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Soft Skills and Education for Circular Economy, Citizens and Consumers

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Abstract

Theoretical background: Dominating most of the world models of linear economy threatens the environment and our lives, so it needs to be replaced by the circular economy (CE) model. However, its functioning requires educated, competent and ready-for-change citizens and consumers.
Purpose of the article: An exploratory research was conducted on business students as consumers and potential future entrepreneurs to identify students' readiness and preparation for CE.
Research methods: The semi-structured survey was designed. Three hundred nineteen responses were collected from MCSU students.
Main findings: Students must be sufficiently prepared to function in the circular economy. This applies to both competencies essential for the role of a consumer and a manager in CE. Higher education institutions (HEI) must take a challenge to stimulate circular entrepreneurship and influence the transformation of consumption style. Economic motives for consumption style change dominate over moral motives. There is a challenge to work on consumer awareness and entrepreneurial readiness. Positive examples of CE models and practices and appropriate didactic methods need to be implemented. Respondents underline that transformation toward CE requires the education of all society members. There is a need to continue research on the determinants of society's readiness to move to CE.

1. Introduction

The current exploitation of the Earth's natural resources threatens a catastrophe for humanity. Previous extensive human activities have had negative consequences and have brought ecological crises all over the globe. One of the consequences is climate warming, which is followed by irreversible climate change. Climate change has caused an intensification of climate migration. At the end of 2020, 55 million people had been forced to move within their countries due to extreme weather events. Another effect is environmental pollution and the extinction of life. The current model of industrial production contributes to the fact that large amounts of undesirable substances have begun to penetrate the atmosphere, resulting in respiratory and heart diseases, as well as a decrease in the quality of crops and yields, provoking climate change and harming the quality and quantity of drinking and agricultural water. The world population passed the first billion during the Industrial Revolution at the turn of the 18th and 19th centuries. It took 130 years to double that number. Today, the rate of global population growth is ten times faster, so much so that by November 15, 2022, it was estimated that the world population would reach 8 billion. The lives of the inhabitants of the Earth are seriously threatened. Not everyone is aware yet that we are facing an urgent crisis. These challenges are well described in the Sustainable Development Goals (SDGs), also known as the Global Goals.

The history of humankind proves that changes often appear in response to a crisis. In this case, transformation is needed on a global scale. Planetary crises in climate, biodiversity and pollution require rapid actions at the micro, mezzo, and macro levels. Although rational and practical use of resources is a practice that has been used by humankind since its inception, such practices are often deployed only when people are forced to do so by the economic situation, scarcity of resources, and, most often, poverty. For example, today, in many African countries, one can buy rubber flaps made of rubber tires or kitchen utensils made of recycled scrap (Street et al., 2020). However, due to the continuation of the dominant consumption pattern, all Earth inhabitants, regardless of their material status or availability of resources, must switch to a new consumption model, a sustainable consumption model.

Consequently, new models have been actively discussed in recent years, and two concepts have emerged: sustainable growth (Pezzey, 1992) and the circular economy (Leontief, 1991). Both concepts are related and have many interconnections. One can assume that sustainability is more broadly associated with the planet, its residents, and the global economy, while the circular economy focuses on resource management and cycles. According to Millar et al. (2019), the circular economy may be regarded as a tool for sustainable development. Additionally, the concept of green economy and green growth should be added to these two concepts (Bina, 2013). Currently, scientists, politicians, businessmen, and representatives of various interest groups are discussing the possibilities of transition from a growth model based on a rope economy to a growth model in which sustainable economic growth is possible. The circular economy has

been popularized as a dominant policy solution that allows sustainable economic development, particularly among developed economies (Korhonen et al., 2018).

The idealistic slogan "zero waste" sends a straightforward message about the direction of transformation, which requires a new paradigm of growth and new behaviours and skills from consumers, managers, politicians, influencers, and generally from all citizens. However, this change seems to be very difficult. For example, a large country, like the USA, changes its position to the Paris Treaty. The USA ratified the document in 2016; however, a year later, President Donald Trump began the official process of withdrawing from the Agreement, which ended in 2020. In 2021, President Joe Biden signed the instrument to bring the United States back into the Agreement. So, political, social, cultural, technological, and economic conditions in each country may facilitate or hinder the transformation to a circular economy (Garcia & Cayzer, 2019). In contrast, change leaders, like Finland, have started a positive transformation. The Finnish government developed a strategic program called "Finland in 2035" (Ministry of the Environment, n.d.). This strategy is based on three assumptions (One Planet Network, 2021):

> 1) The consumption of nonrenewable natural resources will decrease, and the sustainable use of renewable natural resources may increase to the extent that the total consumption of primary raw materials in Finland in 2035 will not exceed what it was in 2015. (…) 2) The productivity of resources will double by 2035 from what it was in 2015. 3) The circular material use rate (CMU) will double by 2035.

