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FINANCIAL EFFECTS OF THE CIRCULAR ECONOMY: HOW CIRCULAR ECONOMY PRACTICES BOOST PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN SELECTED EUROPEAN SOUTHEAST COUNTRIES

Abstract

This paper examines the effects of circular economy (CE) practices on the financial performance of small and medium enterprises (SMEs) in selected European Southeast countries (namely, Serbia, Bulgaria, and Romania). It emphasizes the impact of different kinds of SMEs, like those focused on products, services, or both, and their benefits due to CE practices. Results of Logistic regression shows that Bulgaria is leading all kinds of SMEs in CE adaptation. However, there is a lot of potential in Serbia because there is a positive correlation between turnover increase and selling or reusing leftover materials or designing products that are easier to maintain, repair, or reuse.

Key words: Circular Economy, Small and Medium Enterprises, SMEs' Turnover, Multinomial Logistic Regression, Sustainable Development

JEL classification: Q01, Q56, Q57.

ФИНАНСИЈСКИ ЕФЕКТИ ЦИРКУЛАРНЕ ЕКОНОМИЈЕ: КАКО ПРАКСА ЦИРКУЛАРНЕ ЕКОНОМИЈЕ ПОБОЉШАВА УЧИНАК МАЛИХ И СРЕДЊИХ ПРЕДУЗЕЋА У ОДАБРАНИМ ЗЕМЉАМА ЈУГОИСТОЧНЕ ЕВРОПЕ

Апстракт

Овај рад испитује утицај пракси циркуларне економије на финансијски учинак малих и средњих предузећа у изабраним земљама југоисточне Европе (прецизније

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- Србији, Бугарској и Румунији). Рад истиче утицај различитих врста малих и средњих предузећа, попут оних која су фокусирана на производе, услуге, или оба, и њихове предности због пракси циркуларне економије. Резултати логистичке регресије показују да Бугарска предњачи у прилагођавању свих врста малих и средњих предузећа циркуларне економије. Међутим, у Србији постоји велики потенцијал, јер постоји позитивна корелација између повећања промета и продаје или поновне употребе одпалог материјала или дизајнирања производа који се лакше одржавају, поправљају или поново користе.

Кључне речи: циркуларна економија, мала и средња предузећа, промет малих и средњих предузећа, мултиноминална логистичка регресија, одрживи развој

Introduction

Numerous challenges related to climate change and environmental degradation, which have been present for decades all over the world, lead to a reconsideration of the business philosophies of economic actors in order to make important changes in the way of treating the natural and social community. It is spread by new approaches to business, which are adopted not only by large companies, but by all economic actors, regardless of their size.

The circular economy (CE) concept emerged as an approach to changing the way human activities relate to nature (Geissdoerfer et. al., 2017). The circular model represents changes in the way resources are regulated, produced and consumed. According to this concept, it is essential to update the traditional linear business model with a circular model, using the principles of reduction, reuse and recycling (Prieto-Sandoval et al., 2018). Despite the prevailing opinion that socially responsible practices are the responsibility of large companies, awareness of the need to involve SMEs in solving environmental problems is increasingly present. Although, viewed individually, they have a smaller impact on the environment than larger companies, SMEs represent 90% of all companies in the world (World Bank, 2019) and more than 99% in Europe, so their cumulative impact is large. As the dominant form of business, which also employs the largest number of people, but also has a large environmental impact, the SME sector can play a crucial role in managing limited social and environmental resources (Moore & Manring, 2009; Zhu et al., 2019).

In addition, there are other reasons why SMEs decide to transition to circular business models. For example, taking advantage of new opportunities due to the development of green markets (OECD, 2021), better access to environmentally responsible companies, knowledge flows and the wider market. There is an opinion that companies could profit from the adoption of circular practices, through cost savings due to the reduced use of resources, and the development of new markets (Ciravegna & Micheilova, 2022). These are the reasons why an increasing number of SMEs invest in transformation processes and start their journey towards the CE. A survey by the European Commission (2022) showed that more than half of SMEs in EU countries have already invested or plan to invest in dealing with problems caused by climate change, while two-thirds of SMEs have implemented resource efficiency activities, mainly through minimizing waste or energy saving (European Commission, 2022).

