circular choices without too high costs). The items were measured on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The perceived control score was calculated

as the arithmetic mean of the 3 items, higher values indicating a higher level of perceived control over the adoption of circular consumption.

Circular consumption intention

Intention was measured by 3 items targeting the intention to adopt circular behaviors in the near future (e.g., avoiding buying new products when alternatives exist, reducing waste, choosing brands with return/buy-back/repair programs). The items were measured on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The intention score was calculated as the arithmetic mean of the 3 items, with higher values indicating a stronger intention to adopt circular consumption.

Total Circular Behavior

Circular behavior was measured as the frequency of consumption practices associated with circular economy strategies (Rs), through a battery of frequency items (1 = Never, 5 = Very often). The items covered six behavioral dimensions (with 3 items each, 18 items in total): Refuse/Rethink (e.g., refusing disposable products), Reduce (e.g., reducing energy and water consumption, food waste), Reuse (e.g., reusing containers/packaging), Repair (e.g., repairing items instead of replacing them), Recondition (e.g., using refurbished goods) and Recycle (e.g., collecting plastic/paper/metal/glass separately, returning packaging or WEEE to dedicated points). For this paper, an aggregate total circular behavior score was calculated as the arithmetic mean of the 18 items, with higher values indicating a higher frequency of reported circular behaviors.

The behavioral items primarily assess everyday circular consumption practices (e.g., refusing single-use products, reducing waste, reusing, repairing, and recycling) rather than high-involvement purchasing decisions related to household durable goods.

The data was initially exported to Excel (.xlsx) format and processed to correct any errors or omissions. Subsequently, statistical analyses were conducted using Jamovi (version 2.6), an open-source platform for intuitive statistical analysis. Data was analyzed by descriptive statistics (means, standard deviations, min–max) and the internal consistency of the scales was assessed using Cronbach's α . Composite scores for multi-item constructs (attitude, social norms, perceived control, intention, and circular behaviors) were calculated as the arithmetic mean of the corresponding items, on 5-point scales. The association between constructs was assessed by Pearson's correlation coefficient, along with reporting the correlation coefficient and the significance level.

4. Results and discussions

Table 2 presents the results of the reliability analysis based on Cronbach's alpha, along with detailed descriptive statistics (means and standard deviations) for participants' scores on the psychosocial determinants of circular consumption and overall circular behavior.

Table 2: Descriptives and internal consistency for constructs (N = 132)

Dimension	Number of items	Cronbach's α	Mean	Standard deviation
Attitude towards circular consumption	3	0.841	3.80	0.92
Perceived social norms	3	0.774	3.30	0.92
Perceived control	3	0.823	3.54	0.95
Circular consumption intention	3	0.842	3.40	0.99
Total Circular Behavior	18	0.910	2.98	0.77

Source: Authors 'processing

Note: Scores for Attitude, Social Norms, Perceived Control, Intention, and Total Circular Behavior were calculated as the arithmetic mean of the items (scales 1–5). Higher values indicate higher levels of the construct.

From the table 2, it can be seen that Cronbach's α values are from good to excellent (between 0.774 and 0.910) for all the dimensions, indicating a high level of internal consistency and supporting the reliability of the questionnaire used in this study.

While adolescents are not typically the primary decision-makers for major household purchases, the research specifically examines everyday circular consumption behaviors, such as waste reduction, reuse, repair, and recycling, and the psychosocial factors underlying these practices, including attitudes, social norms, perceived behavioral control, and behavioral intentions. Moreover, participants reported a relatively high level of autonomy regarding their own purchasing decisions (Q: *To what extent do you make purchasing decisions for yourself?* mean decision autonomy = 3.74/5, with 63.7% indicating autonomy *to a large* or *to a very large extent*), which supports the relevance of investigating their consumption-related intentions and behaviors.