The question, then, is how to make it possible to undertake such ambitious goals in all countries. This survey explores skills and competencies that are more relevant for transforming from the linear economy model to the circular economy model. It is interesting to know how higher education institutions (HEIs) may contribute to this human capital development, especially concerning young consumers and future entrepreneurs. In this line, several research questions have been posed:

1. Which factors influence (positively or negatively) consumer readiness for transformation?

2. What are the critical skills and competencies needed for the circular economy to work?

3. What is the perceived level of readiness and competencies of future entrepreneurs/current young consumers?

Comprehensive literature research and an exploratory survey have been carried out among a group of business students in Poland. The combined results of this work lead us to the elaboration of a proposal for the development of circular skills for future circular economy entrepreneurs. Therefore, the value of this paper is double: on the one hand, the research results contribute to the existing body of knowledge by providing qualitative insights on the topic of circular skills and circular economy readiness, and, on the other hand, the implications of the paper could be helpful to HEIs, future entrepreneurs, and policymakers as guidelines for the transformation towards the circular economy.

This paper is structured as follows. After this introduction of the research topic, section 2 presents the literature review results from general (circular economy concept and features) to specific (skills for circular economy). The following section explains the methodology of the primary research, and the next one reveals its results, which are discussed thoroughly in section 4. Finally, the article ends with some conclusions, implications, and recommendations.

2. Literature review

2.1. Circular economy and readiness

There is no one commonly accepted definition of circular economy in the literature. Kirchherr et al. (2017) analyzed 114 definitions of the circular economy and extracted 17 dimensions of the circular economy concept. In many of the analyzed concepts, they found a reference to key areas which constitute the core principles of the functioning of the circular economy. The most popular classifications comprise four areas (4R): reduction, reuse, recycling, and recovery (Allwood et al., 2011). However, the list of critical areas may be longer. For example, Reike et al. (2018) add a fifth principle: Rethink.

The concept of the circular economy can be seen through the connections between its participants. Loops are an essential feature of the circular economy. Efficient, connected, well-organized loops are the basis, the bloodstream of the functionality of the circular economy. Existing relationships with goods and materials should save resources and energy. A circular economy turns goods that are at the end of their useful being into resources for others, closing loops in production ecosystems and reducing waste (Stahel, 2016). This requires the existence of a systemic approach to the management of the economy and its resources. The objective is to maximize value at each point in the life of a product. That is why the circular economy is also known as the "zero waste" economy, especially when its role is to combine and close all loops (closed-loop supply chains or CLSCs). CLSCs that involve reprocessing product flows and aftermarket adjustment operations play an essential role in the adhibition of the principles of the circular economy in the economy (Mahmoum Gonbadi et al., 2021; Tapia et al., 2021).

Among the many approaches and available definitions of circular economy, the definition of Kirchherr et al. (2017, p. 225) deserves attention, as it exhaustively characterizes circular economy assumptions and mechanisms:

> A Circular Economy describes an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro-level (products, companies, consumers), mezzo-level (eco-industrial parks) and macro-level (city, region, nation

and beyond), to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations.

In the literature, different aspects of circular economy readiness are discussed, such as technological, organizational, cultural (Bertassini et al., 2022), digital (Sarc et al., 2019), legal (Tokazhanov et al., 2022), or social readiness (Kaya et al., 2022). Haleem et al. (2021) speak of management-related barriers, lack of financial incentives, and higher costs related to recycled materials in the supply chain, and Kirchherr et al. (2017) evidence that the sociocultural aspects of the circular economy are the least explored.

The circular economy can also be characterized through the prism of circular economy business models (Lewandowski, 2016). However, their functioning requires the fulfilment of several conditions. Therefore, the question of the possibility of alteration from a linear economy to a circular economy and readiness for the circular economy is widely discussed (Kirchherr et al., 2017; Bertassini et al., 2022). There are also critical voices. Corvellec et al. (2022) suggest that the circular economy concept has a fuzzy theoretical basis, and that is why its implementation encounters structural barriers. According to these authors, more attention should be paid to the issues of ideology and politics. Thus, the concept of a circular economy is based on ideological assumptions controlled by technical and economic calculations, creating an uncertain contribution to sustainable development (Corvellec et al., 2022).

Gregson et al. (2015) believe that the concept of circular economy is an endlessly recited ideal and that the extended life of the product is in contradiction to contemporary capitalism and consumption (Gregson et al., 2015). The advancement of the circular economy boils down to the processing of waste that is collected on a global scale, which is not always fair practice. Gregson et al. (2015, p. 215) mention the "idealized visions of the circular economy" perceived as the industrial revolution of "industrial symbiosis", but the truth is that it is based on post-consumer waste management. Generally, scientists, politicians, and practitioners do not necessarily agree on what exactly circular economy means and how it should be implemented. Because the model of circular economy is a solution that concerns the relations among business, society, and nature, it may be questioned by different participants in the economic system. Despite the critical voices and theatrical imperfections addressed toward circular economy assumptions, it seems that it is worth trying to undertake some actions and changes to bring society closer to a circular economy.

