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# Determinants of Circular Economy Participation Among Gen Z in a Sun-and-Beach Destination: A Theory of Planned Behavior Approach

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## ABSTRACT

Using the Theory of Planned Behavior, this study examines the determinants influencing Generation Z in adopting circular practices when traveling as tourists, focusing on 300 respondents from Majorca. Employing a PLS-SEM framework, the research evaluates the influence of TPB factors on circular economy participation and investigates the impact of sociodemographic variables. Results indicate that all factors positively drive intentions to adopt circular behaviors when traveling as tourists, with personal motivation being the most influential. Higher education levels and income are associated with lower rates of circular economy implementation. A significant theoretical contribution is the development of a second-order construct representing the 3Rs, demonstrating their similar importance. These findings highlight the role of intrinsic motivation in fostering circular actions in tourism contexts and the need for targeted interventions considering sociodemographic factors to foster broader circular participation.

## 1 | Introduction

A circular economy (CE) considers all waste as an input that can be recycled, recovered, reused, and transformed into value-added products or processes through design and technology (Granek 2011) and thus allowing for close and narrow energy and material loops (Geissdoerfer et al. 2017). CE is seen as a way to attain sustainable development without threatening economic growth (Ghisellini et al. 2016). In fact, for Neessen et al. (2021), CE is a prerequisite for a "sustainable economy, job growth, GDP growth, and the preservation of natural resources." Within this framework, many researchers argue that the foundational principles of CE are embodied in the 3R model—reduce, reuse, and recycle (e.g., Brennan et al. 2015; Ghisellini et al. 2016). Lately it has been expanded to 4R (Liu et al. 2022; Kirchherr et al. 2023), 6R (Sihvonen and Ritola 2015), or 9R (Van Buren et al. 2016).

In the Balearics, in 2020 tourism represents 41.3% of GDP and 41.6% of employment (Exceltur 2022). Nevertheless, the rapid growth of tourism has placed considerable strain on the coastal environment through excessive construction and adverse environmental impacts. These impacts include seawater pollution, biodiversity loss, carbon dioxide emissions, air pollution, ecosystem erosion, and the degradation of natural resources (Jacob et al. 2025). Additionally, tourism expansion exacerbates climate change impacts, including sea level rises (UNWTO 2018). Local attitudes have also shifted as tourism growth affects residents' perceptions of and support

for the industry (Blázquez-Salom et al. 2021; García-Buades et al. 2022). The growing influx of tourists in many regions has increased public awareness of the adverse effects of overtourism on residents' well-being (Li and Sun 2025). This has led to protests and a decline in hospitality toward visitors, particularly among younger residents, who advocate for reforms in the tourism-dependent economic model to mitigate negative externalities (García-Buades et al. 2022; Amrhein and Langer 2025). Moreover, the situation in the Balearics has been exacerbated by the seasonality of tourism where visitor numbers are concentrated over a short time and space, placing enormous pressure on the destination which it may not be able to withstand. Majorca, being part of an archipelago, is particularly, vulnerable due to resource scarcity. Adopting CE production models is crucial to maintain competitiveness and ensure the long-term sustainability of Majorca's tourism sector.

The CE has garnered significant scholarly and practical interest, particularly regarding its implementation across diverse economic sectors (Mykkänen and Repo 2021). However, few studies have explored the determinants influencing individual-level adoption of CE practices in their daily lives, especially within island tourist destinations (Vargas-Sánchez 2018).

Transitioning to a CE model requires systemic support, active resident participation, and strong business sector commitment to foster positive attitudes and awareness about CE principles, which are crucial for successful adoption. In island destinations, resident engagement is critical for achieving a successful shift to CE. This engagement necessitates the active involvement of all stakeholders—including local residents—in sustainable destination development (Florido et al. 2019). Among residents, younger generations hold particular importance as they are expected to be a key player in the long-term adoption of CE practices (Kanchanapibul et al. 2014). As the most influential demographic in driving the transition toward CE, younger generations are essential for establishing enduring sustainability (Smol et al. 2018). Prior research indicates that the Generation Z cohort is more environmentally conscious than past generations (e.g., Wee 2019; Ribeiro et al. 2023; Prayag et al. 2022). We use the Theory of Planned Behavior (TPB) which identifies three factors that determine the intention to carry out an action or engage in a behavior: subjective norms (SNs), motivation, and self-efficacy. In tourism, TPB has proven a popular theory to study pro-environmental or environmentally friendly behavior and tourists' intention (e.g., Gao et al. 2016; Kvasova 2015; Mehmetoglu 2010), as well as to analyse the environmental intention of implementing environmentally friendly practices in the tourism industry and by businesses (e.g., Acampora et al. 2022; Cornejo-Ortega and Chávez Dagostino 2020; Khan et al. 2023).

The existing literature on residents' intentions and behaviors regarding engagement in the CE is limited and primarily focused on continental contexts such as Vietnam, China, Romania, and Poland. Few studies address tourism-dependent economies or destinations. Additionally, research should emphasize CE awareness and behavior among younger residents (Smol et al. 2018; Ribeiro et al. 2023). For instance, Trân et al. (2022) used the TPB and structural equation model (SEM) to examine residents' willingness to engage in CE in Vietnam. Their findings suggest that environmental concern and attitudes toward intention significantly influence CE engagement, with individuals' opinions impacting others.

