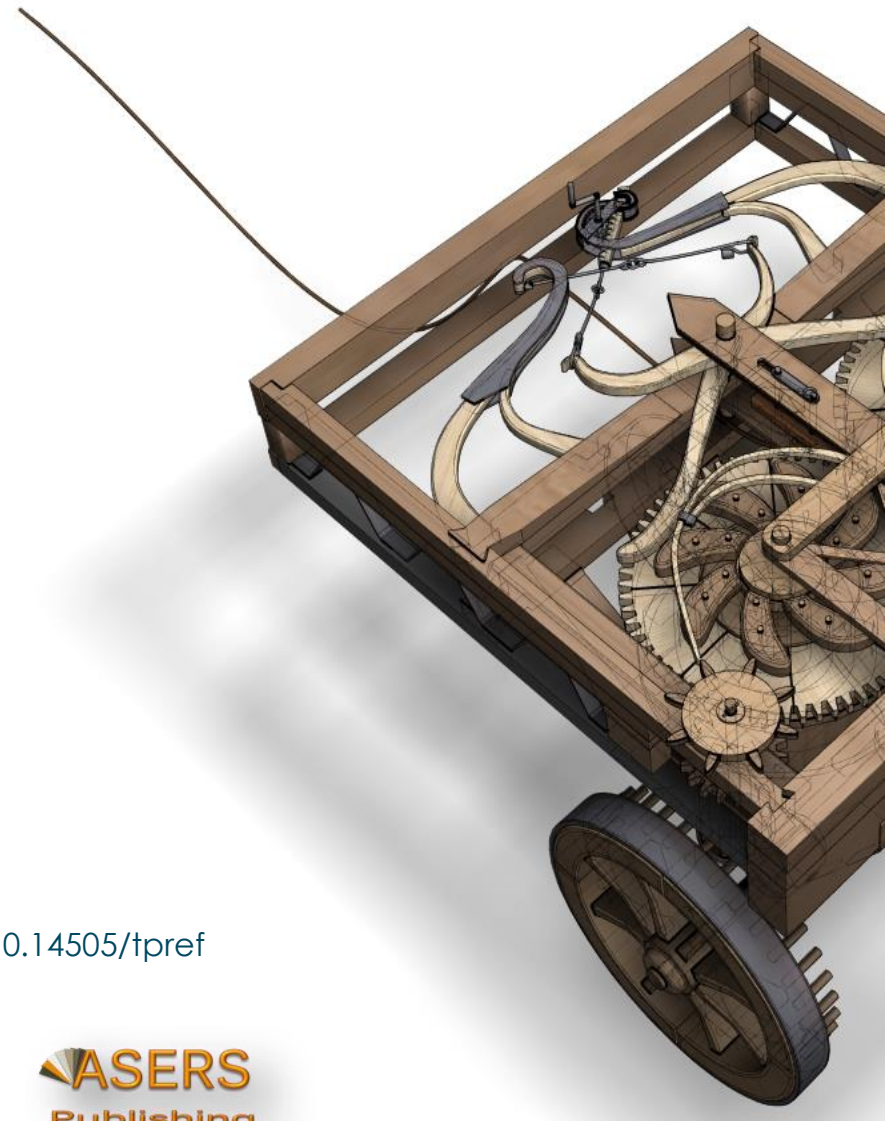
Theoretical and Practical Research in Economic Fields



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Theoretical and Practical Research in Economic Fields

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The Impact of Marketing Tools on the Recyclables Circulation in the Circular Economy

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Abstract: Increasing the efficiency of the recyclables circulation is a generally recognized necessity in view of the worsening of environmental problems. In this context, marketing plays an important role as an effective stimulus for the transition to a circular economy. The aim of the study is to determine marketing tools capable of influencing the improvement of the efficiency of the recyclables circulation, in accordance with the determined aspects of green growth. The work used the methods of correlation, regression, and statistical analysis, as well as case studies. The conducted research proved the correlation between the waste recycling rate and all dimensions of green growth. These include increasing the efficiency of resource use, protecting natural capital, developing a green economy, and increasing social inclusion. The regression analysis, where the level of waste recycling was the dependent variable, found a statistically significant effect of social inclusion. This gave grounds to propose a list of marketing tools that could be useful for increasing the efficiency of the recyclables circulation for each of the studied aspects of green growth. This can be useful for developing strategies and approaches depending on specific needs. It is appropriate to use marketing tools determined for this specific direction (information campaigns, etc.), in particular, in case of insufficient efficiency of the recyclables circulation caused by a low level of social inclusion.

Keywords: circular economy; marketing tools; secondary resources; waste recycling; green growth; social inclusion; green initiatives.

JEL Classification: C10; F18; F64; Q59.

Introduction

The circular economy arose in response to the need to stimulate and support sustainable development (Arruda *et al.* 2021). In the course of its development, the concept of the circular economy has undergone changes in views on its essence. Today, the issue of whether the circular economy can contribute to economic growth and the achievement of environmental goals at the same time remains open (Kirchherr *et al.* 2023). The priority task of the circular economy is to increase efficiency of the recyclables circulation (Morseletto 2020).