According to data from the European Union, only 7.2% of the global economy is circular, which means that a linear economy, characterized by unsustainable production and consumption, is still dominant (EU, 2023). In order to overcome environmental challenges, a set of documents and recommendations was created at the level of the European Union. One of the most important is the Circular Economy Action Plan, which covers the entire value chain from production to consumption, as well as repair and remanufacturing, but also waste management and secondary raw materials (EC, Directorate-General for Communication, 2020). Also, the European Green Deal, which aims to turn the EU into a “modern, resource-efficient and competitive economy” (COM, 2019). In the area of small and medium enterprises, the European SME Strategy (COM, 2020) was adopted in order to contribute to the goals of sustainable development and support the digital and green transition (European Commission, 2022). Although this set of policies and recommendations applies to all EU countries, the characteristics of national policies, financing systems, institutional contexts and incentives may differ between countries, which affects circular practices in SMEs (Zamfir et al., 2017). Also, factors such as geographical, ecological, economic and social influence the implementation of CE (Bačova et al., 2016).

The goal of the research is to investigate the impact of implementing CE practices on the financial performance of SMEs, analyze the effectiveness of existing policies and initiatives in promoting CE adoption among SMEs and to identify possible challenges and chances faced by SMEs in implementing circular practices. The research sample includes Serbia, Bulgaria and Romania because they are neighboring countries that share some common demographic characteristics, but two of which belong to the EU (Bulgaria and Romania), in which the circular transition process is at a higher level, since there are strategic documents and action plans in the field of CE, while in Serbia this process, both in terms of legislation and in terms of practice, is still at the beginning.

In order to reach the objective of the paper, the following hypotheses are developed:

Hoa: Did the circular economy adaptation increase the turnover of SMEs in Serbia, Bulgaria and Romania in the last two years (2019-2021)?

Hob: Is there any significant difference between types of SMSs for adaptation of circular economy, which can result in promotion of circular economy?

1. Literature review

Circular economy is a concept that promotes the use of resources in such a way as to increase the value of products or services through life cycle extension, while at the same time reducing waste or material that cannot be reused. By practicing the 3Rs practices (Reduce, Reuse, and Recycle), companies adopt innovative waste management practices, reduce generated waste and use recycled materials in the production process (Marković et al., 2023). The goal is to maximize the use of the product during its life cycle, and to return it to the production after the end of its useful life in order to create new value (Geissdoerfer et al., 2017). CE changes the traditional way of using resources by extending their life cycle, and the results of this are visible not only through environmental and social performance, through reduced resource consumption and waste treatment, reduced harmful emissions, but also in a positive effect on the financial performance of the businesses (Rodríguez-Espindola et al., 2022).

In the literature, the prevailing opinion is that the transition to CE may have positive effects on company performance (Morić et al., 2020; Geissdoerfer et al., 2017; Demirel & Danisman, 2019; Kirchherr et al., 2017). Numerous papers indicate that cost reduction based on optimization of resource use, seen from a long-term perspective, leads to certain benefits, such as increasing profits and a better position in the market, better competitive position (Morić et al., 2020). That is, it is considered that companies can potentially benefit from CE implementation through cost savings due to reduced needs for natural resources, as well as the development of new markets (Wijkman & Skånberg, 2015; Rizos et al., 2016; Taranic et al., 2016). The adoption of circular economy activities, through the development of new model of business, extends the product's useful life and encourages the use of resources in multiple cycles, which, along with minimizing waste, can have benefits that will be shown through financial indicators (Aboulamer, 2018; Lüdeke & Freund et al., 2019). In summary, earlier research has indicated that the adoption of a circular economy may have a positive effect, in terms of financial benefits for firms, suggesting that a link between the implementation of CE activities and financial performance exists (Rosa & Paula, 2023; Kurapatskie & Darnall, 2013).

However, there are still some questions about the effects of a circular economy on a company's economic performance. Companies that strive to work in accordance with CE principles should improve recycling capacities, enable systems to collect waste in order to reuse it as a resource and reduce the amount of production material (Wang et al., 2014; Ghisellini et al., 2016). That is, companies have to bear certain costs of implementing circular economy practices. However, it should be taken into account that some environmental innovations based on the application of CE require large costs and a long period to produce an impact on company performance (Soltmann et al., 2015).

SMEs are increasingly motivated to switch to circular models not only due to legislative pressures, but also because of potential cost savings in the long term, access to new markets, a good reputation on the market, etc. (OECD, 2011). The number of studies examining the adoption of CE in SMEs is relatively small, especially when it comes to comparative analysis in different geographical locations to discover best practices in SMEs. For SMEs, it is difficult to predict financial benefits because the adoption of circular economy practices generally implies additional investments, which can be unprofitable and excessive for SMEs (Dalhammar, 2016). Therefore, the implementation of the CE concept in the business model of companies, and especially SMEs, is not an easy process, considering that it can cause large costs that directly affect financial performance. As the resources of SMEs are generally limited, adapting to the CE can be a big challenge for them.

