

EMPOWERING CONSUMERS THROUGH CIRCULAR ECONOMY: BENEFITS AND CHALLENGES

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Abstract

In Society 5.0, the circular economy concept is crucial in shaping sustainable consumer practices. With the advancement of technology and the growing demands of consumers, understanding their role in the circular economy is becoming increasingly important. As an indispensable part of this system, consumers use products and actively contribute to shaping a sustainable market. Their rights include access to environmentally responsible products, transparent information about sustainability, and the ability to return, repair, or exchange products. Therefore, this paper analyses how consumers can exercise their rights, the benefits of a circular economy, and what obligations and challenges they must overcome. The research includes data collected through surveys in 31 countries and members of the ECO4ALL COST action. The results obtained will be analyzed using statistical methods to identify the benefits and challenges customers in these countries face within the circular economy framework. Through this analysis, the paper provides recommendations for improving circular mechanisms that benefit consumers and contribute to a sustainable future.

Keywords: Circular economy, consumer, benefits, challenges

JEL Classification: Q56, D12, Q01, M14, D18

1. INTRODUCTION

The circular economy (CE) aims to radically transform production and consumption systems by optimizing resource use to reduce dependence on new raw materials (Camacho-Otero *et al.*, 2018; Kirchherr *et al.*, 2017). This concept enhances sustainability by offering economic benefits to organizations through improved competitive advantage, fostering innovation, boosting sales, and attracting top talent (Kirchherr *et al.*, 2017).

The circular economy (CE) is an approach to the systemic redesign of economies such that they minimize the use of new natural resources and maximize the duration of use of all products and services (Camacho-Otero *et al.*, 2018; Kirchherr *et al.*, 2017). This concept also enhances sustainability by contributing economic value to organisations by improving their competitive position, enhancing innovation, increasing sales, and attracting skilled personnel (Kirchherr *et al.*, 2017).

The transition to a circular economy also significantly benefits consumers through economic savings, better access to environmentally friendly and long-lasting products, and increased awareness of sustainability and the possibilities of reuse and repair (Camacho-Otero *et al.*, 2018). Considering the circular economy aims for sustainable growth (Kirchherr *et al.*, 2017), positioning consumption as a form of sustainable consumption is important (Camacho-Otero *et al.*, 2018) to align with circular economy principles.

The circular economy is a concept that enables consumers to make a difference in resource conservation and waste reduction through their consumption. As the concept of the circular economy gains more momentum worldwide, consumers are now more than ever aware of their consumption's effects on the planet's sustainability (Vidal-Ayuso *et al.*, 2023).

The traditional linear model of buying, using, and then disposing of a product is replaced by the circular economy, which allows consumers to participate in more sustainable practices such as repairing, reusing, and recycling products. This is not only an industrial or regional phenomenon. It also means that consumers have to get involved in understanding the new business models and product use (Hunka *et al.*, 2021).

New product design and business model innovations provide consumers with more durable and environmentally friendly products (de Kwant *et al.*, 2021). The act of buying products and the awareness of making the right decisions towards a sustainable future are relieving the pressure on the environment and encouraging companies to adopt circular principles (Rizos *et al.*, 2016).

Most of the literature on the circular economy has focused on strategies for developing circular economies (Lewandowski, 2016) and optimizing production by exploring circular business models (Rizos *et al.*, 2017), but less attention has been paid to how consumption and consumers can be actively involved in circular practices. This paper aims to explore how consumers can exercise their rights, the

benefits of a circular economy, and the obligations and challenges they need to overcome. For this purpose, it is necessary to examine the impact of incentives for the circular economy, the financial responsibility of institutions, and consumer education on consumer behaviour in the context of the circular economy.

The remainder of the paper is structured as follows. Section 2 presents a literature review and introduces the hypotheses. Section 3 presents the data and methodology employed in the paper. Section 4 presents and discusses the main results. The last section is the conclusion.

2. LITERATURE REVIEW

In recent decades, the role of consumers in sustainable consumption has been increasingly decisive because consumers are considered active participants in achieving sustainability goals and environmental policies (McGregor, 2002). Consumer engagement in the circular economy is reflected in their ability to encourage sustainable production and consumption through informed decisions, changing habits and active participation in recycling and reuse (Mak & Terryn, 2020). Circular models can provide incentives to producers and consumers to use resources in a more sustainable way (Hojnik, 2018). Hence, consumer incentives to adopt circular behavior patterns depend on their attitudes, perceptions and willingness to accept them (Vidal-Ayuso *et al.*, 2023). Although consumers' interest in circular solutions is growing (Vehmas *et al.*, 2018), they simultaneously express the need for clear information about the circular economy and how their behavior can contribute to environmental protection, as they consider it a key guide for making consumer decisions (Testa *et al.*, 2020; Vehmas *et al.*, 2018). Therefore, in light of the preceding discussion, the proposed hypothesis is as follows:

Hypothesis 1: Circular economy incentives positively influence consumer behaviour.