The need to increase the efficiency of the recyclables circulation is determined by the ever-increasing amount of waste (Chen *et al.* 2020; Wowrzeczka 2021). Finding ways to increase the efficiency of the recyclables circulation is an urgent task for the researchers (Li *et al.* 2022; Shen and Worrell 2024). Many studies have emphasized the importance of marketing as an important tool for achieving this circular economy goal (Hole and Hole 2020; Wang *et al.* 2020). Marketing uses various methods and techniques that can encourage citizens to buy more ecological products, and companies to implement ecological technologies and approaches in their activities (Limjaroenrat and Ramanust 2023; Šagovnović and Stamenković 2023). It can be assumed that successful marketing can be one of the key ways that will enable the circular economy to achieve two goals at the same time: economic growth and environmental improvement (Maziriri 2020).

The concept of green marketing, i.e. marketing that promotes environmental goals (Shabbir *et al.* 2020), is closely related to the concept of green growth. This concept focuses on economic growth while reducing negative environmental impact (Dogaru 2021; Allan and Meckling 2023). According to the definition of the Green Growth Index, its dimensions can include efficient and sustainable use of resources, protection of natural capital, green economic opportunities, and social integration (Terzić 2024).

There are certain gaps in research regarding the identification of the relationship between the mentioned aspects and the level of efficiency of recyclables circulation. While the relationship between efficient and sustainable use of resources and the efficiency of recycling secondary resources may be obvious, the relationship with other aspects is not well established in the literature. If such a relationship exists, it can be proven that the efficiency of the recyclables circulation depends on a wider range of variables than it seems at first glance. Accordingly, this potentially expands the list of possible marketing tools that can be used to promote the use of secondary resources. In other words, this approach provides another look at the tools of marketing. This happens due to the addition of such tools to it that were not previously considered for the purposes of increasing the efficiency of the recyclables circulation.

The aim of the study is to identify marketing tools capable of influencing the improvement of the efficiency of the recyclables circulation, in accordance with the determined aspects of green growth. Aim involved the fulfilment of the following research objectives:

- Estimate the change in the level of waste recycling in European countries in 2021 compared to 2004;
- conduct a correlational and regression analysis of the impact of green growth measurements on the waste recycling rate in selected European countries;
- form a list of marketing tools that can be used to increase the efficiency of the recyclables circulation depending on the determined aspects;
- describe examples of successful use of the specified tools.

1. Literature Review

Many researchers confirmed the appropriateness of the transition to a circular economy in order to increase the efficiency of the use of secondary resources. Lonca *et al.* (2020) assessed the environmental effects of the implementation of circular economy strategies using the example of a closed cycle of recycling of plastic bottles in the USA. Calvo-Porral and Lévy-Mangin (2020) emphasized that the transition from a linear consumption model to a closed production model is an important direction of the circular economy, but it is necessary to investigate in detail the attitude of consumers towards circular products. Consumer reactions to products made from recycled or recyclable materials are a relevant issue for many studies. Boyer *et al.* (2021) investigated the consumers' willingness the United Kingdom to pay for circular economy labels with a numerical indication of the proportion of recycled content on the label. Confente *et al.* (2020) found that consumers' "green" self-identity has a positive effect on the willingness to buy bioplastic products. These works prove the importance of using marketing tools to improve the efficiency of the recyclables circulation in the circular economy. The consumers' willingness to make a choice in favour of more ecological products significantly reduces waste volumes and/or increases the share of waste that can be recycled.

A number of studies proved the effectiveness of other marketing tools for increasing consumer interest. Li *et al.* (2021) noted the effectiveness of ecological design as an effective marketing tool to achieve circular

economy goals. Gustavo *et al.* (2021) focused their research on identifying green marketing measures in supermarkets capable of reducing waste from short-life food products. Sugandini *et al.* (2020) analysed environmental supply chain management and green marketing strategies in the context of their impact on green purchase intentions. Hayat *et al.* (2023) studied the impact of corporate social responsibility on encouraging consumers to make sustainable purchases. Alonso-Almeida *et al.* (2020) examined the impact of circular economy promotion on circular consumption and economic competitiveness at the institutional level. Boháček *et al.* (2021) investigated aspects of citizens' motivation to participate in plastic bottle recycling, as well as willingness to recycle bottles depending on socio-demographic characteristics.

Special attention should be paid to works investigating the use of digital marketing tools to promote environmental ideas. Almestarihi (2024) investigated environmental digital marketing methods and tools to increase customer engagement and improve the state of the environment. The tools and methods recognized by the researchers include: social networks, search engine optimization, content marketing, e-mail, influencer involvement. Bojanowska and Kulisz (2020) investigated the impact of eco-marketing in social networks on consumers, in particular, on attitudes towards ecological packaging and the use of zero-waste technologies. Dash *et al.* (2023) studied the use of social media and the involvement of influencers in sustainable marketing strategies.