2. Methodology

In order to perform statistical research, the following dependent and independent variables were considered in developing the model:

Dependent Variable:

Company's annual turnover. The value of the dependent variable is obtained based on the answer to the research question (European Commission, 2022):

"Over the past two years, has your company's annual turnover increased, decreased or remained unchanged?"

Independent Variables:

- (i) Selling your residues and waste to another company (SRW)
- (ii) Recycling, by reusing material or waste within the company (RMW)
- (iii) Designing products that are easier to maintain, repair or reuse. (DP)

The multinomial logistic regression model estimates the probability of observing each category of the dependent variable, given the independent variables. It uses a separate logistic regression equation for each category compared to a baseline category. Here is the general form for the k th category ($k = 1, 2$):

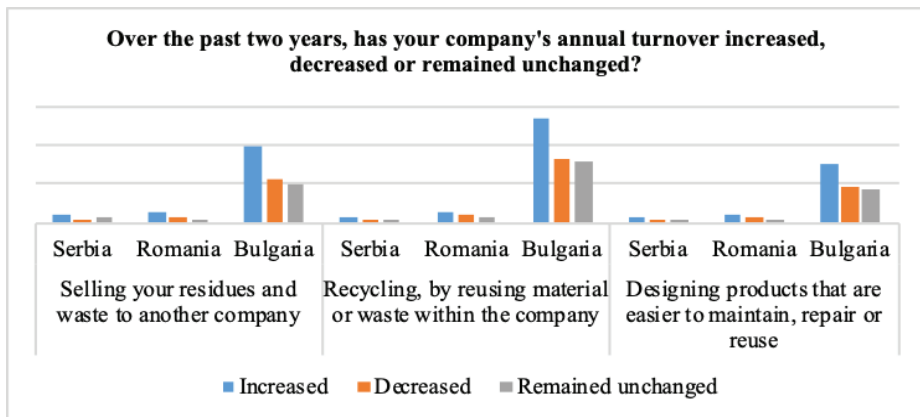
$$\ln(P(\text{SCR13} = k) / P(\text{SCR13} = \text{Baseline})) = \beta_0_k + \beta_1_k * \text{SRW} + \beta_2_k * \text{RMW} + \beta_3_k * \text{DP}$$

We can interpret the results as the coefficients (β) representing the change in the log odds of belonging to a specific category compared to the baseline for a one-unit increase in the corresponding independent variable. Negative coefficients indicate that a higher value of the independent variable increases the odds of being in that category.

3. Results and discussion

The Flash Eurobarometer 498 survey released their report for November-December 2021, *SMEs, green markets and resource efficiency* on the basic bilingual questionnaire by Ipsos European Public Affairs and we have taken data for Serbia, Romania, and Bulgaria to show different levels of reported changes in specific practices concerning SMEs and resource efficiency.

Figure 1: The change in companies' turnover during the period 2019-2021



Source: The Flash Eurobarometer 498 survey, November-December 2021

From Figure 1, we can say that Bulgaria had the largest recorded rise in selling residues and garbage to another company, followed by Romania and then Serbia. Nevertheless, all three countries have a significant number of SMEs, indicating growth in this behavior.

Bulgaria is dominating in all green initiatives, as their number of firms is 10 times higher than that of Romania and Serbia, which recycle through the reuse of materials or garbage within the company as well as selling residues to other companies or designing products that can be repaired or reused.

Figure 2: Companies' turnover in 2020



Source: The Flash Eurobarometer 498 survey, November-December 2021

From the figure 2 companies' total turnover in 2020, the data provides insights into how businesses in Serbia, Romania, and Bulgaria are implementing sustainable practices. The majority of larger businesses with annual revenue above two million euros sell garbage and residues to other businesses, mostly in Bulgaria and less in Romania and Serbia. Larger SMEs are more likely to recycle, particularly by reusing trash or resources inside the company. Out of all turnover categories, Bulgaria has the highest recycling rate. Larger SMEs are more involved in producing "products that are easier to maintain, repair, or reuse" (European Commission, 2022); Bulgaria leads all turnover categories. These findings show that the commitment to implementing sustainable practices increases with business turnover, with Bulgaria continuously leading the way in this regard.

Table 1: Differences in CE practices according to what companies sell

What does your company sell?	Selling your residues and waste to another company			Recycling, by reusing material or waste within the company			Designing products that are easier to maintain, repair or reuse		
	Serbia	Romania	Bulgaria	Serbia	Romania	Bulgaria	Serbia	Romania	Bulgaria
Products	64	88	745	56	71	993	33	57	516
Services	45	75	543	47	11	1021	20	84	461
Both products and services	95	113	840	57	85	1111	47	77	739

Source: The Flash Eurobarometer 498 survey, November-December 2021

The information supplied sheds light on the operations of businesses in Serbia, Romania, and Bulgaria, with a focus on waste and surplus inventory sales, recycling, and product creation.

