



PUBLIC AWARENESS ON CIRCULAR ECONOMY DEVELOPMENT IN HUNGARY

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Increasing public awareness is one of the major factors behind Europe's transition to the circular economy strategy. This paper aims to present the results of an evaluation of public awareness and attitudes about circular economy in Hungary. The data used in this study was collected by random distribution of questionnaires with 512 respondents in order to assess their awareness as well as willingness to buy more environmentally friendly products. Several hypotheses were established divided into 3 categories. The result shows, only 12% knew circular economy benefits and a clear correlation with the education level as the higher-educated respondents were more likely to know about circular economy which hinders sustainable policy adoption, requiring increased education and incentives to drive behavioral and systemic change. Regarding the waste segregation, Hungarian consumers give special attention to organic waste followed by glass and plastic waste, while clothes and batteries have lower care by the locals after use.


Key words: circular economy, public awareness, public willingness, questionnaire, Hungary

JEL: Q51, F64, N54

1 INTRODUCTION

Individuals have a direct and indirect impact on the shift to circular economy through their consumption decisions and behaviors (Shevchenko, 2023). Thus, the perception of circular products and solutions (such as reduce, repair, reuse, remanufacturing, and recycling) among customers is deepening focus on the aspects that encourage or discourage consumers from participating in circular economy are crucial

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components for circular economy development and important policy concerns from the perspective of directing inhabitants toward more environmentally conscious purchases, behaviors, and lifestyles (Jacobs, 2022).

The circular economy has already been implemented in several European countries and areas, including Germany, Netherlands, and Sweden, while in other countries such as Austria and Finland the circular economy concept is still under consideration (Grdicet al., 2020).

Current circular economy studies in the EU display a wide range of research regarding circular economy awareness and attitudes among consumers (Domenech and Bahn-Walkowiak, 2019). However, it appears that there is a knowledge gap and an insufficient number of studies carried out within Hungary. Consequently, it's needed to narrow the scope and conduct empirical research due to a lack of data. To address this gap, this study aims to provide insight into the current attitudes of Hungarian consumers and their willingness toward circular economy development.

This study is useful and novel as it aims to investigate why ethical consumers select eco-friendly products and how consumer organizations can take those reasons into account to enhance their objectives and services and promote environmental sustainability.

The purpose of this study is to discover more about the factors that influence consumer circular economy awareness and the objectives of consumer organizations. The results of this study may also assist businesses in creating environmentally friendly goods that are motivated by consumer demand for green goods rather than just adhering to institutional or legal requirements.

2 LITERATURE REVIEW

Camacho-Otero (2018) pointed out at the literature on consumption in the circular economy and categorized the major elements affecting how consumers perceive and embrace circular goods and solutions into seven categories. The identified variables range from physiological characteristics (attitudes, values, habits, or ideologies) to personal characteristics (materialism, need for uniqueness, or desire for change) to other product-related parameters (quality, longevity, design, risks, or uncertainty), as well as aspects related to their knowledge and understanding (Jacobs, 2022).

We examine into the role of consumer associations contribute to encouraging environmental sustainability, as well as the environmental profile and responsiveness of a sample of Spanish-speaking consumers (Jaca et al., 2018). The findings demonstrate that consumers are knowledgeable of the circular economy and consider the CE's dimensions when trying to consume sustainably.

A fundamentally ecological culture and social awareness are necessary for the development of a conscientious circular economy society. Since circular economy is a novel idea in Europe, it is crucial to monitor and evaluate the people's awareness of CE.

In order to successfully implement circular economy as a long-term development strategy across the EU, special focus should be dedicated to raising awareness among the younger generation, whose knowledge, attitudes, and purchase behaviors will have the greatest impact on the development of a CE-oriented culture (Kanchanapibul, 2013).

A carefully ecological culture and social awareness are essential for the development of a conscientious circular economy society. As circular economy is a novel idea in Europe, it is crucial to track and assess the public's understanding of CE. In order to successfully adopt circular economy as a long-term development strategy within the EU, special focus should be paid to raising awareness among the younger generation, whose knowledge, attitudes, and purchasing habits will have the greatest impact on the development of a CE-oriented society (Kanchanapibul, 2013).

Consumer demand for ecologically friendly goods has increased as a result of environmental concerns. New environmental ethics emerged from this, raising consumer's awareness and significantly influencing their purchasing patterns. Industries have responded by developing a range of green initiatives, including green supply chain management, green product and service design, and creative approaches (Filipe Coelho, 2017).