The perception of the circular economy model differs depending on the group of stakeholders (van Langen et al., 2021). The consumption style may be difficult for some consumers to accept. It requires personal engagement and proper segregation of waste. So, extra effort is expected from consumers for the circular economy. This is called "consumption work" and refers to the labour integral to the purchase, use, reuse, and disposal of goods and services (Hobson et al., 2021). This aspect seems to be not sufficiently appreciated in the research conducted so far despite it being a core

sociocultural aspect of circular economy readiness (Hobson et al., 2021). "Consumer" and "user" are creators, perpetrators, and subjects of the circular economy. Therefore, more attention should be paid to the development of appropriate behaviours and soft competencies (Wastling et al., 2018). For example, Asian consumers are willing to try sharing platforms while concerned about being exploited or cheated; and consumer acceptance of recycled and remanufactured products in Asia is low because they are worried about reliability and quality (Kuah & Wang, 2020). That is the reason these authors recommend promoting circular economy practices by targeting certain demographic groups, managing consumers' trust, and calming their anxiety. Singh and Giacosa (2018) underline the role of cognitive biases of consumers as barriers in the transition towards a circular economy from three perspectives: individual, social, and cultural. These authors claim that circular economy business models are not accomplishing the psychological, social, and cultural needs of the consumers and that causes barriers to circular economy spreading, being the knowledge gap.

In addition, since consumption is a psychological, social, and cultural process of choosing goods (Zukin & Maguire, 2004), buying behaviour's symbolic, hedonic, and aesthetic nature may be important components of consumption (Holbrook & Hirschman, 1982). Hence, consumers must be aware of why they should change their styles and behaviours. Transformation needs a boot-up approach because if it were "pushed top-down on consumers, it could backfire" (Singh & Giacosa, 2018). This means that the development of certain skills of consumers may play an important role in this new economic model by bringing about a new mindset and skills that can be taught (Moon, 2017).

2.2. Skills for Circular Economy

An extensive literature review was carried out to find skills relevant to citizens of the circular economy. One hundred publications tagged the keywords "circular skills" as of 9 December 2022. Most of these were about developing competencies and skills at universities, of which many researched teaching methods, games, workshops, active learning, virtual experiments, and how to cooperate between universities and businesses to develop these skills.

A vast number of authors research the general nature of circular skills, looking for the critical competencies for the everyday functioning of consumers in the circular economy. For example, Korsunova et al. (2021) discuss the most relevant competencies for stakeholders from the point of view of the circular economy area based on the 5R framework. They also argue that there is a need to cooperate and organize opportunities for the exchange of knowledge and skills between generations since older generations may have better repair skills, and younger generations have better technology-enabled solutions for sharing and renting.

One of the 5R areas is the "repair" area. It is emphasized that the critical competencies for product repair processes are complex since they require the integration

of technical knowledge and design and creative skills (Rogers et al., 2021), similar to the skills of the "reuse" area, like those related to the selection and preparation of clothes for exchange, organizing swapping events, networking, and innovation (Camacho-Otero et al., 2020). Terzioğlu and Wever (2021) take it one step further by affirming that there is a social need to change public perceptions, attitudes, and behaviours related to the repair and make it part of the daily life of citizens and an option for employment.

Bakırlıoğlu and McMahon (2021) concur that among circular design skills, self-learning and multi-disciplinary collaboration are indispensable. Raberg (2022), in their master's thesis, establishes a classification of skills for everyday consumers that includes:

1. Manual skills, including skills such as sewing and technical skills that enable the repair and repurposing of materials.

2. Divergent thinking skills and abilities to think creatively, for example, about the ways you can use a specific item and be skilful in questioning consumption-related social norms.

3. Research and communication skills are central for active citizens as they are trying to figure out the most sustainable options and inspire others with humour and positivity to take part in the circular economy.

4. Organizing and prioritizing skills that revolve around time management, making decisions and prioritizing certain actions that preferably are quite influential in terms of their carbon footprint. Moreover, when buying products second hand they should start looking for the items early, and with rental options, needs should be anticipated and planned.

5. Household skills, including maintenance skills of household goods and clothes, cooking skills to avoid food waste by using creativity and planning, and recycling skills on sorting different fractions.

6. Skills brought by experience; like knowledge of different second-hand marketplaces and the skills to recognize good quality of materials and items, enable circular practices

Other authors focus on the exploration of the competencies essential for employability in the circular economy labour market (Burger et al., 2019; Rogers et al., 2021). Although circular economy activities generally require manual and technological skills in renewable energy, repair, and reuse of materials, these authors also refer to the need for more complex cognitive skills in management, design, and technological applicability to enable said activities. In particular, Sumter et al. (2020) focus on the skills and competencies necessary to design new products and services typical of the circular economy; and Lanz et al. (2019) consider that organizations and consumers should develop ICT (information and communications technologies) and problem-solving skills to support this continuous learning paradigm, as well as organizational skills and redesign skills for devising new consumption patterns. ICT competencies are also important to circular economy consumers, who should acquire

skills for the consumption of digitized circular products and services, as well as how to use a variety of technologies that support circularity (Saidani, 2022).