This study differs from the previous ones as it begins with the identification of the impact of green growth aspects on the efficiency of the recyclables circulation. After that, a number of marketing tools were identified for each direction that had a significant impact, potentially influencing the improvement of the efficiency of the recyclables circulation within the corresponding direction. This made it possible to make a wide list of marketing tools that can be applied depending on specific needs (increasing the efficiency of resource use, protecting natural capital, promoting the development of the green economy, or social inclusion). It is appropriate to continue research in this area in view of revealing the importance of marketing tools that are not used enough, but have the potential to increase the efficiency of the circulation of secondary resources.

2. Research Methodology

2.1. Research Design

The first stage of the work contains a brief overview of the change in the waste recycling rate in European countries in 2021 compared to 2004. The purpose of this stage was to emphasize the importance and priority of waste recycling for European countries, as well as to prove the existence of successful practices for improving recycling efficiency. In this case, 2004 is a base for comparison as this year saw the largest increase in the number of the EU member states. Ten new countries joined the union at once, which had a significant impact on the EU's environmental policy, in particular, the policy of managing secondary resources.

The second stage of the research provided for the analysis of how the Municipal waste recycling rate is related to the Green Growth Index and the corresponding indicators (measures of green growth). These include Efficient and sustainable resource use (ESRU), Natural capital protection (NCP), Green economic opportunities (GEO), Social inclusion (SI). The purpose of this stage in the context of the research issue was to determine whether the specified aspects of green growth affect the improvement of the efficiency of the recyclables circulation.

The third stage involved making a list of marketing tools that can be used to achieve the goals of increasing the efficiency of the recyclables circulation for each of the noted aspects. It was assumed that if the positive impact of a particular direction is significant, the use of marketing tools to increase the value of the corresponding indicator will also have a positive impact. In other words, lists of marketing tools were proposed for: 1) increasing the efficiency and sustainability of resource use; 2) improvement of natural capital protection; 3) expanding the opportunities of the green economy; 4) improving social inclusion. An example of its successful implementation by large European companies was provided for each of the proposed marketing tools. The creation of the specified lists is useful for the development of strategies and approaches to increase the efficiency of the recyclables circulation depending on specific needs.

2.2. Sample

The sample of countries for the study, as well as the initial values of key indicators, are presented in Table 1.

Table 1. West Recycling Rate of European Countries

Countries	Municipal waste recycling rate 2004	Municipal waste recycling rate 2021	Green Growth Index	Efficient and sustainable resource use (ESRU)	Natural capital protection (NCP)	Green economic opportunities (GEO)	Social inclusion (SI)
Austria	57.4	62.5	77.78	78.97	80.28	38.99	93.45
Belgium	53.5	55.5	64.33	50.36	77.07	27.96	90.54
Bulgaria	17.2	28.2	63.93	50.84	78.31	32.07	82.58
Croatia	3.2	31.4	68.07	63.99	83.74	25.48	81.66
Czechia	5.5	43.3	75.13	74.56	81.67	40.09	85.85
Denmark	41	57.6	76.08	77.69	71.56	50.53	90.8
Estonia	24.8	30.3	68.27	62.91	74.24	32.9	86.92
Finland	33.6	39	71.69	69.43	73.06	37	90.55
France	29	43.8	70.93	64.98	78.51	31.28	91.91
Germany	56.4	67.8	75.01	64.95	82.65	46.76	92.04
Greece	10.1	21	64.46	61.25	77.01	19.32	84.85
Hungary	11.8	34.9	69.75	65.74	81.18	32.67	81.87
Ireland	29.5	40.8	59.95	65.43	59.22	15.03	88.17
Italy	17.6	51.9	70.89	65.86	80.39	32.61	87.15
Latvia	4.4	44.1	68.85	71.75	76.38	24.07	84.55
Lithuania	1.9	44.3	68.57	68.52	73.33	30.91	83.68
Luxembourg	41.5	55.3	67.99	66.38	74.78	25.13	88.23
Malta	6.3	13.6	50.72	43.13	63.37	9.87	82.37
Netherlands	46.9	57.8	66.04	56.52	71.23	30.2	92.88
Poland	4.9	40.3	66.66	57.3	76.02	32.66	86.27
Portugal	13.5	30.4	69.54	64.81	78.66	28.06	89.27
Romania	1.1	11.3	68.01	64.88	77.32	32.72	80.02
Slovakia	6.1	48.9	74.04	73.67	84.3	38.3	81.43
Slovenia	20.4	60.8	67.68	60.05	78.97	31.21	84.64
Spain	30.9	36.7	68.33	60.83	75.99	29.51	91.29
Sweden	43.9	39.5	76.64	77.3	77.99	37.56	94.71
Switzerland	48.7	53.3	75.78	80.89	78.17	31.31	92.42
Norway	36.5	38.22	67.45	64.36	68.85	28.21	92.6
Iceland	16.4	26.42	51.88	56	44.6	13.63	87.29

Source: generated by the author based on 2010-2021 Green Growth Index Map. Global Green Growth Institute; Waste recycling in Europe 2023