In March 2020, the European Commission submitted an action plan for the implementation of the circular economy, which was voted by the Parliament in February 2021. In March 2022, the Commission published the first package of measures to accelerate the transition to a circular economy. In the same year, the Commission proposed new EU-wide packaging rules.

On January 1, 2024, a new redemption system for beverage packaging came into force in Hungary, the so-called mandatory redemption fee system, in connection with which the VAT regulation was also amended when it entered into force on January 1, 2024.

The European CE focus is on business opportunities, together with resource efficiency goals. CE became prominent only very recently due to fears around high commodity prices, despite its origins from Europe. The attention is mainly on materials, resources, and waste and much less on broader environmental pollution. The European approach places more emphasis on consumption and product design compared to the Chinese approach. Europe's already existing well-developed eco-design system, covering a wide range of household goods, makes it easier to extend the system to cover the Circular Economy (McDowall et al., 2017).

3 DATA AND METHODOLOGY

A primary data was used in the following study via questionnaire. The inclusion criteria for this questionnaire-based study are designed to ensure a diverse and representative sample of the target population within Hungary. Participants must be residents of Hungary, with no restriction on geographical location, thereby including

individuals from all regions of the country—urban and rural areas alike. Additionally, the study aims to capture a broad spectrum of educational level, therefore, individuals with varying levels of education, from primary education to higher education degrees, are eligible to participate.

The primary exclusion criterion is age: individuals over 18 years of age are not eligible to participate in the study. This criterion is established to specifically focus the research on the perspectives, experiences, or behaviours of individuals who are 18 years old. Participants who do not meet this age requirement will be excluded from the study to maintain the integrity and relevance of the data collected.

The questionnaire was designed Online via “Lime Survey” software with both English and Hungarian languages to facilitate data collection and was distributed to Hungarian consumers who were targeted through snowball technique. Using innovative ways to distribute the questionnaire: Intercept Surveying which involves *approaching people in public places*, such as train stations or in front of supermarkets, to ask them to participate in a questionnaire.

Cronbach’s alpha was utilized to assess the reliability of the questionnaire employed in this study. Cronbach’s alpha serves as a measure of internal consistency, with coefficients ranging from 0 to 1; higher values indicate greater reliability. According to Taber (2018), α values between 0.45 and 0.98 are considered acceptable by various authors.

The environmental concern scale, consisting of 4 items, demonstrated acceptable reliability ($\alpha = 0.58$). Similarly, the green product perception scale (5 items, $\alpha = 0.64$), current practices scale (6 items, $\alpha = 0.45$), consumer willingness scale (5 items, $\alpha = 0.51$), and influencing factors scale (5 items, $\alpha = 0.50$) all exhibited acceptable internal consistency.

Table 1: Reliability analysis

<i>Reliability Statistics - Cronbach's Alpha</i>		
<i>Scale</i>	<i>Cronbach's Alpha</i>	<i>Number of items</i>
Environmental Concern	0.58	4
Green Product Perception	0.64	5
Current Practices	0.45	6
Consumer Willingness	0.51	5
Influencing Factors	0.50	5

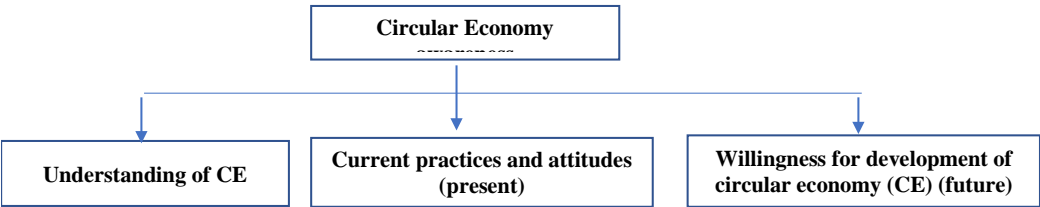
Source: processed by author.