Finally, there is a line of research that focuses on the competencies under the influence of HEIs to ensure learning outcomes encompass the principles of the circular economy (Bakırlıoğlu & McMahon, 2021; Lanz et al., 2019; Sumter et al., 2020; Rodríguez-Chueca et al., 2020). For instance, Sánchez-Carracedo et al. (2021) rationalize that, besides technical and professional skills, a student should be taught to regard social justice and sustainability. In addition, HEIs are responsible for providing entrepreneurial education to create new business models aligned with the circular economy (Del Vecchio et al., 2021). For Moon (2017), eco-innovation or eco-entrepreneurship goes hand in hand with innovative thinking, multi-collaborative and cross-disciplinary mindsets, and cross-disciplinary collaboration skills.

All in all, the extant literature concurs with the belief that soft skills of a cognitive and managerial nature are more important than hard skills, such as household skills or manual skills, because of their complexity and their usefulness for the development of the circular economy in multiple areas. Consumer readiness and society awareness require certain levels of education, and it has been shown that training future entrepreneurs is key. The next section will expand on this idea.

2.3. Higher education for the circular economy

As seen in the previous section, this new circular economy mindset requires that consumers and business managers have certain skill sets and competencies. Entrepreneurship can be implemented in various areas of the circular economy, like the design of circular business models, the creation of networks, or the innovation of organizational structures, processes, products, services, markets, and client relationships (Prieto-Sandoval et al., 2018). Del Vecchio et al. (2021) affirm that "entrepreneurship education (EE) emerges as a useful perspective for the creation of innovative competencies and mindsets for the circular economy". This is supported by Singh and Giacosa (2018), who posit that for a small firm to prepare itself for a circular economy, managers and entrepreneurs must have a particular attitude and a high degree of commitment to environmental protection, resource efficiency, and zero waste values. They recommend that a way to start this is by having educational institutions foster these values in students' personal and business life. For Kranjc et al. (2022), since young people struggle to realize their abilities as change-makers in the circular economy, formal education institutions are the ones to provide their students with the skills and knowledge behind the circular economy mindset.

But what is entrepreneurship education (EE)? In his research, Mwasalwiba (2010) states that although there is not a universal definition of EE, there is a common understanding of what it means. Depending on the type of audience, educational level, field of studies, and course contents, EE trainers use different teaching interventions to assist the learners in acquiring the traits, behaviours, and competencies of suc-

cessful entrepreneurs, often by combining theoretical knowledge and case studies. Therefore, EE for the circular economy aims to provide future entrepreneurs and business managers with the ability and skills to establish and run a successful circular economy business model. Among the barriers to EE found in the literature, the lack of skilled mentors/volunteers to accompany is present in the learning process in more hands-on approaches (Premyanov et al., 2022). Also, cultural barriers may play a role. Rovanto and Finne (2022) found the motives of Finish and Japanese entrepreneurs for circular economy behaviours. While the Finnish entrepreneurs show more intrinsic/transcendent motivations and a vocal approach toward the circular economy, the Japanese entrepreneurs' motivations were diverse, even showing no concern for the circular economy at all, even if they were managing circular business models.

Teaching institutions must endorse developing soft skills related to circular economy values, attitudes, motivation, and creative abilities (Del Vecchio et al., 2021). Also, transversal abilities such as teamwork and work planning are essential (Rodríguez-Chueca et al., 2020). Besides, social media play an essential role in developing young consumers' attitudes (Stachowiak-Krzyżan & Ankiel, 2019). The question is: how to change students' behaviours and attitudes toward the circular economy and whether students are sufficiently conscious.

3. Research methods

Considering the exploratory nature of this research, a self-administered, semi-structured survey with 21 questions was addressed to a group of 400 business students, of which 319 responses were valid. So, the selection of the sample was intentional, and it was important that in the sample were students who are potential managers. Participation in the study was voluntary and anonymous. Students were informed about research goals during their classes. Later, the invitation and link to the survey were sent to students.

This research took place during the first trimester of 2022. 40.1% of the respondents identify as female and 59.9% as male. The age range is 17 to 28 years old, 20 being the median. 84.8% of the students are Polish, 9% are from Ukraine, and 6% are from Belarus. The questionnaire was written in Polish. Business students were chosen because of two reasons: on the one hand, following Haleem et al. (2021), the circular economy is not only a matter of social or civil awareness but of the business sector as well; therefore, it stands to reason that the future business managers and entrepreneurs should be trained in circular economy principles. On the other hand, the zero waste rules imply that there should be organizations dedicated to the reuse or proper disposal of materials, and business students could see these activities as future work fields.

In the end, only 17 questions were considered valid for this research, some questions with single-choice and some with multiple-choice answers. The questionnaire consists of the following parts:

– general interest in the concept of circular economy,
– circular economy awareness and behaviours,
– perception of circular economy as a business chance,
– perception of the barriers, possibilities and actions needed for the transition to a circular economy.

The data have been analyzed in both qualitative and quantitative manners, depending on the nature of each question. These tests aim to communicate as much information as possible from the respondents on their levels of readiness for the circular economy and how EE may be a leverage factor in the development of soft skills for the circular economy, following (Wastling, 2018).