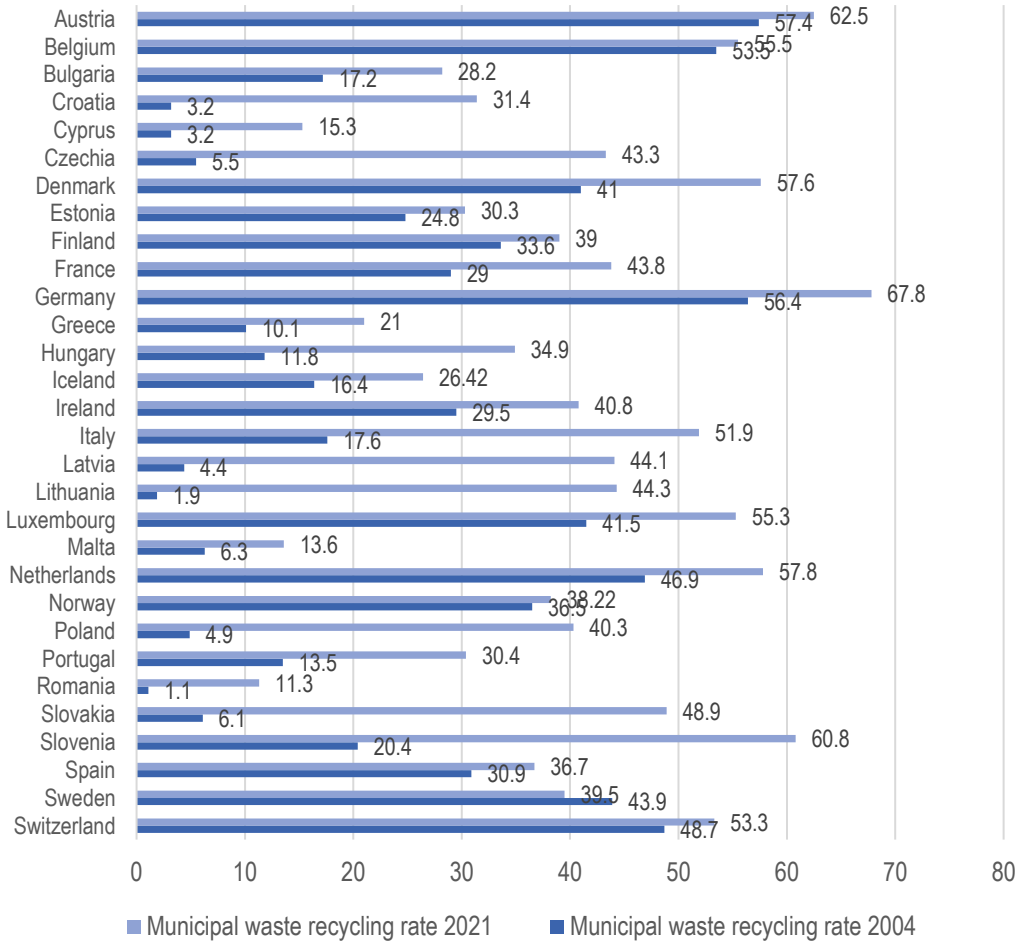
2.3. Methods

Correlation and regression analyses are key research methods. Correlation analysis was used to identify relationships between the waste recycling rate and the Green Growth Index and its aspects. This made it possible to verify the existence of a linear relationship between these indicators. Regression analysis made it possible to assess the impact of independent variables, which were aspects or components of the Green Growth Index, on the dependent variable — the waste recycling rate. An important difference between regression analysis and correlation analysis is that the regression model is able to take into account the influence of other variables. Statistical analysis was also used in the work to assess changes in the waste recycling rate by country. An important method was the case study to analyse the practice of European companies and describe the most successful practices that are effective in the context of improving indicators within the studied aspects of green growth.

3. Research Results

The environmental policy of European countries places special emphasis on the need to increase the efficiency of the recyclables circulation. In view of the priority of this circular economy objective, significant efforts have been made in the last two decades to ensure an appropriate waste recycling rate in European countries. Figure 1 shows the change in the waste recycling rate of individual European countries in 2021 compared to 2004.

Figure 1. Change in the waste recycling rate in European countries - comparison of 2021 with 2004



Source: generated by the author based on Waste recycling in Europe 2023

Figure 1 shows that especially significant changes affected countries that had rather low waste recycling rates in 2004. For example, Slovenia in 2004 had a waste recycling rate of 20.4. But in 2021, the country broke into the top three in terms of waste recycling, along with Austria and Germany, reaching a value of 60.8. At the same time, some countries are still characterized by a rather low waste recycling rate in 2021 (less than 20), in particular, Cyprus, Malta, and Romania.

The observed changes indicate the importance of increasing the efficiency of the recyclables circulation and testify to the existence of successful practices for achieving this goal in Europe. However, it is important to assess which dimensions of green growth can have a significant impact on increasing the efficiency of the recyclables circulation. Effective and sustainable use of resources, protection of natural capital, green economic opportunities, and social integration are included in the study. These aspects correspond to the constituent components of the Green Growth Index.