A total of 523 questionnaires were distributed to the respondents and 512 questionnaires were obtained, 11 questionnaires were not taken into consideration because were not completed. Based on these, the total number of the analyzed questionnaires is 512 and the response rate is 98%The respondents used their contacts and social networks to share the questionnaire with other people. This questionnaire

promises not to disclose the respondent’s names but required them to fill in their income level, age, and level of education in order to erase and eliminate their mistrust. The questionnaire composed of 13 closed questions categorized into four sections which are detailed as follows:

1. The first section consists of 4 questions about sample description. The questions are as follows:
 - Age of the respondent, Gender of the respondent, Education level, Place of living;
2. The second section aims to evaluate consumer’s knowledge and understanding about circular economy approach. The questions are as follows:
 - Have you heard of circular economy? Are you familiar with Circular Economy benefits?
3. The third section aimed to explore the current practices and attitudes toward circular economy approach. The questions are as follows:
 - Waste segregation in the daily life, To what extent you are adopting the following eco-friendly activities (Likert scale)?
4. The fourth section attempts to find out consumer’s willingness to develop circular economy approach. The questions are as follows:
 - Willingness to pay more for green product (Multiple choice question), Willingness to adopt the Eco-friendly activities (Likert scale).

Figure 1: Proposed study structure



Source: processed by author.

The following hypotheses were established before sending out the questionnaire. We have categorized 3 main hypotheses based on research objectives. 2 hypotheses to determine to what extent the respondents are aware of circular economy benefits, 7 hypotheses to find out whether the basic practices of the circular economy are followed, and 6 hypotheses to explore the respondent's willingness. The threshold of below hypotheses are based on the study in Blugaria by (Zhelyazkova, 2017). The stated hypotheses are:

H1: Awareness of Circular economy:

- H1-1: At least 50% of respondents know the concept of circular economic;
- H1-2: At least 25% of respondents are familiar of circular economic benefits.

H2: Current practices and attitudes:

- H2-1: A maximum of 25% of respondents do not separate the waste;
- H2-2: At least 65% of respondents pay attention to water and electricity saving;
- H2-3: At least 65% of respondents take shopping bags with me when shopping;
- H2-4: At least 65% of respondents buy products with 100% recyclable packaging;
- H2-5: At least 65% of respondents use energy-saving lamp at home;
- H2-6: At least 65% of respondents use a public transport vehicle or bike;
- H2-7: At least 65% of respondents repair the electronic devices to keep using them as long as possible.

H3: Consumers willingness for Circular economy adoption:

- H3-1: At least 75% of respondents accept stricter rules and environmental regulations;
- H3-2: At least 75% of respondents recommend green products to my friends and family;
- H3-3: At least 75% of respondents make a special effort to buy products that are made from recycled material;
- H3-4: At least 75% of respondents are willing to change the brand choice to buy from companies that show greater care for the environment;
- H3-5: At least 75% of respondents agree with the policy of charging a fee for a shopping bag;
- H3-6: A maximum of 25% of respondents are not willing to pay extra for green products.

The chapter includes data analysis and interpretation of the results. Various types of statistical data processing methods will be used to screen, interpret, and display the data. The primary data were collected from a total of 512 respondents. The data were coded and analyzed with appropriate statistical analysis using SPSS version 25. The data analysis would also allow the researcher to test the hypotheses that have been formulated.

The statistical tests performed in this study include the Chi square test and correlation, and so forth.

Table 2 presents the valid final sample description which is homogeneous and representative sample which consisted of 512 respondents, 48% were female and 52% of whom were male. The characteristics of sample suggest that the respondents were generally educated where 43% of the respondents has university degree, 34% has secondary school and only 23% has primary school. In terms of living place, Budapest was the most common residence (34.2%, n = 175), with smaller percentages living in towns, split by population size, and villages.

Table 2: Sample description

		<i>Number of respondents</i>	<i>Percentage</i>
<i>Gender</i>	Male	266	52%
	Female	246	48%
<i>Age</i>	18 – 30	167	33%
	31– 45	142	28%
	46 – 60	134	26%
	Over 60	69	13%
<i>Educational level</i>	Primary School	119	23%
	Secondary school	174	34%
	University and college	222	43%
<i>Place of living</i>	Village	94	18%
	Town (less than 40 000 people)	132	26%
	Town (more than 40 000 people)	11	22%
	Budapest	175	34%

Source: processed by author.