Lakatos et al. (2016) found that Romanian residents have a positive attitude toward the environment but their recycling and green consumption behaviors are not particularly consistent with their environmental attitude. European Union (EU) residents exhibit greater knowledge and awareness of the CE than non-EU residents. While males show higher awareness, females demonstrate greater commitment to CE practices. Price is a key factor influencing environmentally friendly purchases (Duarte et al. 2024). Smol et al. (2018) showed that younger Polish generations are more familiar with CE behaviors than older generations and general resident awareness of CE positively correlates with their educational level. In a similar vein, Hao et al. (2020) employed the TPB and SEM to establish that in China, factors such as SNs, perceived economic benefits, the willingness to make sacrifices for environmental conservation, and anticipated positive emotions significantly influence the populace's readiness to engage in CE initiatives.

In Majorca, where the phenomenon of tourism phobia has increased, particularly among young residents (García-Buades et al. 2022) this population cohort is expected to be environmentally conscious. This paper focuses on this actor and seeks to address several key research questions: Do members of Gen Z of Majorca exhibit a circular behavior when traveling as tourists? What factors influence their behavior during holidays? This paper analyses the intention and behavior of Gen Z residents in Majorca to engage in CE practices while traveling as tourists. Employing the TPB, the research seeks to identify the factors influencing the implementation/engagement in CE practices by this population cohort while on holidays. A conceptual model utilizing partial least squares structural equation modeling (PLS-SEM) is proposed, grounded in a comprehensive literature review to test the research hypotheses.

This study contributes to research on circular and environmentally friendly behavior in several ways. It explores the circular and environmentally friendly behavior of residents of a tourism-based economy when traveling, by examining the intention and behavior of the resident population in a mature island tourism destination, with a specific focus on Generation Z, a rapidly growing tourism segment (Ribeiro et al. 2023). It assesses the impact of attitudes, SNs, and perceived behavioral control on Gen Z residents' intention to engage in CE practices when traveling. Additionally, the study focuses on the 3R principle—reduce, reuse, and recycle—introducing a two-dimensional construct to characterize 3R implementation behavior. The findings offer valuable insights for hotels' marketing managers and destination management organizations to develop strategies promoting CE practices among Gen Z consumers. This study contributes to the growing body of research on circular and environmentally friendly behavior in several ways. It examines the intention and behaviors of residents in a mature island tourism destination while they travel as tourists themselves, with a particular focus on Generation Z, a rapidly growing tourism segment (Ribeiro et al. 2023). It also evaluates the impact of attitudes toward CE practices, SNs, and perceived behavioral control

on Gen Z's intention to engage in CE practices while traveling. Additionally, the study centers on circular measures guided by the 3R principle—reduce, reuse, and recycle—introducing a two-dimensional construct to characterize 3R implementation behavior. Finally, the findings provide important insights for hotels' marketing managers and destination management organizations to develop targeted strategies promoting CE practices among Gen Z consumers.

Following this introduction, the paper is organized into a comprehensive literature review that sets the theoretical framework and research model, a methodology section detailing the research method, followed by a description of the findings in Section 4. Finally, Section 5 discusses the results, concludes the study, and outlines its theoretical and practical implications.

## 2 | Theoretical Framework and Research Model

### 2.1 | Generation Z and Environmental Awareness

Generational cohorts shape individual behaviors and thought processes, influenced by contextual factors and experiences. Four main generations are identified: Baby Boomers (1946–1960), Generation X (1961–1980), Millennials (1981–1990), and Generation Z (1991 and later) (Thangavel et al. 2019; Turner 2015). Generation Z, also referred to as iGeneration or Centennials, is highly connected through the Internet and exhibits greater environmental awareness than previous generations (Wee 2019; Ribeiro et al. 2023; Prayag et al. 2022). They are more likely to purchase second-hand goods (Duarte et al. 2024), consume organic products, and engage in sustainable travel practices (Seyfi et al. 2023; Sharma et al. 2023). In Poland, younger residents tend to discard and replace items more frequently than older generations, though they are also more inclined to resell them (Ostrowska 2023). Similarly, older individuals and males in France are more engaged in product repair (Jourdain and Lamah 2024). According to the World Economic Forum (2022), three-quarters of Generation Z prioritize sustainability over brand names, reflecting a decline in trust in traditional corporations and an increased focus on CE principles (Deloitte 2023). Additionally, Gen Z consumers in Portugal are more willing to pay a premium for green products when they perceive environmental benefits (Gomes et al. 2023). Overall, younger generations are highly interconnected and environmentally conscious, influencing their sustainable consumption patterns and engagement with circular goods and services (Carrillo González and Pomar Fernández 2021).

### 2.2 | TPB and CE

When individuals are environmentally conscious, they will likely take eco-friendly actions to maintain consistency (Rao et al. 2022). TPB can be used to analyse both resident and tourist consumers' pro-environmental behavior and intentions. The TPB posits that people make decisions through a rational evaluation of costs and benefits, with attitudes, perceived social pressure, and behavioral control playing key roles. So, a given behavior is essentially a psychological rather than social entity where the critical components involved in intention formation processes are attitudes toward said behavior, SNs and perceived behavioral control (Ajzen 1991). It also considers the influence of personal determinants in predicting an individual's readiness to engage in CE behavior; taht is, attitude, SNs, and perceived behavioral control determine behavioral intention.