Companies in Bulgaria, Romania, and Serbia sell leftovers and trash to other businesses; Bulgaria leads in quantity, followed by Romania, and Serbia in the lowest place. In Bulgaria, recycling activities are quite common, especially the repurposing of resources or garbage inside the company. Furthermore, enterprises in all three of the countries routinely claim to have a higher percentage of products designed with ease of maintenance, repair, or recycling. Businesses are realizing more and more how important it is to adopt sustainable practices because of legal pressure and customer demand for environmentally friendly goods and services. Encouraging and promoting sustainable business practices is crucial for enhancing resource efficiency and environmental reform in the region's small and medium-sized firm sector.

5. Determinants of the implementation of circular economy activities in SMEs

We used multi-logistic regression for the analysis as our dependent variable have more than two responses.

The data shown in Table 2 says that in the last two years, turnover for Serbian SMEs selling their residues and waste to another company has increased more as compared to Romania and Bulgaria, but the Bulgarian SMEs have a lower standard error and their coefficient is significant at the 1% level as well. It means that in Serbia an increase in selling SMEs' residues and waste to another company will increase their turnover by 41 percent. SMEs in Serbia are providing products instead of services, as they can sell their residues and waste. Romania is ahead of Bulgaria and Serbia in this. However, if the SMEs are working with the products and services, they are getting more benefits by selling their residues and waste to other companies.

Table 2: Selling residues and waste to another company (M)

Variables	Coefficients			Standard Error		
	Serbia	Romania	Bulgaria	Serbia	Romania	Bulgaria
Increased in turnover as base outcome Decreased	-.41*	-.398**	-.263***	.227	.190	.065
Providing services as base outcome Products	.657*	1.03***	.692***	.243	.211	.068
Providing services as base outcome Products and services	1.15***	1.352***	.687	.234	.212	.067

Source: authors' own calculations-using STATA

According to Table 3, we cannot interpret the results for Serbia and Romania as they are insignificant, but for Bulgaria, we can say that turnover of SMEs that are recycling their waste at their own company has increased in the last two years. Bulgarian SMEs producing products or both (products and services) have been recycling within their company as compared to only service-provider SME's.

Table 3: Recycling, by reusing material or waste within the company

Variables	Coefficients			Standard Error		
	Serbia	Romania	Bulgaria	Serbia	Romania	Bulgaria
Increased in turnover as base outcome Decreased	-.391	.082	-.209***	.245	.192	.065
Providing services as base outcome Products	.302	-.237	.222***	.247	.210	.063
Providing services as base outcome Products and services	-.023	-.184	.193**	.249	.208	.063

Source: authors' own calculations-using STATA

From Table 4, we can see that Serbian SMEs, which are “designing products that are easier to maintain, repair or reuse” (European Commission, 2022), increased their turnover in the last two years by 94%, as compared to only 15% for Bulgarian SMEs. However, Bulgarian SMEs producing products get more benefit if they are designing products easier to maintain, repair, or reuse by 28.5%. When it comes to both products and services, Serbian SMEs are 21% better than Bulgarian SMEs, but we cannot say anything about Romanian SMEs due to the insignificance of the results.

Table 4: Designing products easier to maintain, repair or reuse

Variables	Coefficients			Standard Error		
	Serbia	Romania	Bulgaria	Serbia	Romania	Bulgaria
Increased in turnover as base outcome Decreased	-.94**	-.279	-.149**	.315	.200	.071
Providing services as base outcome Products	.615	-.025	.285***	.316	.219	.075
Providing services as base outcome Products and services	.877**	.262	.670**	.303	.212	.071

Source: authors' own calculations-using STATA

Conclusion

The findings showed a significant positive relationship between selling leftover materials and waste and higher revenue for Bulgarian SMEs. This discovery is consistent with the ideas of the circular economy, which focus on optimizing resource usage and reducing waste, potentially resulting in economic advantages. Serbian and Romanian SMEs show room for improvement. The results of the second hypothesis showed varied findings about

the advantages of various CE procedures for different types of SMEs. Product-providing SMEs in Serbia showed some advantages, like making products easier to maintain. However, there was no definitive proof of these benefits being consistent across two other countries and industries. Furthermore, due to data constraints and inconclusive findings for Romania, further research is required in these areas. This research emphasizes the capacity of circular economy activities, namely the sale of residues and garbage, to increase small and medium-sized enterprises' revenue. Country-specific characteristics and variances across different types of SMEs significantly influence the success of these approaches.

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