4 RESULTS

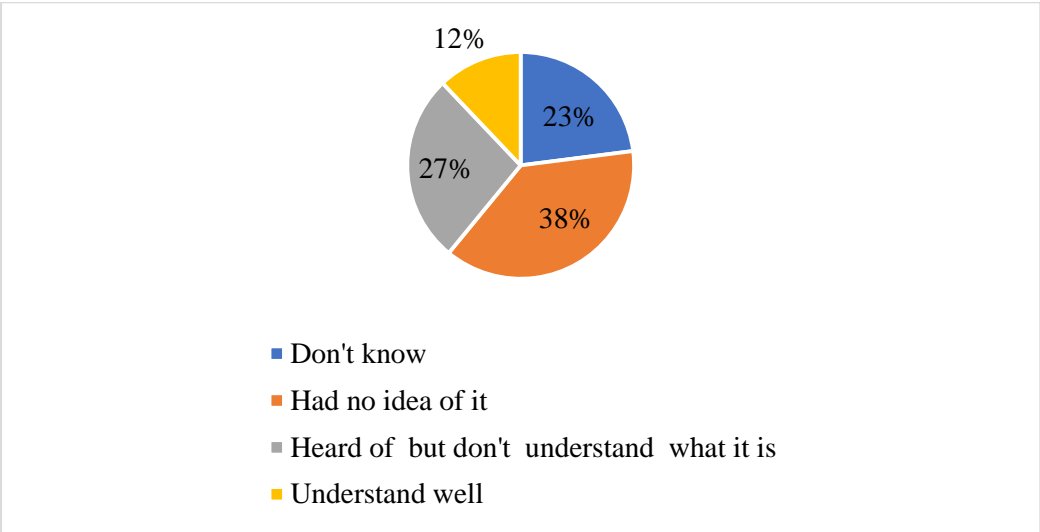
The respondents were asked whether they had ever heard of CE, as it is presented in below Figure2, the results show over a third of the respondents (36.7%) indicated that they had heard of it.

One of the survey's significant findings was that circular economy awareness is relatively low, only 12% of respondents indicated that they are knowing the benefits of CE. Less than a third (27%) indicated that they had heard of it but did not really know

what it was. The majority, almost two-thirds (61%), had no idea or they don't know, as it is shown on Figure 2.

This percentage highlights the level of awareness and comprehension among respondents, and a high value indicates a significant knowledge gap that may hinder the adoption of circular economy principles. Understanding this figure is essential for identifying the need for targeted educational initiatives and public awareness campaigns aimed at promoting sustainable development practices.

Figure 2: Awareness of circular economy benefits



Source: Source: processed by author.

Table 3: Awareness of circular economy by education level

	<i>Total</i>	<i>Primary school</i>	<i>Secondary school</i>	<i>University and college</i>
<i>Respondents</i>	512	118	173	221
	100%	23%	34%	43%
<i>Understand well</i>	61	1	10	50
	12%	1%	6%	23%
<i>Heard of but don't understand what it is</i>	136	5	37	94
	27%	4%	21%	43%
<i>Had no idea of it</i>	197	58	85	54
	38%	49%	49%	24%
<i>Don't know</i>	118	54	41	23
	23%	46%	24%	10%

Source: processed by author.

There were a few demographic sub-group differences in terms of whether people have heard of CE.

The responses on table 3 show a clear correlation with the education level as the higher-educated respondents were more likely to know about circular economy : 23% of university and college respondents are familiar with circular economy benefits and 43% Heard of but don't understand what it is.

Table 4: Awareness of circular economy by age

	<i>Total</i>	<i>Understand well</i>	<i>Heard of but don't understand what it is</i>	<i>Had no idea of it</i>	<i>Don't know</i>
<i>18 - 30 years old</i>	167	32	54	57	24
	33%	20%	32%	34%	14%
<i>31 - 45 years old</i>	142	9	41	56	36
	28%	6%	29%	40%	25%
<i>46 - 60 years old</i>	134	14	29	49	42
	26%	10%	22%	37%	31%
<i>Over 60 years old</i>	69	6	12	35	16
	13%	9%	17%	51%	23%

Source: processed by author.

As mentioned in the previous section, the data reflects a strong correlation with the respondent's age (Table 4), the youngest respondents are more likely to know or heard about CE: 20% of the respondents who belong to 18-30 years old understand well the circular economy practices.