Literature focusing on consumers' environmental or green behavior using TPB is relatively recent and mainly analyses their behavior in their home residence rather than when they travel, as this paper does. This literature can be classified into several streams: (1) factors affecting ecological or green behaviors such as purchasing or using green products (e.g., Joshi and Rahman 2016; Lee 2022; Wang and Wang 2016; Sharma and Foropon 2019; Adam 2022; Wang et al. 2018, among others), (2) waste sorting, composting and recycling behavior (Adjei et al. 2023; Cao et al. 2023; Mason et al. 2022; Hu et al. 2021; Mohamad et al. 2022; Lee 2022; Lu et al. 2022; Rahman et al. 2022), and (3) resource-saving and sustainable behavior (Bhutto et al. 2022; Zheng et al. 2023; Zhu et al. 2020).

In the first stream on factors influencing green behavior, Sharma and Foropon (2019) used TPB to demonstrate the significance of product attributes in the decision-making process behind green purchases. Wang et al. (2018), using TPB and SEM, found that attitude and perceived behavioral control are positively related to purchase intention for remanufactured products in China, while SNs do not affect this intention. Lee (2022) used TPB to show that eco-friendly attitudes, SNs, and perceived behavioral control positively influence residents' circular packaging behavior and their intention to use circular packaging in Taiwan.

Similarly, Jan (2022) examined factors influencing consumer behavior and purchase intention regarding CE products. Utilizing the TPB and SEM estimation, the study analyzed consumer data from Malaysia and Turkey. Findings indicate that SNs significantly impact purchase intentions in both countries, emphasizing the role of social influence (family, friends, and peers). However, while environmental concerns drive the intention to buy CE products in Malaysia, perceived behavioral control plays a crucial role in Turkey.

When focusing on the literature on waste sorting, composting and recycling behavior, Bardus and Massoud (2022) used TPB and SEM estimation to predict waste-sorting intentions in rural Lebanese communities. Their findings show a strong positive attitude toward waste management. Behavioral intention and PBC were moderately high, while perceived norms presented a low level. In this sense, awareness campaigns focusing on sorting at source can lead to a positive resident response. Cao et al. (2023) identified attitudes, SNs, and perceived behavioral control as key determinants of tourists' waste sorting behavior. Specifically, positive attitudes toward waste sorting enhance waste sorting intentions, self-identity as an environmentally conscious individual reinforces these intentions, and moral norms are positively associated with actual waste sorting behavior. Tourists who perceive themselves as eco-friendly engage in sustainable actions to align with their self-identity. Adjei et al. (2023) highlighted the role of socio-demographic factors, particularly gender and educational level, in shaping plastic waste recycling intentions and behaviors in Ghana. Furthermore, environmental concern was found to positively influence recycling intentions and behaviors.

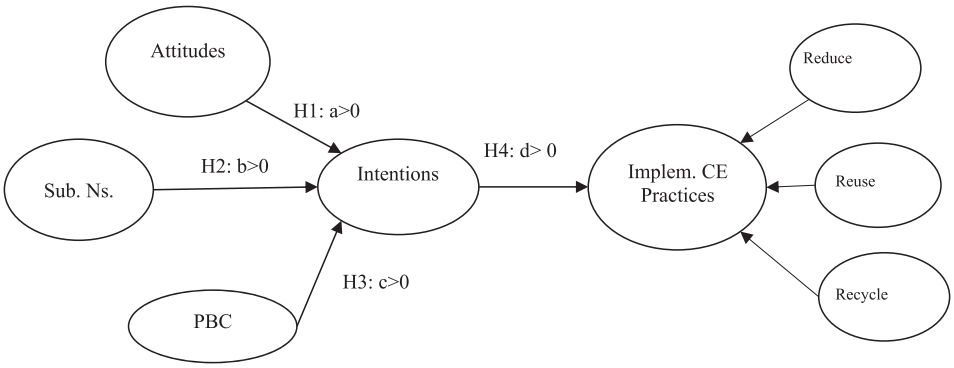


**FIGURE 1** | Research model.

Finally, among the research on resource-saving and sustainable behavior, Bhutto et al. (2022) showed that the purchase intention of energy-saving appliances among young consumers in Pakistan using TPB and SEM is positive and rational and is not related to moral obligations and SNs. This intention is predicted by their attitude and determines green purchase behavior for energy-saving appliances. Zheng et al. (2023) discovered that environmental concern had a positive and significant impact on the three TPB constructs (attitudes, SNs and perceived behavioral control) for a sample of Chinese residents traveling to a rural area. This ecological concern affected resource-saving behavioral intention positively. Zhu et al. (2020) also used TPB and SEM to analyse the influence of residents' environmental concerns through the three TPB constructs with regard to their willingness to adopt bicycle sharing. The findings, first, indicate that the three TPB constructs have a positive influence on the intention to adopt the circular practice and, second, that attitude emerges as the most significant factor influencing the intention to engage in bicycle sharing.

So, some previous research indicates: (a) how attitudes have a significant and positive impact on the intention to engage in green or circular activities or to pursue circular behavior (e.g., Bhutto et al. 2022; Cao et al. 2023; Wang et al. 2018; Zhu et al. 2020). The more positive Gen Z residents' eco-friendly attitudes are, the greater their intention to engage in CE activities will be. Thus, the following hypothesis can be formulated:

**H1.** *Attitudes toward CE positively and directly influence the intention of Gen Z residents of an island sun-and-beach destination to implement CE practices when traveling as tourists.*

(b) SNs, that is, the influence of individuals' closest environment (friends, family) plays a positive role in the intention to engage in CE activities (e.g., Cao et al. 2023; Lee 2022; Zhu et al. 2020). Hence, a second hypothesis can be formulated:

**H2.** *The subjective norm, that is the support of one's closest environment, exerts a positive or direct influence on the intention of Gen Z residents of a mature sun-and-beach destination to implement CE practices when traveling as tourists.*

(c) perceived behavioral control positively influences the intention to engage in circular practices such as resource-saving activities (Zheng et al. 2023), bicycle sharing (Zhu et al. 2020), waste sorting (Cao et al. 2023), or purchasing remanufactured products (Wang et al. 2018). This leads to the formulation of the proposed hypothesis:

**H3.** *Perceived self-control directly influences the intention of Gen Z residents of a sun-and-beach island destination to implement CE practices when traveling as tourists.*

Similarly, certain articles in the literature review (e.g., Bhutto et al. 2022) indicate that intention positively affects implementation of circular practices, that is, circular behavior. For Bhutto et al. (2022) this intention determines green purchase behavior for energy-saving appliances among young consumers, while for Sharma et al. (2024) environmental concern influences the attitude toward sustainability among young university students, while contributing to explain the factors for promoting sustainable or eco-friendly entrepreneurship. This leads to a fourth hypothesis:

**H4.** *The intention of Gen Z residents of a mature island destination positively influences the implementation of CE practices when they travel as tourists.*

In light of this, the proposed model is shown in Figure 1.

## 3 | Research Method

### 3.1 | Sample

The study population comprises Gen Z residents in Majorca (18–30 years old). A sample of 300 usable questionnaires was collected face-to-face from Gen Z residents, in line with Green (1991) and Hair et al. (2017). This design achieves an 80% confidence level with a 5% margin of error, accommodating up to four predictor variables. The minimum sample size required to detect medium-sized effects among the variables is 89 responses. Therefore, given the sample size was exceeded, it was deemed acceptable for this study. Respondents were surveyed in public spaces such as educational organizations (universities, high schools, etc.), train, bus, and subway stations, and so forth, and the fieldwork was carried out from March until the end of June 2023. Information on the objective of the study and an explanation of the questions were

provided by survey takers, with the survey taking between 10 and 18 min to complete. The proposed hypotheses are tested using a SEM.

The survey used in the fieldwork was structured into three sections, with open and closed-ended questions, as well as items rated on a seven-point Likert scale.

- Section 1 contained questions on circular practices classified according to the 3R principles (reduce, recycle, and reuse) implemented by Gen Z, first at home (place of residence) and then, when traveling as a tourist.[1]
- Section 2 included questions about knowledge and attitude regarding CE: reasons for implementing CE practices, types of support (friends, family, and colleagues) and perceived self-control.
- Section 3 contained questions related to the respondent's profile and socioeconomic details.

Table 1 shows the sample distribution for the control variables. The respondent profile matches a female Gen Zer aged 18–20 with at least upper secondary education, living in a large town or city, and with an annual family income under 40,000 euro.

**TABLE 1** | Respondent profile.

| Sociodemographic characteristics | | N° | % |
|---|---|---|---|
| Gender | Male | 135 | 45.0 |
| | Female | 165 | 55.0 |
| | Total | 300 | 100 |
| Age | 18–20 | 145 | 48.3 |
| | 21–25 | 97 | 32.3 |
| | 26–30 | 58 | 19.4 |
| | Total | 300 | 100 |
| Educational level | Lower secondary | 87 | 29.0 |
| | Upper secondary (and vocational education) | 176 | 58.7 |
| | Tertiary education | 37 | 12.3 |
| | Total | 300 | 100 |
| Municipality size | Under 20,000 | 41 | 13.7 |
| | 20,000–100,000 | 56 | 18.7 |
| | Over 100,000 | 203 | 67.7 |
| | Total | 300 | 100 |
| Annual income level | Under 19,999€ | 43 | 14.3 |
| | 20,000€–39,999€ | 69 | 23.0 |
| | Over 40,000€ | 44 | 14.7 |
| | No answer | 144 | 48.0 |
| | Total | 300 | 100 |

### 3.2 | Measures

The endogenous variables are intention and implementation of CE practices. The intention to implement the CE practices scale was adapted from the scale initially developed by Ajzen (1991) and comprises three items. In line with previous work, it was modeled as a mode A or reflective composite construct. The scale of the implementation variable was developed by the authors to collect the three dimensions involved in implementing CE: recycle, reuse and reduce. The variable was modeled as a higher order construct (HOC) formed by three lower order dimensions (LOC), where the two levels are type B or formative (first and second order). All item response options are scaled from 1 ("strongly disagree") to 7 ("strongly agree") and were adapted from previous studies following a comprehensive literature review (Rodríguez et al. 2020; Guan et al. 2023; Parzonko et al. 2021). The Reduce dimension was measured by six items, while the Reuse and Recycle dimensions were measured by five each.

The independent variables are intention antecedents. Each construct was assessed using a Likert-type scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"), with all items adapted from Ajzen (1991). A six-item scale was used to rate attitude, asking about the motivation making individuals consider CE practices. This variable was modeled as a formative or type B composite construct. Perceived self-control was assessed using a four-item scale that evaluated the ability to effectively perform specific CE practices. SNs were assessed through a three-item scale. These last variables were modeled as a type A or reflective composite construct. The selection of the PLS methodology was driven by two main factors: (i) the relatively small sample size and (ii) the characteristics of the model's variables, which align with a composite mode B approach (Roldán and Sánchez-Franco 2012). The analysis was performed using SmartPLS version 4.1 software (Hair et al. 2017).