According to research, financial support in the circular economy has become increasingly important as a key concept of sustainable development because investors want more environmentally friendly production and sale of goods (Dirk & Nett, 2022; Saleem *et al.*, 2022). Financial institutions which support circular consumption can help producers provide eco-friendly products to customers (Gu *et al.*, 2023). Many studies have addressed the impact of financial instruments, such as green financing, on consumer behavior (Machova *et al.*, 2022; Mogaji *et al.*, 2022; Amalia *et al.*, 2021). Financial support provided by policymakers influences consumers' intention to adopt sustainable practices and products in the circular economy. According to Gu *et al.* (2023), financial support can increase consumers' willingness to engage in circular consumption. The theory of planned behavior supports this fact, as external factors can influence consumer behavior regardless of their original intention (Yuriev *et al.*, 2020). Therefore, the following hypothesis is proposed:

Hypothesis 2: Consumer perceptions of financial support for circular practices influence their behaviour.

Although the availability of sustainable products and services on the market is necessary, it is insufficient to encourage circular consumer behavior (Mak & Terryn, 2020). Consumer education is key in applying circular practices by engaging other participants in the circular economy loop (Kakadellis *et al.*, 2021; Borrello *et al.*, 2020). Therefore, by educating consumers, it is possible to increase awareness and shape their attitudes and thinking when making informed decisions in accordance with the principles of circularity. Information consumers receive through education can empower them to make decisions about circular consumption (Vidal-Ayuso *et al.*, 2023). Furthermore, regulation can contribute to directing demand, but education enables consumers to understand the benefits of sustainable choices and actively participate in the circular economy (Mak & Terryn, 2020). From this perspective, the next hypothesis is proposed as follows:

Hypothesis 3: Consumer education about reducing, reusing, and repairing influences their behaviour.

The conceptual model that illustrates proposed relations among defined factors is depicted in Figure 1.

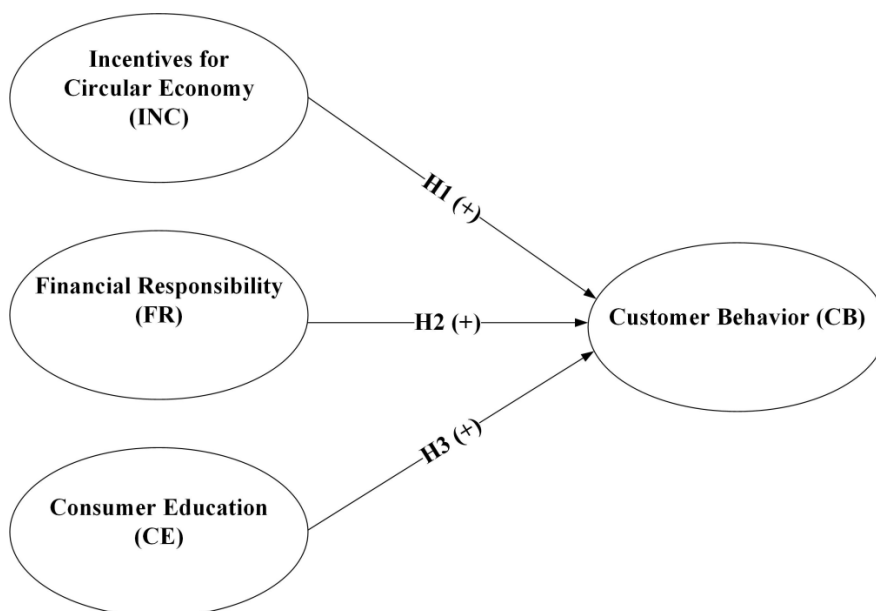


Figure 1. Conceptual model

3. METHODOLOGY

In order to collect data on the development of consumer capacities in circular practices such as reduction, reuse and repair through virtual collaboration and networking in a pan-European framework, an initial survey was conducted within the COST Action CA22124 - ECO4ALL. The action research group prepared a measurement scale, and questionnaire to assess the role of consumers in circular practices in the countries involved in the ECO4ALL action. The survey highlighted the importance of empowering consumers by informing them about their rights, obligations and opportunities in the circular economy context. A five-point Likert scale was used to express the respondents' opinions. Participants were consumers who engaged in circular consumption. A structured online questionnaire surveyed 165 respondents from 30 countries participating in the ECO4ALL action. The data obtained were further prepared for statistical processing, which was carried out using the SPSS v.25 software package.