Table 2. Results of correlation analysis between the waste recycling rate and aspects of green growth

	Green Growth Index 2021	Efficient and sustainable resource use (ESRU)	Natural capital protection (NCP)	Green economic opportunities (GEO)	Social inclusion (SI)
Municipal waste recycling rate 2021	0,557359	0,40436	0,300185	0,541797	0,52945

Source: generated by the author based on 2010-2021 Green Growth Index Map. Global Green Growth Institute; Waste recycling in Europe, 2023

If there is a relationship between them and the waste recycling rate, it can be argued that the waste recycling rate is affected not only by the improvement of resource efficiency, but also by less obvious factors - the increase of

social inclusion, the development of opportunities for the green economy, etc. Table 2 contains the results of the correlation analysis between the waste recycling rate and the aspects of green growth.

The results of the correlation analysis indicate a statistically significant moderate (0.3 – 0.5) and significant relationship between the waste recycling rate and green growth indicators. The closest relationship is observed between the waste recycling rate and the integral value of the Green Growth Index (0.56), green economy opportunities (0.54) and social inclusion (0.52). This proves the previous assumption that less obvious factors can have a significant impact on recycling rates. A regression analysis was conducted using the 2021 Municipal Waste Recycling Rate as a dependent variable to identify the influence of the components of the Green Growth Index on this indicator (Table 3).

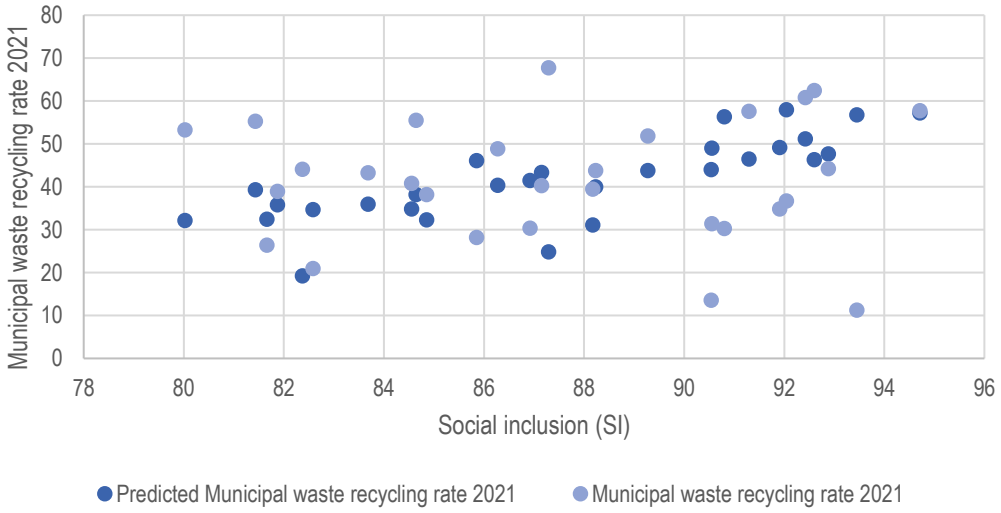
Table 3. Results of regression analysis between the Municipal Waste Recycling Rate 2021 and the 2021Green Growth Index

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95%	Upper 95%
Intercept	-125.4	57.71802	-2.17264	0.039908	-244.524	-6.27622	-244.524	-6.27622
Efficient and sustainable resource use (ESRU)	0.080699	0.302225	0.267015	0.791739	-0.54306	0.704461	-0.54306	0.704461
Natural capital protection (NCP)	0.241197	0.354549	0.680291	0.50283	-0.49056	0.97295	-0.49056	0.97295
Green economic opportunities (GEO)	0.489642	0.365272	1.340485	0.19264	-0.26424	1.243526	-0.26424	1.243526
Social inclusion (SI)	1.470161	0.569421	2.581851	0.016361	0.294933	2.645388	0.294933	2.645388

Source: calculated by the author based on 2010-2021 Green Growth Index Map. Global Green Growth Institute; Waste recycling in Europe, 2023

The results of the regression analysis between indicators in Table 3 indicate a statistically significant influence of Intercept and SI on the dependent variable in view of the P-value. According to the Determination Index values, the obtained model can explain about 45.82% of the change in 2021Municipal Waste Recycling Rate. Additional information about the adequacy and appropriateness of the model can be obtained from the graphs in Figure 2 and 3. Figure 2 contains the SI Line Fit Plot, Figure 3 – SI Residual Plot.

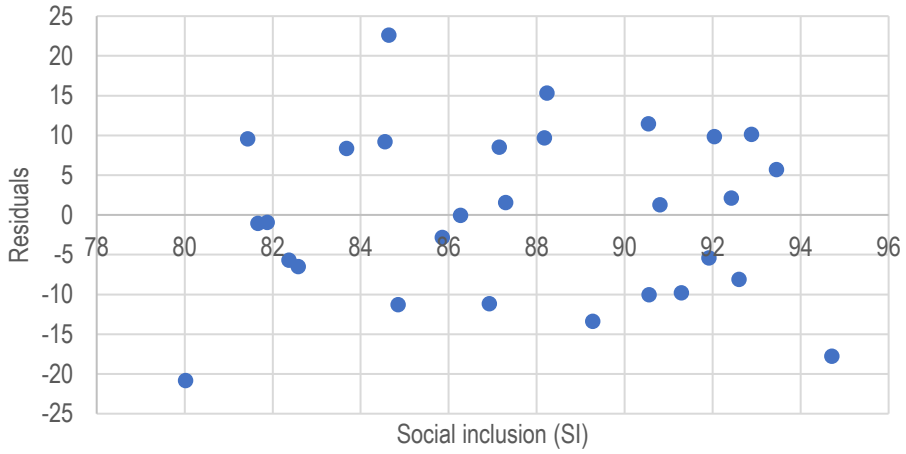
Figure 2. SI Line Fit Plot



Source: graphed by the author based on 2010-2021 Green Growth Index Map. Global Green Growth Institute; Waste recycling in Europe, 2023