Ex-ante measures to try and prevent common method bias (CMB) were taken. Participants were informed that there were no correct or incorrect responses, and that their answers will be kept confidential. To assess the existence of CMB, the measured latent marker variable (MLMV) technique was used (Chin et al. 2013), incorporating respondent gender. These findings indicate that (a) all direct coefficients from the MLMV to the original model constructs are nonsignificant ($p < 0.05$); (b) the MLMV model demonstrates a poorer fit compared to the original one; and (c) the direct coefficients show no significant difference from the original estimates. The findings indicate that CMB is improbable to be an issue in our data.

### 3.3 | Data Analysis

partial least squares (PLS) methodology has been employed to estimate direct coefficients and evaluate the hypotheses. PLS methodology is preferable in this case (Roldán and Sánchez-Franco 2012), as the model's variables follow a composite mode structure (Mode A—reflective—and Mode B—formative). Additionally, one of the variables, implementation, was modeled as a HOC (formative or type B) with each of its

**TABLE 2** | Measurement model assessment (Mode A constructs).

| Constructs/items | CR | AVE | Loading | Value |
|---|---|---|---|---|
| Subjective norm | 0.860 | 0.775 | | |
| I find support for the implementation of CE practices in my closest family. | | | 0.837 | 0.000*** |
| I find support for the implementation of CE practices from my friends. | | | 0.909 | 0.000*** |
| I find support for the implementation of CE practices from my acquaintances and coworkers. | | | 0.893 | 0.000*** |
| Perceived behavioral control | 0.845 | 0.565 | | |
| I have the money necessary to carry out circular or environmentally sustainable practices. | | | 0.420 | 0.000*** |
| I have the necessary knowledge to carry out these practices. | | | 0.763 | 0.000*** |
| I can overcome all obstacles and prioritize my participation in circular or environmentally sustainable practices. | | | 0.863 | 0.000*** |
| I am able to carry out circular or environmentally sustainable practices. | | | 0.871 | 0.000*** |
| Intention | 0.860 | 0.662 | | |
| I am looking forward to participating in circular or environmentally sustainable practices. | | | 0.679 | 0.000*** |
| I am interested in knowing the environmental values and/or problems of my surroundings. | | | 0.838 | 0.000*** |
| I will assist in creating and implementing initiatives to promote CE practices. | | | 0.811 | 0.000*** |
| I will promote environmental awareness in my family. | | | 0.784 | 0.000*** |
| I will recommend others to participate in circular or eco-friendly practices. | | | 0.795 | 0.000*** |

*Note:* 95% confidence percentile ($N = 5000$ subsamples).
***$p < 0.001$.

dimensions also modeled as a formative composite or type B (LOC).

Researchers mainly use two approaches to measure HOCs in PLS-SEM: repeated indicators and two-stage. Sarstedt et al. (2019) demonstrate that the two-stage approach is superior to the repeated indicators approach. Likewise, according to Hair et al. (2018), the two-stage approach is better where the researcher intends to evaluate the nature of the higher-order construct using a CTA-PLS analysis. In line with these arguments, our work uses the two-stage approach. In the first stage, all LOC indicators are mapped to the HOC measurement model so that the indicators are used twice, once for LOCs and again for HOCs. In this way, the scores of the first-order latent variables (LOC) are estimated, becoming the indicators for HOC in the second stage (Hair et al. 2018). In the second stage, the specific weights of each of the dimensions (LOC) are estimated in the formation of the higher-order variables (HOC). The weights of each item involved in the formation of each LOC and the weights of each of the dimensions in the formation of HOC enable us to estimate the values of these aggregate variables for each sample element.

A two-step approach was used to evaluate the research model (Hair et al. 2017). In the first step, the measurement model (outer model) was assessed. In the second step, the structural model (inner model) was evaluated using path coefficients, explanatory power ($R^2$), and the root mean squared residual (SRMR) to assess the PLS-SEM model fit (Henseler et al. 2016).

## 4 | Results

### 4.1 | Measurement Model Assessment

Educational and income level, gender, and age were used for the control variables. As Arun et al. (2021) indicated, limited studies considered income, gender or age as control variables in the model, as we do in this research when examining residents' environmentally friendly and circular attitudes and behaviors when traveling as tourists. Gender was coded as 1 for men and 2 for women. The four variables show negative effects on implementation, but only income at the 5% level and educational level at the 10% level are significant. This indicates that individuals with lower income levels and lower levels of education implement CE practices to a greater extent. The gender and age variables do not show any significant effect.

Tables 2 and 3 show the weights and loadings of composite variables modeled as Mode A (reflective) (Henseler et al. 2014, 2016). For Mode A composites, reliability is considered adequate for loadings above 0.7 (Hair et al. 2017). Just two items, one for the PBC and one for the Intentions items, had a lower loading. However, we have kept these values as they increase