4. Results

The first results reveal the perception of the concept and attitudes of these HE students regarding the circular economy. When asked whether they favoured the circular economy, after being presented with the concept, the majority of respondents (80%) expressed a desire to be educated further on the topic, and 16% see the circular economy as a way for the survival of the planet, and only 2% agree that it was a possible business opportunity. This is a gap to be covered with EE, a chance for HEIs to promote circular economy awareness among their students as an entrepreneurial field (Figure 1).

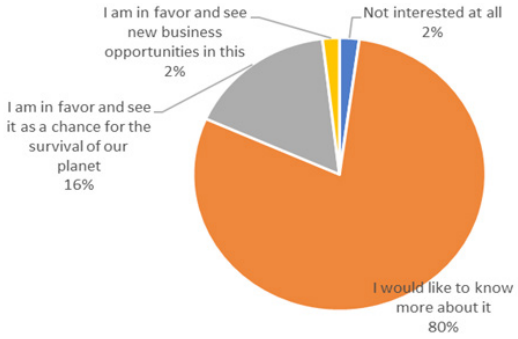

Figure 1. Circular Economy as necessary for the survival of the planet

Source: Author's own study.

As it turns out, only 30% of the surveyed students recall having heard of the circular economy during their classes, while 36% do not remember if they had (Figure 2). This means that education in the circular economy still has room to grow in this context.

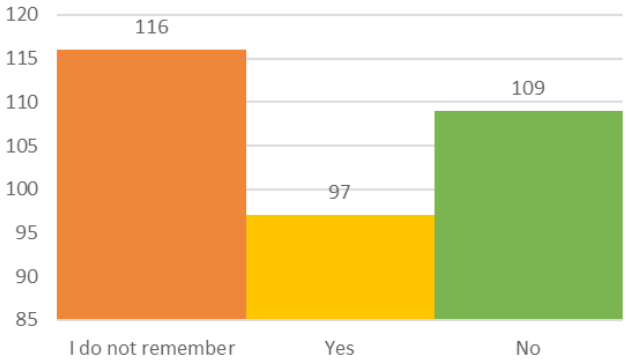

Figure 2. Students who have come across the concept of the circular economy during lectures

Source: Author's own study.

The next question is about how to increase awareness of the circular economy; the respondents put the focus on education: for society in general (29%) and young people in particular (36%) (Figure 3).

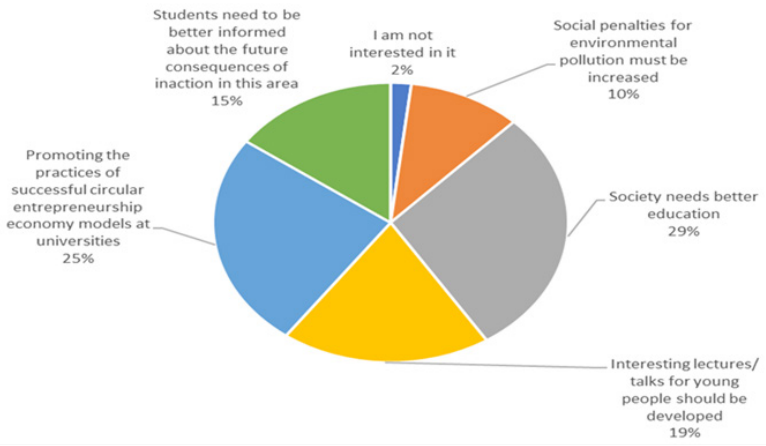

Figure 3. Circular economy awareness promotion actions

Source: Author's own study.

In second place comes promoting successful circular entrepreneurship models among students, while punitive actions are the least preferred method. When asked to offer more detail, some respondents added their comments, most of which mentioned the importance of education. Students see the need for change in education and emphasize the need to educate the whole society, from kindergarten children to the senior population, to gain the necessary skills and raise awareness. They propose to adapt

different didactic methods to the age of the to-be-educated citizens, such as games, competitions, or workshops to promote new lifestyles. They also underline the importance of consciousness of risk and the consequences of continuing the current lifestyle.

Next, Figure 4 shows how environmental protection problems raise a lower interest than the circular economy, with 57% of respondents sustaining a negative or limited interest in it. For those interested, when asked about their sources of information, it can be seen in Figure 5 that two-thirds are self-taught, using media at their disposal (social networks, papers, etc.), or simply observing their surroundings. Only 14% admit going to expert sources, 13% have been informed during regular lectures, and 4% take an action-research approach by involving themselves in environmental activities. It seems that HEIs also have an opportunity to provide scientific information on circular economy to eager students who have not considered going to this source, as well as a duty to provoke interest in those students who have not realized the magnitude of this issue yet.

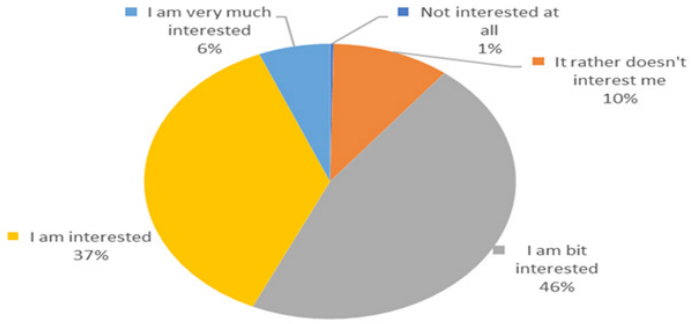

Figure 4. Interest in environmental protection problems

Source: Author's own study.