Figure 2 gives grounds to conclude that the model is generally appropriate, because most of the points are close to the regression line. This indicates that the model adequately describes the relationship between the variables. At the same time, several significant deviations are observed, therefore the model does not consider all factors that have a significant impact on the dependent variable. This may be indicated by the high statistical significance of the Intercept, which may indicate the existence of influential variables not included in the model.

Figure 3. SI Residual Plot



Source: graphed by the author based on 2010-2021 Green Growth Index Map. Global Green Growth Institute; Waste recycling in Europe, 2023

In general, Figure 3 confirms the adequacy of the model. The residuals are randomly distributed along the axis, but there are also some regularities, for example, mostly positive/negative values of the dependent variable for individual ranges, the formation of clusters. So, the model may not fully show all aspects of the relationship between the variables. As in the findings above, it can be assumed that the model can be improved by adding new influential variables.

Therefore, the conducted correlation analysis proved that all the studied dimensions are related to the waste processing rate. However, according to the results of the regression analysis, SI is the only indicator that has a statistically significant effect on the dependent variable. This may be explained by the fact that, unlike correlation analysis, the regression model is able to take into account the influence of other variables. It may be assumed that SI has the most pronounced and pure effect among the studied independent variables. On this basis, a list of marketing tools capable of increasing the efficiency of the recyclables circulation within each of the studied components was made (Table 4).

Table 4. Marketing tools and examples of their use to increase the efficiency of the recyclables circulation

Marketing tools	Examples
	ESRU
Environmental labelling, increasing citizen involvement	The German Federal Government uses the Blue Angel label, which designates only environmentally friendly products and services. One of the brand's initiatives is called "We love second-hand", making a call to buy school notebooks only with the Blue Angel label, because they are made from 100% recycled paper.
Promotion in social networks, content marketing, "green" advertising	The German company Adidas in partnership with Parley presented shoes that were made from recycled marine plastic waste, as well as tools used by poachers. The French company Danone emphasized its participation in achieving the goals of the circular economy. The company has made a global commitment that its products will be 100% compostable, recyclable or reusable by 2030. Both companies actively promote their ideas through social networks.
"Green" packaging, extending the product life cycle	The Swedish company IKEA not only promotes furniture from recycled materials, but also introduced a programme of exchanging old furniture for store credit for its customers. In addition, the company uses "green" packaging - today less than 10% of the company's packaging is made of plastic.
	Natural capital protection
Initiatives to support corporate social	In its advertising proposals, the German company BMW actively emphasizes the advantages of its products for the environment, in particular, electric cars. In the production of cars, the

responsibility	company uses up to 20% of parts made from recycled plastic. "We must set an example ourselves" — it is emphasized on the company's official website, emphasizing the high level of corporate social responsibility.
GEO	
Investor marketing	Dutch company Unilever uses investor marketing to promote environmental initiatives. Together with other large companies, Unilever is investing $100 million in the development of infrastructure for the collection and processing of plastic waste in a number of countries.
Promotion of "green" logistics	The German company DHL uses recycled materials for the manufacture of packaging for parcels. The packaging itself is also recyclable. Starting in 2022, the company's boxes and envelopes will be 100% recyclable. The foil is at least 80% made from recycled materials, 100% recyclable and has the Blue Angel label.
Employer branding, talent attraction strategies	Many leading companies (H&M, Sweden; Philips, Netherlands; Novo Nordisk, Denmark) emphasize their contribution to the environment, using it, among other things, as an employer branding tool. This allows companies to attract talent, including for the development of material reuse initiatives.
Innovation showcases	The Finnish company Stora Enso, which produces paper and packaging, participates in events where modern innovations are demonstrated. The company's innovations include solutions based on the use of recyclable materials.
SI	
Information initiatives, green branding	A number of leading companies support initiatives that inform citizens about the importance of environmental issues. Such companies include, for example, Inditex (Spain), Luxottica (Italy), Red Bull (Austria), Sonae (Portugal), Solvay (Belgium), which also use recycled materials in the manufacturing of products or packaging. The Danish company GoGreen participates in rallies, organizes lectures and parties in order to promote the ideas of sustainable development. One of the company's projects is the creation of a digital version (application) of city guides. Such guides inform users where to buy sustainable, certified, and recycled products.

Source: developed by the author

Therefore, the identified relationships gave grounds to conclude that the use of effective marketing tools within each of the components of green growth has the potential to make a positive contribution to increasing the efficiency of the recyclables circulation. The distribution of such tools by components is useful for the development of strategies and approaches to increase the efficiency of the recyclables circulation depending on specific needs. For example, if there is an insufficient level of social inclusion in the country, which negatively affects the recyclables circulation, it is appropriate to use such tools as the implementation of information initiatives, green branding using the example of leading companies.