More women (65.5%) than men (34.5%) participated in this study. Respondents represent a wide age range: 25.5% are between 18 and 30 years old, 24.8% are 31 to 40 years old, 30.3% are in the 41 to 50 year-old range, 14.5% are 51 to 60 years old, 0.6% are 61 to 65 years old, and 4.2% are over 65 years old. The respondents' education level indicates that the most significant percentage completed doctoral studies (60.5%), while the smallest percentage (6.1%) completed high school or lower. Work experience also varies: the smallest percentage of respondents (3.6%) has no experience, while the most significant percentage of respondents is in the range of 11 to 20 years (30.3%), followed immediately by the following group of respondents from 21 to 30 years (18.8%). Participants come from 30 countries and participate in the ECO4ALL COST action. The highest percentage answered the questionnaire from Turkey (17.0%), Serbia (12.7%), the Czech Republic (9.7%), and Albania (7.3%), while the other countries have a smaller share.

4. RESULTS AND DISCUSSION

Cronbach's alpha coefficient was used to check the accuracy of the measuring instrument. This is the most popular coefficient used to measure the internal consistency of the questionnaire and provides a unique assessment of its reliability. Cronbach's coefficient α was determined for each group of questions (Table 1), and the results show that the values are over the recommended values of 0.7 (Cronbach, 1951), which fulfils the consistency condition.

Table 1. Cronbach coefficient alfa (α)

Constructs	Cronbach coefficient alfa (α)
Incentives for Circular Economy (INC)	0.840
Financial Responsibility (FR)	0.877

Constructs	Cronbach coefficient alfa (α)
Consumer Education (CE)	0.925
Customer Behavior (CB)	0.822

Statistical research of the links between the defined constructs is carried out using correlation and regression analysis. For this purpose, the correlations between the defined factors have been calculated to reveal the nature and degree of quantitative agreement of the analysed factors (Moore *et al.*, 2009). The intensity of the link is determined based on the size of the correlation coefficient. The results of the correlation analysis indicate that all relationships between the observed constructs have high values with statistical significance, which can be seen in Table 2.

Table 2. Correlation analysis

	INC	FR	CE	CB
INC	1			
FR	0.617**	1		
CE	0.668**	0.675**	1	
CB	0.626**	0.558**	0.570**	1

** . Correlation is significant at the 0.01 level (2-tailed).

The next step is regression analysis, one of the most commonly used statistical methods for determining the functional dependence between two or more variables (Ho, 2006). This research used regression analysis to examine the relationship between independent variables such as incentives for a circular economy, financial responsibility, consumer education, and the dependent variable, customer behavior.

Table 3 shows that the R Square Change value is 0.454, pointing out that the independent variables explain 45.4% of the variance in the dependent variable. This prompts customer behavior to be affected by incentives for a circular economy, financial responsibility, and consumer education.

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.674 ^a	0.454	0.444	0.43715	0.454	44.579	3	161	0.000
a. Predictors: (Constant), INC, FR, CE									
b. Dependent Variable: CE									

Table 4 and Figure 2 depict the regression analysis used to determine whether incentives for a circular economy, financial responsibility, and consumer

education significantly impact customer behavior. The Variance Inflation Factor (VIF) is used to estimate the level of multicollinearity (Cohen *et al.*, 2013). Multicollinearity indicates linear relationships among independent variables. The results (Table 4) show that the VIF values for incentives for a circular economy, financial responsibility, and consumer education are low, which indicates a low mutual influence of these independent variables in predicting customer behavior. According to Ho (2006), VIF values greater than 10 indicate a multicollinearity problem, which was not identified in this analysis.