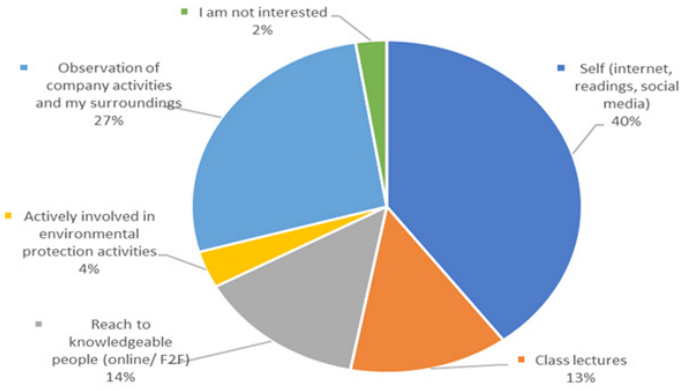

Figure 5. Sources of information on environmental protection

Source: Author's own study.

The next set of questions deals with the motivations of students and reasons for pro-environmental behaviours. The respondents could choose one, both options or both. Generally, economic and ethical reasons lie behind the rational use of food waste and water, while economic reasons are more popular for the rational use of energy, and ethical reasons lie mostly behind less plastic usage. Still, it seems that there is a strong economic component in those aspects related to consumption, on its own or with an ethical edge, except for plastic.

The study then explored their consumer's awareness and readiness to become CE consumers. So, they indicated how much they care when making buying decisions about eco-friendly products. It mainly refers to environmentally-friendly packages, possibilities of extension of the life of products and things, product life span, and production conditions (Figure 6). The respondents pay more attention to factors they have personal control over, such as attention to the life span of a product or the possibility of extending the usability of the purchases. An environmentally-friendly package is important, probably because they feel they have several choices in that regard. Finally, interest in the manufacturing conditions of the product or service is the least relevant concern (Figure 7).

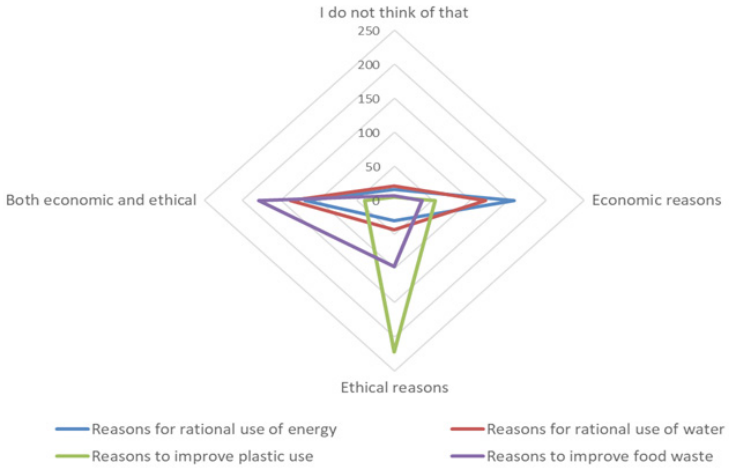

Figure 6. Reasons for pro-environment behaviors

Source: Author's own study.

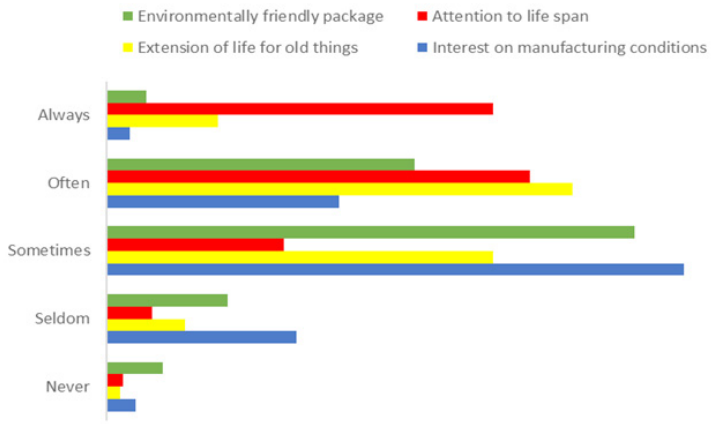

Figure 7. How often attention is paid to environmental / circular economy factors when making a purchasing decision (consumer skills/consciousness)

Source: Author's own study.

Concerning the reasons behind a specific circular economy behaviour, recycling, Figure 8 shows that almost all the respondents believe in at least one goal (they could pick more than one option). Reducing waste and rubbish is considered by one-third, and decreasing the use of resources and raw materials by a quarter. One-fifth raises the issue of potential new businesses and products aligned with the circular economy, while another-fifth considers the greenhouse effect. 34% believe that with the new CE strategy, it will be possible to reduce rubbish and waste and decrease the use of raw materials (26%). Only 1% is not interested in the promotion of recycling actions.