4. Discussions

The results of the study quantitatively show the impact of green growth components on the efficiency of the recyclables circulation. Relevant marketing tools were also determined, which contribute to the achievement of goals depending on the component. Comparing the author's conclusions with the results of other works will allow to deepen the understanding of the researched concepts.

Lonca *et al.* (2020) proved that implementing a closed-loop approach to recycling plastic bottles is environmentally efficient. The researchers also noted that increasing the "circularity" of materials mitigates the negative impact on the environment. These conclusions are reflected in this study, which also includes a list of specific marketing tools that can help to achieve the observed effects. In particular, it was indicated that environmental labelling and the involvement of citizens contribute to increasing the efficiency and sustainability of the use of resources. This thesis is supported by the work of Calvo-Porral and Lévy-Mangin (2020), who established that the positive image of "circular" products is a key incentive for changing the perception of such products by consumers. Confente *et al*. (2020) found a positive influence of "green" self-identity on the desire to purchase bioplastic products. Boyer *et al.* (2021) also found that when choosing between alternatives, consumers usually prefer products that are more "circular". However, a deeper analysis proved that when the share of recycled content increases, the willingness of customers to pay more decreases or disappears. The researchers conclude that the use of circular economy numerical labels may be the most profitable strategy for some low-recycling appliance manufacturers. Li *et al.* (2021) found that increasing the level of greening of products could be a profitable strategy for companies when there is a high or low effect of marketing efforts. With a moderate effect, greening has a significant impact on the growth of profits and, as it should be assumed, on the desire to purchase the product. These two studies indicate the importance of a comprehensive study of the effects of the

implementation of individual marketing tools, because the same tool can have different effectiveness in different contexts.

Other researchers proved the effectiveness of the marketing tools proposed by the author. Sugandini *et al.* (2020) proved the importance of green supply chain management in green marketing. The author's work also noted the importance of promoting green logistics, so the conclusions of both studies are consistent, proving the link between green marketing and green logistics. Almestarihi (2024) noted that environmental efforts are important both at the government level (in Jordan) and at the company level (Patagonia, Google, IKEA, Tesla). The researchers indicated that the use of content marketing is effective for creating educational resources. Influencer marketing has a positive impact on customer engagement and brand awareness. The researcher concluded that the environmental friendliness of the brand improves the customers' attitude, which confirms the importance of corporate social responsibility. Hayat *et al.* (2023) found a direct positive effect of corporate social responsibility on impulsive green purchases, and green advertising and plastic bans — on planned green purchases.

Furthermore, the author's work proposed the use of marketing in social networks as a tool for increasing the efficiency of the recyclables circulation. At the same time, Bojanowska and Kulisz (2020) found that the use of social networks to promote ideas related to ecology, in particular, zero-waste production, does not attract enough attention. The researchers noted that the reaction to relevant ideas is not the same for different genders: women pay more attention to manifestations of green marketing (using the example of Poland). Boháček *et al.* (2021) also focused on the fact that the consumers' willingness to participate in green initiatives significantly depends on their socio-demographic characteristics. This once again confirms that the use of the tools proposed in the author's work may have different effectiveness in different cases. Therefore, the context should be considered during their implementation.

Some techniques and tools were covered by Gustavo et al. (2021). The researchers determined that the following aspects should be taken into account for effective promotion of products with a short shelf life: product, place, price, and promotion. This means that the placement of relevant products in supermarkets affects the sales volumes, as well as the dynamics of pricing for such products.

In further studies, it is important to take into account the influence not only of large companies, but also of other market participants, for example, institutional influence. Alonso-Almeida *et al.* (2020) found that soft circular economy institutional promotion initiatives are effective both in increasing the level of circular consumption and in improving market competitiveness. At the same time, tough initiatives affect mostly the increase in cyclical consumption rates. The researchers found that not all institutional initiatives are effective. The obtained results can be useful from the perspective of implementing the proposed marketing tools for increasing the efficiency of the recyclables circulation in the practice of large companies. These tools have the potential to improve the performance of such companies by focusing on the environmental qualities of products, which makes a significant contribution to sustainable development and green growth.

A limitation of the study is that it analysed the impact of green growth components on increasing the efficiency of the recyclables circulation in general. Relevant marketing tools, potentially affecting the increase in the efficiency of the recyclables circulation, were determined by researching the practices of companies, but were not tested on specific indicators. In terms of coverage, this approach is an advantage of the research, as it allows considering the maximum number of marketing tools that can be useful in the context of the set tasks. However, it lacks numerical support, so further research may focus on identifying the impact of the use of certain marketing tools on increasing the efficiency of the recyclables circulation.

Conclusions and Further Research

Marketing has the potential to be the tool that can combine the circular economy's goals of growing the economy, while improving the environment. In particular, appropriate marketing tools can be used to increase the efficiency of the recyclables circulation.