Table 5: Channels to circular economy information acquisition

	<i>Radio and TV</i>	<i>Newspaper and Magazine</i>	<i>Government Document</i>	<i>Internet and social media</i>
<i>18 - 30 years old</i>	4	20	56	77
<i>31 - 45 years old</i>	15	28	47	45
<i>46 - 60 years old</i>	26	37	35	35
<i>Over 60 years old</i>	16	30	21	2
<i>Total</i>	61	115	159	159
	12%	22%	31%	31%

Source: processed by author.

One of the key questions regarding the main channel of circular economy information acquisition, the results on Table 5 showed that the "Internet and Social media" and " Government Documents" are the official channels for picking up information about circular economy practices and Eco-friendly habits, which count 31% each. The government plays a crucial role in awareness campaigns to encourage

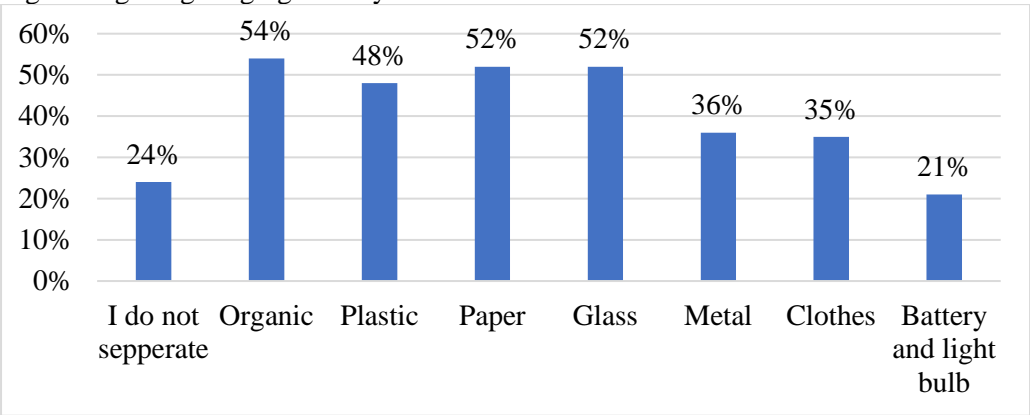
consumers: Sort garbage and optimization of energy use (electricity, water, gas), however, internet, especially social media provides easy access to acquire information about the characteristics of products and best practices for circular economy .

There were a few demographic subgroup differences in terms of age, where the younger generation rely more on the Internet and social media for getting environmental protection knowledge, while, the older generation prefers "Newspaper and Magazine" and "Radio and TV". Besides, 4% of the respondents chose “Other” and states that they have got the circular economy information during their studies at the university.

Waste sorting is one of the most visible side effects of consumption and has been introduced in several countries for many years. The first sorting experimentation program started in 2000, followed by a collecting cost in 2002 (Guo et al., 2021). In China, new waste disposal systems were launched in the early years of the twenty-first century. Therefore, the respondents were asked about their practices toward garbage sorting and how they are sorting their garbage in their daily life. The respondents have to select either they separate (7 types of waste) or do not separate.

Based on the results shown in Figure 3, 24% of the respondents never sorted the garbage in daily life. The questionnaire shows that most of the locals give special attention to Organic waste 54% followed by Glass and Plastic waste which count 52% each, while Clothes and batteries have lower care by the locals after use. Overall, the result revealed a positive attitude from Hungarian consumers, however, mutual efforts are required from the government and consumers to have a higher performance toward garbage sorting.

Figure 3: garbage segregation by consumers



Source: processed by author.

Consumers can positively contribute to the adoption of circular economy by adopting eco-friendly activities in their daily activities (Tosun et al., 2023). In the following question, the respondents were asked about the frequency of adopting an eco-friendly activity, six eco-friendly activities being considered, and which frequencies have

been measured on a 5 responses scale (Table 5), where: (1) = never, (2) = rarely, (3) = sometimes, (4) = often and (5) = always.

Table 6: Current eco-friendly attitudes

	<i>Answers scale</i>					<i>Statistical result</i>	
	<i>Never</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Often</i>	<i>Always</i>	<i>Mean</i>	<i>St. dev.</i>
<i>Pay attention to water and electricity saving</i>	0.19%	9.17%	27.30%	46.67%	16.60%	3.70	0.86
<i>Take shopping bags with me when shopping</i>	1.95%	16.01%	23.20%	30.66%	28.12%	3.67	1.11
<i>Buy products with 100% recyclable packaging</i>	1.95%	25.39%	36.52%	31.60%	4.49%	3.11	0.90
<i>Use energy-saving lamp at home</i>	1.36%	10.35%	20.11%	40.03%	28.12%	3.83	1.00
<i>Use a public transport vehicle or bike</i>	3.51%	11.71%	13.28%	30.85%	40.62%	3.93	1.15
<i>Repair the electronic devices to keep using them as long as possible</i>	0.78%	9.37%	24.02%	40.03%	25.78%	3.81	0.95

Source: processed by author.

