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Implementation of Circular Economy Business Models by SMEs in Bosnia and Herzegovina

Amina Kahriman & Nataša Tandir

International Burch University, Sarajevo, BOSNIA AND HERZEGOVINA
Faculty of Economics and Social Sciences

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Abstract

Discussion regarding circular economy has gained traction in recent years due to increase in environmental awareness, as well as companies' quest for ways to reduce their costs. In order to gain understanding of circular economy, it is necessary to understand enablers and barriers for the implementation. Therefore, this research focuses on identifying enablers and barriers for implementation of circular economy in SMEs in Bosnia and Herzegovina, as well as points out to relevant findings regarding the importance and frequency of those factors. These findings are relevant because they will provide reference for SMEs who would like to introduce the concept of circular economy, as well as for legislators in charge of managing such initiatives. By identifying enablers and obstacles, these findings will also help stakeholders devise best strategies and policies for successful implementation, as well as foresee and plan for potential obstacles. The research included 33 SMEs located in Bosnia and Herzegovina and was conducted through e-mail delivered surveys. Research findings suggest that the CE practices are not very widely implemented among the SMEs in Bosnia and Herzegovina. According to the survey results, "Energy saving programs" was the most implemented CE practice, while "Captation/reuse of wastewater and/or rainwater" was the least implemented one. In addition, "Uncertainty about response times from public" was perceived as the highest barrier, while "Dialogue between institutions, bodies and associations of the territory for the implementation of projects on the circular economy" was perceived as the strongest enabler.

Keywords: circular economy, enablers, barriers.

1. Introduction

Discussion regarding circular economy has gained traction in recent years due to increase in environmental awareness, as well as companies' quest for ways to reduce their costs. In order to gain understanding of circular economy, it is necessary to understand enablers and barriers for the implementation. Therefore, this research focuses on identifying enablers and barriers for implementation of circular economy in SMEs, as well as point out to relevant findings regarding the importance and frequency of those factors. These findings are relevant because they will provide reference for SMEs who would like to introduce the concept of circular economy, as well as for legislators in charge of managing such initiatives. By identifying enablers and obstacles, these findings will also help stakeholders devise best strategies and policies for successful implementation, as well as foresee and plan for potential obstacles.

Correspondence: Amina Kahriman, Faculty of Economics and Social Sciences, International Burch University, Sarajevo, BOSNIA AND HERZEGOVINA. E-mail: amina-kahriman96@hotmail.com.

Circular economy is a promising alternative to currently prevailing linear economy, and can generate not only environment-friendly benefits, but also cost reductions It is estimated that USD 1.5 billion in revenue could be produced annually by processing food waste into biogas and compost in the UK alone, and cost reduction of 20% per hectoliter of beer could be obtained by switching to reusable glass bottles (Ellen MacArthur Foundation, 2013). Driver that could be the initiator of change to circular model are SMEs which are a crucial part of the economy. However due to their size and related constraints, they face a lot of barriers.

This research has several objectives. First objective is to identify enablers and barriers that the SMEs face regarding implementation of the circular model. Second objective is to point out to relevant findings regarding the importance and frequency of those factors. Third objective is to propose potential solutions to the issues SMEs face.

2. Literature review

2.1 *Linear economy*

The global economy has historically been dominated by linear consumption and production model, which entails goods being produced from raw materials, sold, used, and finally being disposed of as waste. This model results in significant losses along the value chain, resulting in the development of negative externalities due to the expansion of the extractive economies. This model is however being increasingly challenged, and there are indications that deeper changes in the economy are needed (Circular Economy: Business Rationale, 2015).

First of all, when it comes to economic losses and structural waste, current economy is substantially wasteful when it comes to value creation. In Europe, recycled waste and waste-based energy recovery recover only 5% of initial raw material value. For instance, 31% of food in value change is wasted, and average office is used only 35-50% of time (Circular Economy: Business Rationale, 2015).

The linear economy model is based on sourcing of raw resources from the earth and the manufacturing of goods. The waste resulting from this production either accumulates in landfills, or ends up being incinerated. However, just 14% of plastic waste is recycled, and that will result in the ocean having more plastic than the actual fish if nothing changes by 2050. Once the plastic ends up in the waterway, it results in USD 13 billion losses to tourism, shipping and fishing industries (Kaplan, 2016).

Other than plastic, there are also many other negative externalities caused by linear model. Many other materials, such as aluminum, steel, paper, cans, leather, oils and fossil fuels also cause similar issues. In addition, the increasing competition among companies has resulted in reduced product cycles, thus making products obsolete and turning them into waste, which affects the ecological balance. Figure below shows the flow of resources in the linear economy, where resources are extracted, turned into products, consumed, and finally turned into waste and disposed of (Upadhayay & Alqassimi, 2019):

Figure 1. Linear economy flow diagram.

This model also entails price and supply risks. The linear system is characterized by exposure to risks resulting from resource price fluctuations and disruptions in supply. Prices

volatility in last decade has been higher than at any point in 20th century. Moreover, in order to procure raw materials many countries have to rely on imports, which means they have to face raw material supply threats, as well as risks to the safety and security of supply in regards to global supply chains (Circular Economy: Business Rationale, 2015).