According to the results of the correlation analysis conducted in the study, all green growth component correlate with the waste recycling rate. The results of the regression analysis give grounds to note that social inclusion has the most significant and net effect on the efficiency of the recyclables circulation. Considering these results, the study offers a wide range of marketing tools for increasing the efficiency of the recyclables circulation depending on specific needs. These needs vary by region and scale and can be classified according to the content of green growth components. These include: the need to increase the efficiency of the use of resources, improve natural capital protection, promote the development of the green economy, or increase social inclusion.

Summarizing the above, it is worth noting that this study is an important contribution to marketing research. Comparison with other studies reveals the advantages of the author's work, while determining the scope of further work. Among other things, further research should include an in-depth study of the empirical impact of individual marketing tools and consider the impact of all stakeholders. In particular, it is important to assess the role of the state, small and medium-sized business entities from the perspective of their use of marketing tools. The obtained results can be used in the practice of large companies through the implementation of the proposed marketing tools, which will allow emphasizing the environmental friendliness of products.

Credit Authorship Contribution Statement

Olena Sadchenko: Conceptualization, Validation, Project administration;
Yuliia Zabaldina: Investigation, Writing – review and editing, Methodology;
Zoreslava Liulchak: Writing – original draft, Software.
Lilia Bublyk: Formal analysis, Data curation.
Olena Kanishchenko: Visualization, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

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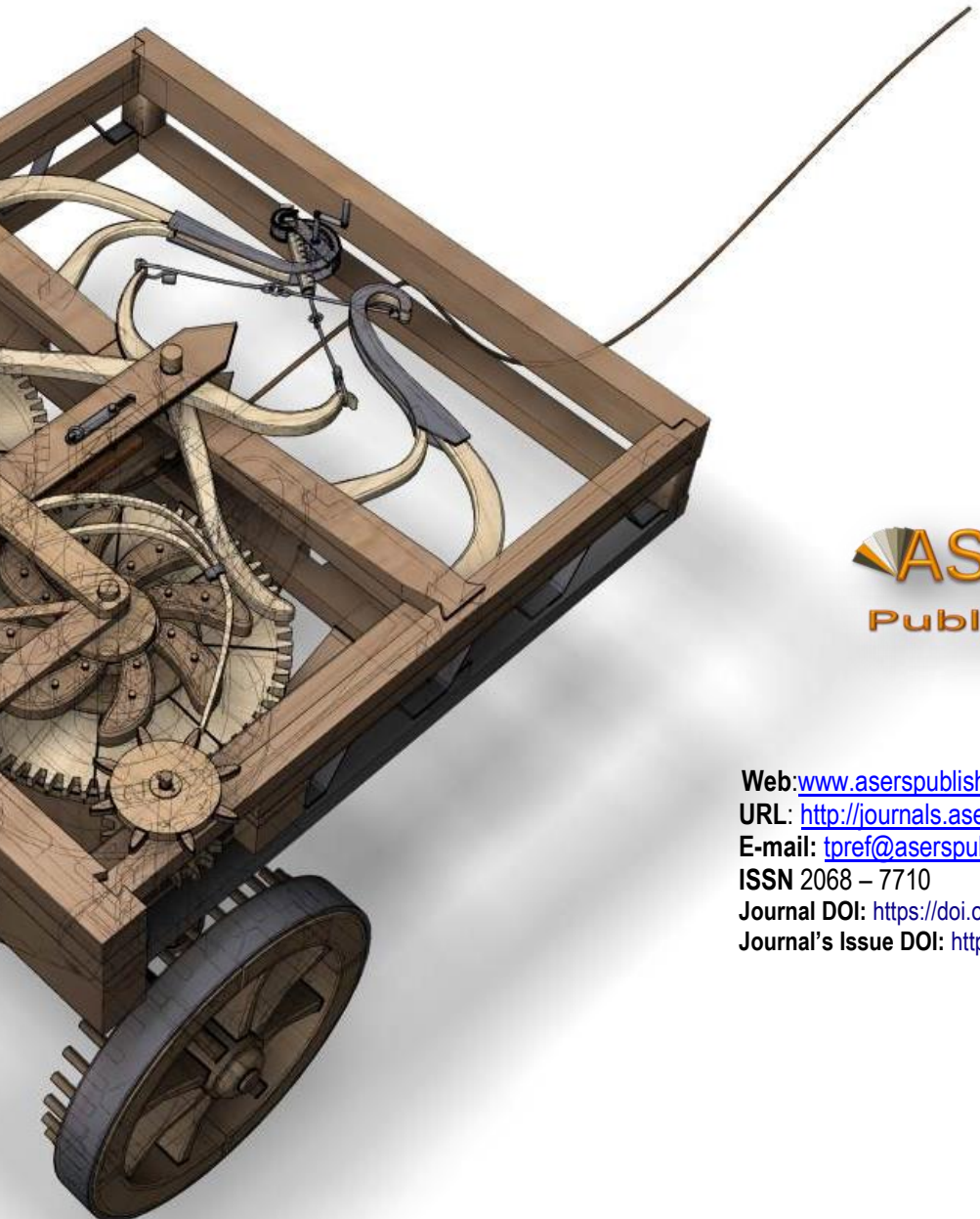

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