Among the highest rates for eco-friendly activities, 'Use a public transport vehicle or bike' is done on an often basis or always by 71.47% of the respondents. Using public transport or bikes maximizes resource efficiency, waste reduction, emission reduction, and sustainable practices. These choices enhance a more sustainable and circular approach to transportation.

Table 7: Consumers' willingness for eco-friendly activities

	<i>Answers scale</i>					<i>Statistical result</i>	
	<i>Strongly disagree</i>	<i>Disagree</i>	<i>Neither agree nor disagree</i>	<i>Agree</i>	<i>Strongly agree</i>	<i>Mean</i>	<i>St. dev.</i>
<i>Accept stricter rules and environmental regulations</i>	0.19%	5.07%	29.10%	46.48%	19.14%	3.79	0.81
<i>Recommend green products to my friends and family</i>	0%	1.36%	21.28%	49.21%	28.12%	4.04	0.74
<i>Make a special effort to buy products (plastic and paper, ...) that are made from recycled material</i>	0.39%	1.75%	22.85%	47.85%	27.12%	4.00	0.78
<i>Change the brand choice to buy from companies that show greater care for the environment</i>	0.19%	2.34%	22.26%	46.67%	28.51%	4.01	0.79
<i>I agree with the policy of charging a fee for a shopping bag</i>	0.19%	8.59%	26.95%	37.89%	26.36%	3.82	0.93

Source: processed by author.

Also 'Use energy-saving lamp at home' rates are relatively high among the eco-friendly activities with 68.15% of the respondents adopting this eco-friendly activity often or always.

Of respondents, 65.81% tend to 'Repair the electronic devices to keep using them as long as possible' which is relatively low.

Another eco-friendly way is 'Pay attention to water and electricity saving', 63.27% of respondents confirmed that they often or always adopt it. Though it may seem a big figure, it still is far away from that of more than 90% considering the concern for the environment as important or very important.

Buying products with 100% recyclable packaging' rates are low even compared to other eco-friendly activities, with only 36.09% of the respondents declaring to make it on an often basis or always. It is a tangible way for consumers to boost conserving resources and minimize the environmental impact associated with packaging.

Taking shopping bags with me when shopping' does not rate much higher than the precedent one as only 58.94% stated to make it on an often basis or always. The use of reusable bags which are typically made from durable materials such as cotton or polyester, contributes to energy savings and reduces the demand for new plastic production.

Customers are obliged to adopt new behaviors to mitigate their concerns, and this will motivate service providers to introduce more environmentally friendly products in order to tackle the environmental issues, climate change and the finite natural resources.

The shift to a circular economy strategy requires consumer contribution in the acquisition, use, and disposal of products and services (Shevchenko, 2023). A 5-point Likert scale question was used to analyze the willingness to be involved in the Circular economy through different types of engagement from consumers (Table 6).

The statement "Recommend green products to my friends and family" holds significant importance for the consumers as it is shown on table 6 with 4.04 mean. The respondents agree to recommend the green products as it contribute to personal well-being, environmental sustainability, and global responsibility.

The data showed a positive willingness from the study participants to Change the brand choice to buy from companies that show greater care for the environment, this is demonstrated the overall mean which counts 4,01. Embracing the following statement supports companies that prioritize the environment is a powerful force for positive change. It indicates a conscious effort to align customer behavior with environmental values and boost a more sustainable and responsible global economy.

Making a special effort to buy products made from recycled materials is crucial practice for consumers which aligns with resource preservation and Closed-Loop systems by recycling the product. The majority of respondents showed their willingness to change the consumption habits from regular to recycled materials products.