**TABLE 3** | Measurement model assessment (Mode B constructs).

| First level (LOCs) | Weights | *p* | VIF |
|---|---|---|---|
| Attitudes | | | |
| Feeling good about myself. | 0.834 | 0.000*** | 1.725 |
| Fulfilling my responsibility to care for and protect the environment. | 0.924 | 0.000*** | 1.611 |
| Looking good to my family, friends, and acquaintances. | 0.277 | 0.994 n.s. | 2.213 |
| Doing the same thing as my family, friends, and acquaintances. | 0.274 | 0.454 n.s. | 2.005 |
| Due to the economic compensation that it represents in some cases (bonuses, discounts, etc.). | 0.042 | 0.779 n.s. | 1.749 |
| To avoid economic sanctions. | 0.020 | 0.209 n.s. | 1.669 |
| Reduce | | | |
| I shower instead of taking a bath. | 0.378 | 0.000*** | 1.282 |
| I buy local, zero-kilometer, handmade products. | 0.212 | 0.029** | 1.225 |
| I buy ecological, environmentally friendly products (food, souvenir items, etc.). | 0.408 | 0.000*** | 1.345 |
| I work to minimize food waste in restaurants/hotel buffets. | 0.197 | 0.022** | 1.195 |
| I switch off the air conditioning, heating, and lights when I leave the accommodation. | 0.160 | 0.039** | 1.134 |
| In general, I try to consume only what is strictly necessary. | 0.208 | 0.067* | 1.420 |
| Recycle | | | |
| I recycle plastics. | 0.289 | 0.041** | 2.377 |
| I recycle glass. | 0.189 | 0.063* | 1.258 |
| I recycle paper and cardboard. | 0.132 | 0.216 n.s. | 1.545 |
| I put waste in separate containers. | 0.415 | 0.000*** | 1.191 |
| In general, I try to recycle as much as possible. | 0.381 | 0.008*** | 2.377 |
| Reuse | | | |
| I reuse the bath towels. | 0.205 | 0.035** | 1.323 |
| I reuse beach/pool towels. | 0.393 | 0.000*** | 1.225 |
| I request that my sheets not be changed during my stay, if possible | 0.457 | 0.000*** | 1.258 |
| If I go to a restaurant/hotel buffet and I have leftover food, I ask to take it home. | 0.247 | 0.009*** | 1.115 |
| In general, I try to reuse as much as possible. | 0.198 | 0.049** | 1.472 |
| Second level (implement CE practices) | | | |
| Reduce → implement CE practices | 0.402 | 0.000*** | 1.533 |
| Recycle → implement CE practices | 0.359 | 0.000*** | 1.408 |
| Reuse → implement CE practices | 0.468 | 0.000*** | 1.487 |

*Note:* 95% confidence percentile ($N = 5000$ subsamples).
Abbreviation: n.s, not significant.
*$p < 0.05$.
**$p < 0.01$.
***$p < 0.001$.

the constructs' average variances extracted (AVEs) and reliability. The composite reliabilities (CRs) exceed 0.7; similarly the AVEs also exceed 0.5, indicating acceptable convergent validity (Hair et al. 2017). With regard to the first-order constructs in Mode B, the recycle construct returns one non-significant item. The rest are significant at the 95% or 99% confidence level. All items for the three dimensions of the second-order construct are significant at the 99% confidence level. Only the two items referring to intrinsic motivation are significant for the attitude's variable. The four items related to extrinsic motivation are not significant. Following Hair et al. (2017, 2018), all items from constructs of a formative or

**TABLE 4** | Discriminant validity.

| | Fornell–Larcker criterion | | | Heterotrait–Monotrait ratio criteria | | |
|---|---|---|---|---|---|---|
| **Constructs** | **PBC** | **SNs** | **Intentions** | **PBC** | **SNs** | **Intentions** |
| PBC | **0.751** | | | | | |
| Subjective *N* | 0.415 | **0.880** | | 0.418 | | |
| Intentions | 0.621 | 0.498 | **0.813** | 0.591 | 0.488 | |

*Note:* The square roots of AVEs are shown diagonally in bold.

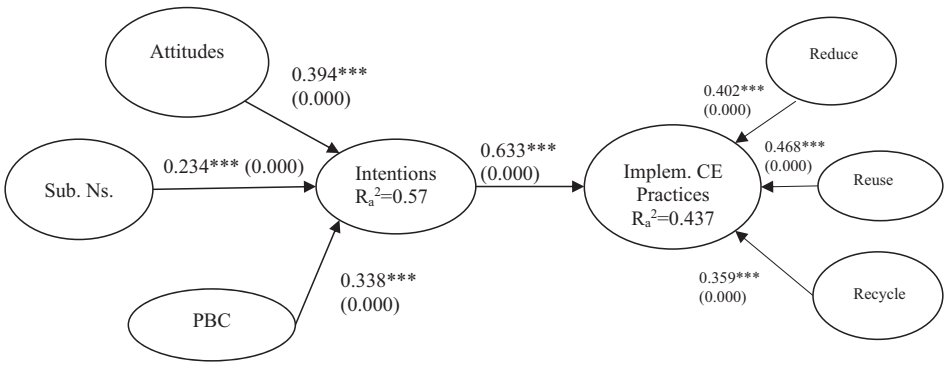


**FIGURE 2** | Estimated model.

composite Type B nature were retained, regardless of their significance. The highest variance inflation factor (VIF) for the Mode B composite constructs is 2.377, which is below the commonly accepted threshold of 3.

Thus, the data do not exhibit multicollinearity issues.

Both the Fornell–Larcker approach (Barclay et al. 1995) and the more stringent Heterotrait–Monotrait ratio of correlations (HTMT) (Henseler et al. 2015) prove the presence of discriminant validity for all the Mode A latent variables (Table 4).

To evaluate the convergent or external validity of the Mode B composites, the constructs are linked to the identical underlying construct; however, they are designed as Mode A composites. The resulting path coefficients exceed the accepted threshold of 0.8 (Hair et al. 2017). Hence, convergent validity is confirmed for the Implementation and Attitude constructs.