Regarding the dimension *Attitude towards circular consumption*, the score of 3.80 suggests a relatively favorable attitude towards circular consumption (in the *agree* to *strongly agree* range). The standard deviation value, i.e. 0.92, is moderate, which means that there are visible differences between respondents: not all are pro-circular to the same extent. The minimum–maximum range of 1–5 indicates that responses covered the full scale, suggesting that both skeptical/resistant and strongly pro-circular respondents were captured. Therefore, we can say that there is a good attitudinal orientation towards circularity, but not a uniform one.

For the dimension *Perceived social norms* a score of 3.30 was registered, which is closer to *neutral to agree*. This means that respondents perceive the norms around them as moderately favorable to circular consumption. Descriptive results indicate that perceived norms are lower than attitudes (3.30 vs. 3.80), suggesting a common pattern whereby respondents express positive personal evaluations but perceive weaker social endorsement of circular consumption. A standard deviation of 0.92 indicates substantial differences between groups/social circles (in some circles second-hand/reuse is normal, in others it may be less so). We can therefore observe that social norms are not as strong as attitude, so social pressure/validation can be a limiting factor.

For *Perceived control*, the average score of 3.54 shows that respondents tend to feel moderate to high control (that they can find alternatives, that they can recycle, etc.),

but not very high. With a standard deviation of 0.95, the perception of control is very heterogeneous: some have easy access to alternatives/infrastructure, others do not. The full range of responses (1–5) also suggests that some respondents report very low perceived control, potentially reflecting constraints such as limited access, higher costs, inadequate infrastructure, or insufficient information. In other words, perceived control is a key area and can explain the differences between intentions and action. As for the *Intention* dimension, the average of 3.40 suggests a moderate intention to adopt circular behaviors in the near future (not low, but not very high either). The standard deviation value of 0.99 shows large differences: there are both respondents with no intentions (1) and highly motivated respondents (5). Overall, behavioral intention appears to be present but not particularly strong at the group level, suggesting scope for targeted interventions (e.g., education, improved facilities, or dedicated programs).

The last dimension, *Total Circular Behavior*, shows an average score of 2.98, which is practically around the value 3, i.e. it reveals an occasional/sometimes frequency of circular behaviors. A notable discrepancy is observed between attitudes and behavior: while attitudes are relatively high (3.80), actual behavior remains moderate (2.98). This pattern is consistent with the *attitude–behavior gap*, indicating that favorable evaluations do not necessarily translate into consistent action. The standard deviation (0.77) is slightly lower than that observed for intention and perceived control, indicating that, although there are differences, behaviors are more concentrated around the mean than intentions.

We can conclude that there is greater declarative support than actual behavior.

Further, to test the hypotheses, Pearson correlations were calculated between attitude, social norms, perceived control, intention, and total circular behavior.

Pearson correlation analysis, summarized in table 3, indicated significant positive associations between psychosocial determinants (attitude, social norms, perceived control, intention) and total circular behavior. First, the correlations between psychosocial determinants and intention are high, suggesting that the intention to adopt circular behaviors is closely related to individual evaluations, perceived social context, and perception of the possibility to act. The strongest association with intention is perceived control ($r = 0.769$, $p < 0.001$), followed by social norms ($r = 0.652$, $p < 0.001$) and attitude ($r = 0.627$, $p < 0.001$).

Total circular behavior is most strongly associated with intention ($r = 0.661$, $p < 0.001$), indicating that respondents who report higher intentions also report a higher frequency of circular behaviors. At the same time, perceived control has a moderate association with total circular behavior ($r = 0.522$, $p < 0.001$), suggesting that the level of perceived ease and accessibility (e.g., knowledge of proper recycling methods, access to circular alternatives, perceived costs) is substantially related to reported actions.

Attitude ($r = 0.453$, $p < 0.001$) and social norms ($r = 0.472$, $p < 0.001$) are also positively correlated with total circular behavior. This result suggests that both positive evaluation of circular consumption and perception of a favorable social climate are associated with higher levels of circular practices.