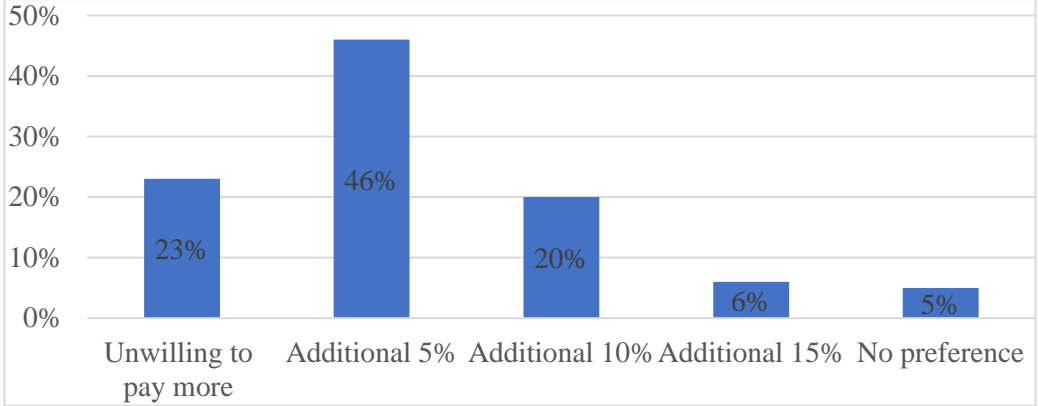
The respondents showed a reluctance for these statements 'Implementing extra fees for plastic bags' and 'accepting stricter rules and environmental regulation' that might be perceived as an additional burden for the budget. This is clearly demonstrated by the lowest attributed mean on Table 6.

The result showed that in case of product availability, 77% of the consumers are willing to pay higher prices for eco-friendly products which is ranging from 5% to 15%

and more. A similar study by Millock and Hansen (2002) in Denmark stated that only 18% of consumers are not willing to pay for all kinds of products (Aryal et al., 2009).

The respondents revealed that 46% of the interviewees are willing to pay up to a 5% price premium compared with ordinary products. Similarly, 20% of the consumers like to pay up to a 10% additional for the eco-friendly products. In addition, the minority are willing to pay up to 15% which accounts for 5% of total respondents. However, 23% of the consumers are not willing to pay more (Figure 4).

Figure 4: Consumers’ willingness to pay more for Eco-friendly product



Source: processed by author.

Aryal et al. (2002) stated that the primary motivation for buying organic products is health, followed by attributes of quality including flavor, color, and taste. The Kathmandu Valley noticed a rise in demand for these products; however, in order to further promote them, some factors that need to be taken into account in the future are the lack of consumer information, the lower prices of these products compared to conventional foods, and the limited and unpredictable domestic supply.

Table 8: Consumers’ willingness to pay more for eco-friendly product by age category

	<i>Unwilling to pay more</i>	<i>Additional 5%</i>	<i>Additional 10%</i>	<i>Additional 15%</i>	<i>No preference</i>
<i>18 - 30 years</i>	42	82	24	12	7
	25%	50%	14%	7%	4%
<i>31 - 45 years</i>	27	58	40	9	8
	19%	41%	28%	7%	5%
<i>46 - 60 years</i>	32	64	25	7	6
	23%	48%	19%	5%	5%
<i>Over 60 years</i>	16	35	11	1	6
	23%	51%	16%	2%	8%

Source: processed by author.

The study revealed that among the surveyed consumers age category of 18 - 30 years are less willing to pay more, this could be explained by the limited income (Table 8). In contrast, all other categories showed a positive willingness.

5 CONCLUSION

This study is conducted to run an imperial investigation among consumers and businesses in Hungary in order contribute to the future researches in the subject circular economy implementation with the goal of providing practitioners and academics a comprehensive understanding of CE, challenges and consumers' willingness.

In this study, we analyzed the role of stakeholders (consumers, suppliers, businesses, government, etc.) in CE implementation, however, cooperation is required for the successful shifting to ensure the seven pillars operate harmoniously. The importance of working collectively, being able to delegate, and communication are the various elements identified during our study. Taking environmental and social aspects into account should not have negative consequences on the company's financial performance, while the challenge is to find a balance between the environment, the economy, and society.