Table 4. Regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.769	0.176		10.064	0.000		
	INC	0.258	0.055	0.382	4.646	0.000	0.503	1.988
	CON1	0.116	0.047	0.203	2.446	0.016	0.495	2.020
	RRR	0.098	0.048	0.179	2.039	0.043	0.442	2.263

a. Dependent Variable: CB

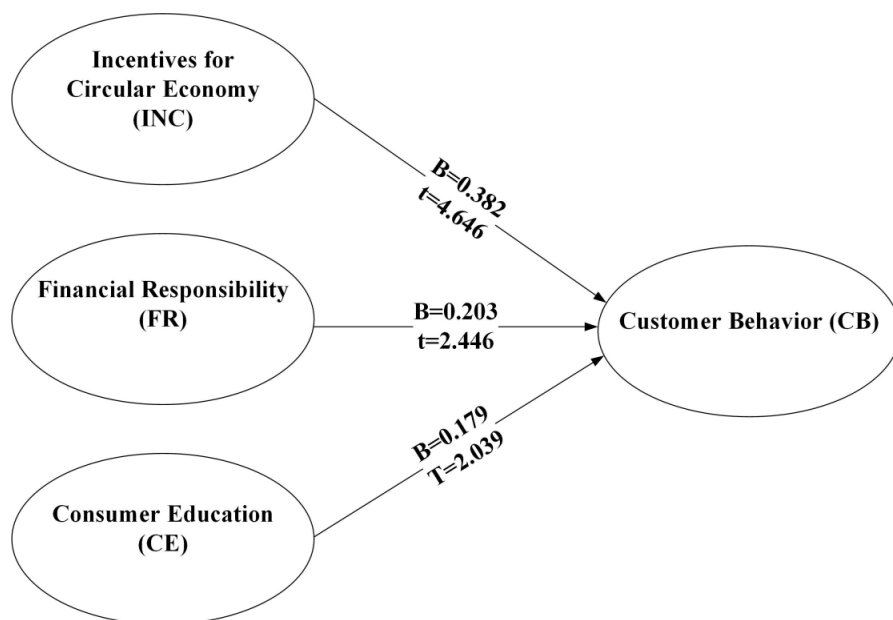


Figure 2. Regression model

This research indicates a more profound assessment of the relationship between incentives for a circular economy, financial responsibility and consumer education in relation to consumer behavior in a circular economy. The results show that all independent factors positively influence customer behavior with

statistical significance (Table 3 and Figure 2). It is necessary to emphasize that incentives for a circular economy have the strongest impact on consumer behavior in the circular economy and the hypothesis H1 is accepted. This finding is consistent with research by Wei (2025), which points to incentive mechanisms, such as an eco-taxation system including a price mechanism, cost effects and incentives for innovation, playing a key role in promoting the principle of sustainable consumption.

Furthermore, the results show the impact of financial responsibility on consumer behavior. Thus, hypothesis H2 is confirmed. In addition to the regulatory framework, the state must play an enabling role through various financial mechanisms, as it enables the creation of incentives, supports the development of infrastructure and implements policies that facilitate access to sustainable choices and raise awareness of the importance of responsible resource use. This result can be found in the literature indicating that financial responsibility, which encompasses various institutions from state authorities to private investors and international organisations, has an impact on consumer behavior in the circular economy and sustainable consumption (Gu *et al.*, 2023; Machova *et al.*, 2022; Mogaji *et al.*, 2022; Amalia *et al.*, 2021).

Finally, hypothesis H3, which examines the impact of consumer education on consumer behavior in the circular economy, is also accepted. This result is similar to the research conducted by Vidal-Ayuso *et al.* (20213) and Kakadellis *et al.* (2021), where consumer education and information are key factors shaping their behavior when making decisions about circular consumption.

The results of this study confirm all three hypotheses, indicating that incentives for the circular economy, such as tax relief, exemption from payment of environmental tax, government green bonds, etc., financial support from various institutions, both state and private, and consumer education, significantly impact shaping responsible consumer behavior regarding the consumption of resources, products, and services.

5. CONCLUSION

This research has provided useful insights into how consumers can exercise their rights, the benefits of a circular economy, and how they can overcome challenges to direct their behavior towards more sustainable consumption. By examining the impact of incentives for the circular economy, the financial responsibility of institutions, and consumer education on consumer behavior in the circular economy context, this study can have theoretical and practical implications. Given the observed lack of research on how sustainable consumption and consumers can be actively involved in circular practices, the theoretical implication is to fill a gap in the literature. The analysis of these results provides practical implications for advancing policies and practices that encourage a circular economy while contributing to understanding the factors that

shape consumer behavior. Also, this study can contribute to consumers by providing a road map for their active involvement in circular practices and more responsible consumption, all of which contribute to their well-being and a more sustainable lifestyle.

This research, like any other, has limitations. One of the main limitations of this study is the sample size, which could be overcome by extending the survey to a larger number of respondents, which would contribute to greater reliability of the results and enable broader generalization of the findings. Another limitation of this study lies in the limited number of factors that were considered when examining consumer behavior in circular consumption. In future research, it would be helpful to include a broader range of factors influencing consumer decisions to obtain a more comprehensive picture of their behavior.

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