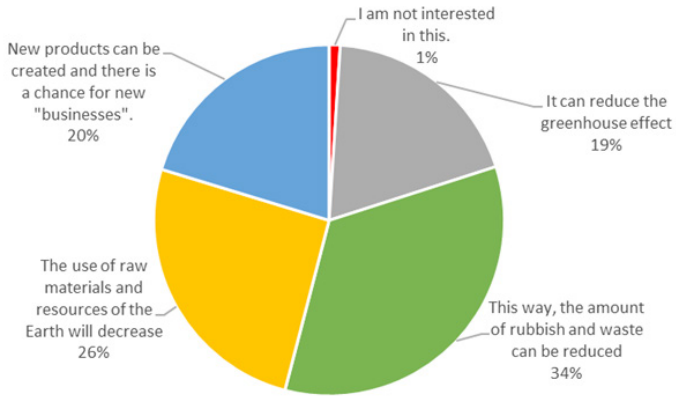

Figure 8. Reasons for the promotion of recycling actions

Source: Author's own study.

Students were also asked about their attitudes and behaviours regarding another specific circular behavior, namely waste management. Three-quarters of the respondents affirm wanting to do right but need to learn how, and almost a fifth of the students try their best. Still, 6% refuse to engage in positive waste management actions because of convenience, disinterest, or indifference (Figure 9). So, the attitude is there, but the knowledge needs to be added, asserting the importance of dissemination and education.

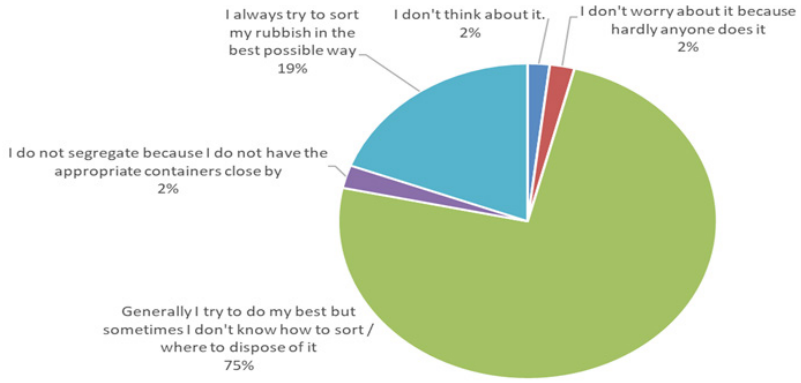

Figure 9. Attitudes towards waste management

Source: Author's own study.

The last set of questions was open for the respondents to answer freely about the future of the circular economy and what is necessary to increase circular awareness and sustainable behaviours. These open comments show that awareness and attitudes toward the circular economy can be worked out through marketing, advertising, and social media campaigns. Seventeen students suggest specifically developing marketing activities in various media (radio, TV, Internet) to encourage a lifestyle change, attending to the different ages and social groups. They also mention the role of influencers and famous people in participating in social actions.

Fifteen comments relate to the business sphere. Some of them concern the regulations and coordination of business activities at the national level, such as the imposition of specific obligations on producers to extend the product life cycle, the use of recyclable packaging, switching to renewable energy sources, and reducing gas emissions. They seek actions to encourage new business models and develop and implement business innovations in the production field. The respondents also suggest encouraging a better organization of communal services in the recycling field (e.g. vending machines for cans from which you can get a little money, like the Pfand system, or building a network of stations where some products packaging can be refilled).

Fourteen students indicate the role of actions at the government level to develop and implement legal regulations and financial motivations for enterprises and citizens. Governmental responsibility and involvement in the circular economy imply preparing

a strategic plan and activities related to the transition to this model. These respondents underline the need to establish legal standards forcing producers to use materials that can be recycled, subsidize bio-production activities, promote practices and social programs for lifestyle changes, and tighten penalties for illegal landfills. However, they caution that enforcing changes in behaviours only by legislation and penalties without good examples and state incentives will not bring real attitudinal changes. To sum up, the respondents express that citizens, businesses, organizations, and the government must work actively to transform to CE.

5. Discussion

This study aims to explore the most relevant soft skills for developing of the circular economy. Moreover, the role of HEIs as providers of skills for future professionals was identified. Indeed, according to Street et al. (2020), for the circular economy to take off, educational institutions must deploy active leadership towards circular economy values, attitudes, motivation, and creative abilities to start this process. The first step is to ensure the students know what the circular economy is and what it entails. Our research has shown that the surveyed students declare that their knowledge about the circular economy is scarce, although they are keen to learn more. However, only 30% recall having heard of this concept in their lectures, and one out of three self-educate on it. These results concur with those of other studies in Poland (Pezzey, 1992), South Africa (Leontief, 1991) or Spain (Millar et al., 2019), which means that there is an ample area for improvement for HEIs to work on a global scale. According to the experience of other universities, teaching practices based on collaborative project-based learning work particularly well (Millar et al., 2019), as well as other methods that support research and stimulate innovation (Bina, 2013). It is also stated that HEIs must engage in CE by showing examples and referring to potential or existing problems, informing about the environmental changes, the effects of which, if appropriate actions are not taken, will be hazardous for the natural environment. It is pointed out that lectures must be conducted in such a way as to stir the students' interest in the issues of the circular economy. The classes should encourage the exploration of these issues and present successful business practices and models. In addition to influencing attitudes by pointing to good practices and informing about threats, students see the legitimacy of shaping attitudes by using more severe penalties for people and organizations that pollute the environment.