Table 3: Correlation matrix

		Attitude_mean	Norms_mean	Control_mean	Intention_mean	Behavior_total_mean
Attitude_mean	Pearson's r	—				
	df	—				
	p-value	—				
Norms_mean	Pearson's r	0.563***	—			
	df	130	—			
	p-value	< .001	—			
Control_mean	Pearson's r	0.702***	0.695***	—		
	df	130	130	—		
	p-value	< .001	< .001	—		
Intention_mean	Pearson's r	0.627***	0.652***	0.769***	—	
	df	130	130	130	—	
	p-value	< .001	< .001	< .001	—	
Behavior_total_mean	Pearson's r	0.453***	0.472***	0.522***	0.661***	—
	df	130	130	130	130	—
	p-value	< .001	< .001	< .001	< .001	—

Note. * p < .05, ** p < .01, *** p < .001

Source: Authors 'processing

In addition, correlations between psychosocial predictors are relatively high (e.g., attitude–control $r = 0.702$; norms–control $r = 0.695$; attitude–norms $r = 0.563$; all $p < 0.001$), suggesting conceptual coherence between the constructs and the fact that they tend to coexist in respondents' profiles (e.g., those with favorable attitudes tend to perceive even more control, and more pro-circular social norms).

Overall, the correlational results indicate that the tested hypotheses were supported, with the strongest associations observed between perceived control and intention ($r = 0.769$) and between intention and total circular behavior ($r = 0.661$). The findings offer correlational evidence in support of hypotheses H1–H6. Due to the cross-sectional design of the study and because it is based on self-reported data, the observed relationships should be interpreted as correlational associations rather than evidence of causality.

5. Conclusions

This study contributes to expanding the literature on the circular economy and consumer behavior by investigating the relationships between attitude towards circular consumption, perceived social norms, perceived control, circular consumption intention and total circular behavior among a sample of 132 high school students (grades IX–XII), with a relatively balanced urban/rural and gender distribution.

The descriptive results suggest a possible gap between pro-circular orientation and actual behavior: although respondents report relatively favorable attitudes, the frequency of circular behaviors is only moderate. At the same time, social norms and perceived control are in the moderate range, with high variability, which may reflect differences in access to circular alternatives and social support for these practices.

Correlational analyses revealed significant positive associations between psychosocial determinants and intention, as well as between intention and total circular behavior. Of the determinants analyzed, perceived control had the strongest association with circular consumption intention ($r=0.769$), and intention had the strongest association with total circular behavior ($r=0.661$), followed by perceived control ($r=0.522$) in relation to behavior. In addition, both attitude ($r=0.453$) and social norms ($r=0.472$) were positively associated with total circular behavior, indicating that personal evaluations and perceived social context are relevant to reported circular practices.

From a practical perspective, the results suggest that interventions aimed at increasing circular consumption among young consumers might be more effective if they focus on increasing perceived control (e.g., operational clarity on concrete recycling steps, accessibility of circular alternatives, reduction of perceived costs) and on supporting intentions through opportunities and contexts that facilitate action. At the same time, as social norms are positively associated with intention and behavior, initiatives that make circular practices visible and normalize them in affiliation groups (school/colleagues/community) can contribute to strengthening the pro-circular social climate.

Several limitations should be acknowledged. First, the sample consists of high-school students, and although participants reported substantial autonomy in their personal purchases, they may not be the final decision-makers for major household durable goods. Therefore, findings should be generalized primarily to adolescents' everyday circular consumption practices and intentions, and less to household-level high-involvement purchasing decisions (e.g., large appliances and buy-back programs). Second, the study is cross-sectional and based on self-reports. Therefore, the findings indicate associations rather than causal or temporal effects. Future research could replicate the proposed model among older Generation Z cohorts and adult consumer populations; employ longitudinal or experimental designs to better evaluate the directionality of the relationship between intention and behavior; develop category-specific models distinguishing everyday consumption from major durable purchases; and investigate whether interventions aimed at enhancing perceived behavioral control - such as improved access to repair services, clearer recycling infrastructure, or greater affordability - can facilitate the conversion of pro-circular intentions into consistent behavioral practices.

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