Effective adoption of the circular economy relies on close collaboration between the government, consumers, and businesses, each of them has a complementary and essential role to play. The government serves as a stimulant by establishing a favorable regulatory framework, developing incentive policies (subsidies, green taxation, environmental standards), and investing in the research, education, and infrastructure necessary for the circular transition. It must also foster the emergence of public-private partnerships and integrate circular principles into public procurement. Businesses, for their part, are at the heart of operational change: they are responsible for rethinking their business models, designing durable, reusable, or recyclable products, and developing innovative resource management solutions. They can also educate consumers by making their practices more transparent and traceable. Finally, consumers have significant influence through their purchasing choices: by favoring eco-designed, repairable, or recycled products, they encourage businesses to adopt sustainable practices. Their behavior can accelerate the demand for circular solutions, especially if they are informed and aware of the environmental impacts of linear consumption. The interaction between these three actors is therefore essential to make the circular economy a viable, inclusive, and sustainable model.

This study advances theoretical understanding by exposing the limitations of traditional consumer behaviour frameworks, which often neglect sustainability as a driving factor, and proposes an expanded model that incorporates eco-conscious motivations and social influences. By revealing a strong willingness among consumers to adopt circular economy practices when properly informed and supported, the research bridges the gap between theory and practice. It provides a nuanced view of how pro-

environmental attitudes can translate into action, offering valuable guidance for designing effective CE interventions.

The evaluation of public circular economy awareness is the first step to understanding the levels of circular economy knowledge that Hungarian consumers have. This study aims to examine the behaviors of those residents in Hungary by conducting a questionnaire. The key research findings of this study include:

The young generation seems to be more involved than other age groups to the environmental issues and promoting CE. In terms of demographic sub-categories, consumers awareness has a positive correlation with their education level, whereas their environmental conscious level and resource preservation behavior has a positive correlation with their age category. Thus, promotion of behaviors should focus on the younger age groups.

Despite the positive current attitudes, the results showed that a higher percentage of the consumers give their priority to the environmental elements related to saving energy and gaining some economic benefits, such as pay attention to electricity consumption and repairing electronic devices. So, these are economical consumption attitudes rather than conservation-conscious attitudes. Regarding garbage sorting, Hungarian consumers have a positive attitude, however, this should be supported and followed by a governmental instruction or relevant knowledge.

The research findings are particularly useful for decision-makers and businesses to understand just how effective their circular economy promotion actions and strategies are at shaping the transition to a circular economy business model of development. The study framework prepared could be inspired for carrying out CE-related studies in other European countries and elsewhere in the world. It could also be helpful for exploring the relationship between public awareness about circular economy and progress toward realizing a circular economy in specific countries.

The research also has limitations. Existing study explored the circular economy awareness issues, current practices and consumers' willingness in Hungary is quite limited. Second, many other factors and activities can also be related to circular economy adoption and practices could be added in future studies. Thirdly, another sub-category could be added which is net income for respondents. We initially created 15 hypotheses to test. The outcome of the verification is available in Appendix A.

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Appendix A: Summary of hypothesis output

	<i>Hypothesis</i>	<i>Result %</i>	<i>Accepted/rejected</i>
<i>Knowledge of CE</i>	H1-1: At least 50% of respondents know the concept of circular economic	36.7%	Rejected
	H1-2: At least 25% of respondents are familiar of circular economic benefits	12%	Rejected
<i>Current practices</i>	H2-1: A maximum of 25% of respondents do not separate the waste	24%	Accepted
	H2-2: At least 65% of respondents pay attention to water and electricity saving	63.27%	Rejected
	H2-3: At least 65% of respondents take shopping bags with me when shopping	58.78%	Rejected
	H2-4: At least 65% of respondents buy products with 100% recyclable packaging	36.09%	Rejected
	H2-5: At least 65% of respondents use energy-saving lamp at home	68.15%	Accepted
	H2-6: At least 65% of respondents use a public transport vehicle or bike	71.47%	Accepted
	H2-7: At least 65% of respondents repair the electronic devices to keep using them as long as possible	65.81%	Accepted
<i>Willingness for CE adoption</i>	H3-1: At least 75% of respondents accept stricter rules and environmental regulations	65.62%	Rejected
	H3-2: At least 75% of respondents recommend green products to my friends and family	77.33%	Accepted
	H3-3: At least 75% of respondents make a special effort to buy products that are made from recycled material	74.97%	Rejected
	H3-4: At least 75% of respondents are willing to change the brand choice to buy from companies that show greater care for the environment	75.18%	Accepted
	H3-5: At least 75% of respondents agree with the policy of charging a fee for a shopping bag	64.25%	Rejected
	H3-6: A maximum of 25% of respondents are not willing to pay extra for green products	23%	Accepted

Source: processed by author.