In this sense, regarding the attitudes towards and motives for environmental challenges, most of the respondents show interest in environmental protection issues. Further analysis of the data shows that the primary motivation behind this is economic, in the case of the rational use of water and electricity, and moral, as in the rational use of food or plastic. One possible reason for this would be that clients may have an option, for example, to use paper or plastic or to make a different food choice, while, in the case of water or power, a substitute may be challenging to find.

Also, it should be remembered that students are usually not wealthy clients and need to consider each buying decision carefully.

However, even if the dominant motivation is economical and not moral, the most important thing is that specific consumption habits are shaped, which are crucial for developing competencies essential for functioning in the circular economy (Korhonen et al., 2018). Indeed, when buying new products, the respondents almost always pay attention to the life span of products and look for possibilities of extending the life of old things. Some declare that sometimes they look for information concerning manufacturing conditions.

Likewise, students' attitudes concerning waste management are aligned with a positive outlook, as the majority affirms to try their best and go as far as proposing potential solutions. Polish respondents believe that the introduction of a circular economy will reduce the amount of waste and reduce the greenhouse effect. These results concur with Garcia and Cayzer (2019), who found that Finnish students strongly associated the circular economy with recycling activities and waste management. However, there is a definite need for more knowledge on this topic, so once more, educational institutions have a role to play.

Finally, regarding the student's perception of the circular economy as a nascent niche for entrepreneurship actions, it is worth noting that 20% of the respondents indicate that the transition to the circular economy model may be perceived as an opportunity for the emergence of innovative projects and businesses despite their recognized gap in knowledge about the topic. Low interest in entrepreneurship can bother. In the sample, there are future managers and potential entrepreneurs. Results show that with adequate training by HEIs, it would be possible to develop their ability to create new products and solutions for the circular economy. Education can shape students' circular economy awareness and perception of market chances.

There is also a need for the education of society, using various didactic methods and involving learners and governmental institutions at the micro, mezzo and macro levels (de Juana Espinosa et al., 2022). Minimalism in consumption should also be promoted (Błoński & Witek, 2019). The challenge is to work on a new culture of consumption and a new lifestyle. As one of the respondents states, "if no customers are willing to buy new products, circular economy business models will not have a chance to emerge". Consumers' behaviours are perceived as a substantial barrier in the transition towards a circular economy (Singh & Giacosa, 2018). Among the three critical elements of competence, such as knowledge, skills and attitudes, attitudes are the most challenging to change.

6. Conclusions

This research addresses several questions, exploring the factors influencing consumer readiness for the circular economy. It has been mentioned by the literature and the survey respondents that the education of the whole society is critical for

advancing the circular economy. It is necessary to raise awareness of citizens and customers in a broad "bottom up" approach (Kirchherr et al., 2017), or, as posited by Allwood et al. (2011), "a concurrent top-down and bottom-up approach towards the same goal: an economy which is environmentally and economically regenerative". The first contribution of this paper is, consequently, the reinforcement of the need for a change in society's mindset.

Therefore, education is to be directed to all market participants, but what are the critical skills and competencies needed for the circular economy to work? Among the extant barriers studied by the literature, the socio-cultural barriers, particularly the consumers' lack of interest and consciousness and country and company cultures, constitute the most significant obstacles (Garcia & Cayzer, 2019; Kirchherr et al., 2017; Rovanto & Finne, 2022). The research shows that soft skills are necessary but insufficient because hard skills like those supporting the 5R model (Korhonen et al., 2018) to be able to reuse or recycle, as well as technical knowledge in particular fields such as food production, agriculture, engineering, manufacturing, and the like. EE, which comprehends technical, managerial, and soft skills, rises as a sustainable way to introduce young consumers to the circular economy mindset. This research, then, endorses in its second contribution that educational programs should consider how to develop the soft skills that leverage changes in the consumption style, promote sharing consumption and encourage readiness to work for the circular economy.

To do so, we need to know the starting point or the current level of readiness and competencies of future entrepreneurs/young consumers. Our results show that these young consumers disclose an open attitude to further education and demand that HEIs and governments take action to provide it. Therefore, our third contribution is that the will and the awareness are there, but the need for knowledge and the economic barriers are the leading contenders of the process. Policymakers, HEIs governors, and civil society key actors should foster this will for education and offer alternatives to overcome these barriers.

This research has weaknesses, the main one being the degree of specification of the respondents. On the one hand, they are students from the faculty of economics exclusively, and on the other, the research has been carried out in one country, Poland. Our future research will attempt to overcome these weaknesses by addressing a more diverse target group internationally. In addition, the survey only explores people's opinions and perceptions, not actual behaviours. It is an interesting future avenue of research to reveal actual consumption and decision patterns.

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