## 4.2 | Structural Model Assessment

We first analyzed the direct relationships for the proposed structural model for the entire sample data set. Figure 2 shows the estimated path coefficients. We used a bootstrapping procedure with 5000 subsamples that allows us to calculate the standard error, *t* student statistics, and *p*-value to evaluate the significance of these coefficients. The results show that all path coefficients are significant at 99% (Table 5). The model explains 57.4% of the intention variable and 43.7% of the implementation variable.

The f statistic indicates the improvement percentage of the $R^2$ for an explained variable by including a specific explanatory variable in the model. The effect of one variable in explaining another can be considered as large, medium or small depending on the statistic's value. Here, attitudes or perceived behavioral control have a medium effect on the determination coefficient for the Intention variable. The Intention variable has a significant impact on the determination coefficient for the Implementation of CE practices variable. Regarding the model's fit (Table 6), the SRMR has a value of 0.068, less than 0.08, meaning that

**TABLE 5** | Structural model results.

| **Path coefficients** | |
|---|---|
| H1: Attitudes → intentions ($a>0$) | $a=0.394$*** (6.433) |
| H2: SNs → intentions ($b>0$) | $b=0.235$*** (3.887) |
| H3: PBC → intentions ($c>0$) | $c=0.338$*** (4.914) |
| H4: Intentions → implement CE ($d>0$) | $d=0.633$*** (13.520) |

*Note: t* Bootstrapping values in parentheses.
***$p<0.001$.

**TABLE 6** | Model fit statistics.

| **Dependent variable** | $R^2_a$ | $f^2$ |
|---|---|---|
| Intentions | 0.574 | |
| Attitudes | | 0.278 |
| Subnorms | | 0.105 |
| PBC | | 0.188 |
| Implement CE practices | 0.437 | |
| Intentions | | 0.669 |

according to (Hu and Bentler 1998) and Hair et al. (2017), the model can be considered valid.

## 5 | Discussion and Conclusions

### 5.1 | Conclusions

This study addresses a research gap concerning the role of residents in the transition toward a CE in mature island tourist destinations, with a special focus on Generation Z, a fast-growing demographic group in the tourism market. Unlike previous studies that have primarily analyzed resident behavior in their usual place of residence, this paper examines their behavior when traveling as tourists.

The study examines the key determinants influencing Generation Z residents in Majorca to engage in CE practices while traveling as tourists. Additionally, it identifies the sociodemographic variables that most significantly impact the implementation of circular practices within this population cohort. Using the TPB and PLS-SEM, a conceptual model was formulated based on a review of the literature to evaluate the influence of three factors on the intention to engage in CE practices and, subsequently, the effect of this intention on their actual implementation.

Four hypotheses (H1–H4) were developed and empirically tested, with the results confirming their validity. The findings indicate that all three factors positively influence the intention to adopt CE practices while traveling as tourists among Gen Z residents, with personal motivation being the most significant determinant. Furthermore, educational level and income negatively affect the implementation of circular practices. Notably, two intrinsic motivational drivers—feeling good about oneself and fulfilling the personal responsibility toward environmental protection—emerge as key factors in fostering CE engagement while traveling as tourists among Gen Z residents. This viewpoint has not yet been examined in the existing literature.

The acceptance of H1 aligns with the findings of Bhutto et al. (2022), Halepete et al. (2009), and Michel et al. (2023). Bhutto et al. (2022) analyzed the purchasing intention of energy-saving appliances among young consumers in Pakistan and showed attitude as predicting intention. Similarly, Michel et al. (2023) demonstrated a positive and significant effect from attitude toward sustainable consumption on green purchase intention for Gen Z consumers in Haiti, among other results. Halepete et al. (2009) demonstrated that attitude toward clothing customization is positively related to the intention to purchase personalized fair-trade clothing. The acceptance of H2 is consistent with the results from Wray-Lake et al. (2010, 2016) who found young people's perceptions of environmental responsibility to be strongly influenced by their social environment, that is, SNs. Additionally, Korsunova et al. (2021) showed that young Finns are reluctant to accept environmental responsibilities and behave accordingly since, for them, the government and institutions are in charge of these responsibilities. Likewise, our results on the acceptance of H3 are also supported by previous findings from Zhao et al. (2014) and Zhu et al. (2020). For Zhao et al. (2014), green consumer behavior (particularly, use behavior) in China is determined by perceived behavioral control. Zhu et al. (2020) found three factors, namely user attitudes, SNs, and perceived behavior, that all have a positive impact on the intention to participate in bicycle-sharing in China.

In turn, when focusing on attitudes the findings show significant items are linked to intrinsic motivation: feeling good about oneself and fulfilling one's personal responsibility of caring for and protecting the environment. In fact, as Duong et al. (2023) indicate, intrinsic motivations correspond to motives involved in eco-friendly behavior in carrying out circular practices, which emerge internally from one another as the behavior is satisfying or rewarding for individuals, or pleasurable. The behavior is related to tourists' desires and needs (Chan and Baum 2007) and they engage in circular initiatives due to intrinsic happiness, pleasure or satisfaction. This result is supported by previous findings from Ali et al. (2020), Nguyen et al. (2022), and Pham et al. (2022). Ali et al. (2020) indicated that green thinking and green altruism have an important positive influence on eco-friendly purchasing intention, and that intrinsic motivation mediates these relationships. Nguyen et al. (2022) pointed out that organizing education and communication programs on reducing single-use plastic consumption leads consumers to find enjoyment and engage more frequently in green behavior and practices. Similarly, Pham et al. (2022) found positive interaction effects between intrinsic motivation and prosocial motivation in promoting sustained pro-environmental consumer behaviors, in particular on residents' behavior to reducing single-use plastics in three Vietnamese cities.

The findings also support H4: Gen Z residents' intention positively or directly influences the implementation variable of CE practices when traveling as tourists. This result is in line with Bhutto et al. (2022), who found that the intention of young consumers positively affects the implementation of circular practices, that is, circular behavior and, particularly, the green purchase behavior for energy-saving appliances.

The analysis of control variables revealed that only income (at the 5% level) and educational level (at the 10% level) were significant, both exhibiting a negative effect. This indicates that individuals with lower income and education levels adopt CE practices more extensively. This negative relationship may be explained by the fact that individuals with lower income levels are more likely to engage in circular practices such as reusing, repairing, or repurposing products as cost-saving strategies. Similarly, lower educational levels may be associated with more practical, necessity-driven behaviors rather than deliberate environmental awareness. For example, Korsunova et al. (2022) document a "necessity-driven circular economy" in low-income informal contexts, where reuse, repair, and recycling are driven by economic necessity rather than voluntary environmental pro-behavior. Similarly, Wright et al. (2019) argue that many low- and middle-income countries are already more "circular" than high-income ones simply because of lower consumption and greater reuse practices. Michel et al. (2023) supported this finding by demonstrating that attitudes toward green consumption positively influence green product and service purchase intentions among low-income Gen Z consumers. However, previous studies have reported mixed results. Some authors (e.g., Ansar 2013; Guan et al. 2023; Kim et al. 2012; Leonidou

et al. 2015; Paul and Rana 2012) found income level to be non-significant or positively related to environmental behavior, while others (e.g., Ansar 2013; Fisher et al. 2012; Leonidou et al. 2015; Shimul and Cheah 2023) reported similar findings for education level. Leonidou et al. (2015) indicated that higher education and income levels correlate with stronger environmental attitudes, while Bai and Wan (2012) associated them with greener consumption behavior. Meet et al. (2024) applied SEM modeling to demonstrate a positive relationship between education, income levels, and the intention to purchase environmentally friendly packaged beverages among Gen Z Indians. Similarly, Shimul and Cheah (2023) found that education level positively influences consumers' purchasing behavior for environmentally friendly packaged products.

### 5.2 | Theoretical Implications

This study fills a research gap on the role of Gen Z residents in the transition to a CE in mature island tourist destinations. Unlike previous research, this study examines their behavior while traveling and staying in hotels, instead of resident behavior in their place of residence.

An important theoretical contribution of our study is the introduction of a second-order RRR construct (Implementation of CE Practices), which synthesizes the 3Rs (reduce, reuse, recycle). The study reveals that these three dimensions hold similar importance, indicating that the construct should be considered formative rather than reflective. This represents a novel theoretical contribution, as no prior studies have modeled CE implementation in this manner, that is, synthesizing the 3R.

### 5.3 | Practical Implications

The findings of this study provide valuable insights for policymakers, hotel managers, and tourism planners seeking to promote CE practices in island destinations. The strong influence of intrinsic motivation—particularly the feeling of personal fulfillment and personal environmental—suggests that circular initiatives should prioritize emotional and self-determined drivers of behavior rather than relying exclusively on rational or economic incentives. Since Generation Z residents show greater engagement in CE practices when personally motivated, hotels and tourism businesses could design participatory initiatives (e.g., gamified recycling/reuse programs, reward systems, or cocreated sustainability projects) that link CE actions to personal enjoyment, social recognition, and personal satisfaction, thus fostering long-term commitment among Generation Z.

Furthermore, the negative association between income, education, and the implementation of CE practices when traveling indicates the need for differentiated policy and communication approaches. These should highlight the relevance and simplicity of circular actions, especially for higher-income and highly educated groups who may view such behaviors as less rewarding or necessary. Finally, destination management organizations and local governments should integrate these behavioral insights into sustainability policies, fostering environments where CE practices are visible, socially supported, and easy to adopt by residents and tourists alike. Engaging young residents collaboratively can further position Generation Z as key agents of change in the transition toward a CE.

Personal motivation is key to engaging Generation Z in CE practices. Early education on Sustainable Development Goals and CE can reinforce these attitudes, fostering environmental responsibility. The findings guide strategies to promote circular behaviors by appealing to Gen Z's sense of responsibility and self-esteem. Policymakers should prioritize intrinsic motivation to enhance CE adoption, while hotel marketers can use these insights to encourage sustainable behavior.

### 5.4 | Limitations and Directions for Future Research

This research has several limitations: First, a limitation lies in the sample utilized, since it focuses on Gen Z residents in a mature island destination when traveling as tourists. Results might not be generalizable to the Gen Z residents of other regions. Further research could collect data from a continental region and/or an emergent destination and compare findings. Future research could also focus on comparing the findings on Generation Z residents with other population cohorts, or with other modeling techniques such as logit modeling. Additionally, results could be compared with the behavior of these Gen Z residents in their place of residence (Majorca) and identify differences in behavior at home and when traveling as tourists. Second, while the quantitative methodology (TPB) adopted in this research offers meaningful contributions, it might only partially reflect the full complexity of stakeholder dynamics or the broader contextual implications of these practices. Future research can address this limitation by integrating qualitative methodologies to complement our findings, such as a Delphi survey with experts and managers in the tourism sector.

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#### Conflicts of Interest

The authors declare no conflicts of interest.

#### Endnotes

[1] In this study, only the items from Section 1 concerning Gen Zers traveling as tourists were considered.

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