Another challenge for linear model is natural systems and regulatory trends. Linear model contributes to reserve depletion and degradation of natural capital which affect the productivity of the economy. Due to this, regulators have been creating additional regulations. Since 2009, the number of climate change laws has risen by 66%, and carbon pricing (carbon tax) is about to be or has been introduced in nearly 40 countries (Circular Economy: Business Rationale, 2015).

While this model has been successful in generating wealth until 20th century, it has shown many weaknesses over the last millennia, and its downfall is expected in the future. Commodity prices are said to have met turning point in 1999 when once declining costs of material started rapidly increasing. This is attributed to increase in demand which caused prices to rise and caused depletion of raw material. On top of this, with the competition becoming tighter, the companies were unable to transfer their increased costs onto customers which had put constraints on the companies' profits and drawn down the value of the total economic output (Sariatli, 2017).

There are also other developments with potential impact on future demise of this system. Movement of people from densely populated industrial zones to emerging markets, together with rapid economic development of China and India, has led to the expected increase in number of middle-class consumers around the world by estimated three million. Corresponding increase in consumption means that annual infrastructural investments of around three trillion USD will be necessary (Dobbs et al., 2011). If it fails to meet the necessary level of investment, the economy is bound to become supply constrained, especially in case of western countries that were already low on supplies. Addressing these hurdles is inevitably challenging, even if factors such as political tensions and interconnectedness of the markets are not taken into consideration (Sariatli, 2017).

2.2 *Circular economy*

After analyzing 114 mentioned definitions, Kirchherr, Reike and Hekkert defined circular economy as an „economic system that replaces the "end-of-life" concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes" (Kirchherr, Reike & Hekkert, 2017).

The phrase "Circular economy", sometimes abbreviated as CE, is considered to first be introduced by Pearce and Turner (1989), even though the concept has been around since 1960s.

The rise of circular economy can be traced to Boulding (1966) who proposed that cyclical ecological system should be used as an alternative to reckless linear economic model. Boulding (1966) titled the open economy the "cowboy economy", with the cowboy representing limited plains and reckless exploitative behavior – characteristics of open economy. On the other hand, Boulding (1966) titled the closed economy of the future the "spaceman economy", where the earth is regarded as a single spaceship without any unlimited reserves, either for extraction or pollution. He considered the main difference between the two models to be the attitude towards consumption. In the "cowboy economy" consumption and consequently production are considered to be a good thing, while in "spaceman economy" production is considered to be "something to be minimized rather than maximized". In line with this, Boulding considered that people must find their place in a cyclical ecological system that can continuously replicate the material form even though it can not avoid having energy inputs (Boulding, 1966).

Stahel later introduced the idea of "spiral–loop (or closed loop) self-replenishing economic construct" (Stahel, 1982). Subsequently, Stahel (2010) expanded it to the idea of "performance" economy. The premise of the performance economy is to redefine the topic of manufacturing, distribution and maintenance - businesses should sell performance instead of products (Stahel, 2010).

Next step in the development of the circular economy was biomimicry. Benyus (1998) proposed that the economic system is supposed to mimic the ways observed in nature to deal with industrial and commercial challenges and gauge efficiency based on solutions found in nature.

The Stahl idea was also included in Braungart and McDonough's successful proposal, in which all materials used in industrial and commercial processes are viewed as nutrients (Braungart & McDonough, 2008).

When it comes to circular economy, this model is considered to make sense both in environmental and business sense. This model no longer needs increased extraction and utilization of resources, electricity, water and raw materials, decreases waste, and preserves the value of goods and resources for as long as possible (Circular economy research and innovation, 2017).

The more the economy reuses and recycles the waste, the closer it gets to the idea of a circular economy, as well as to increasing their profit and reducing damage to the environment. The approach promotes reduction in usage of virgin materials and usage of clean technologies (Sariatli, 2017).

2.3 *SWOT analysis of circular vs. linear economy*

In addition to various benefits that the circular economy can provide, there are also series of hurdles that must be overcome.

Sariatli (2017) has summarized these elements as follows:

Strengths:

- Potential competitive advantage in form of proficiency in reverse material flow cycle;
- Reduction of systemic and direct material cost and reduction in resource dependence as a result of elimination of waste from the value chain;
- Progress in material sciences and development of higher quality more durable components as a result of incorporating circular economy considerations in R&D phase of operations;
- Less exposure to price fluctations of materials, and flattened cost curve resulting in better use of resorces in terms of both vaue and volume;
- Decreased exposure to externalities due to lower consumption of material.

Weaknesses:

- amalgamation of the entire product life cycle from raw material acquisition to disposal (Van Ewijik, 2014);
- specific guidance on how to apply the circular economy is not given to businesses;
- lack of a widely recognized standard institutions to govern the sector (Circular Academy, 2017);
- the semi-recyclability feature may be overlooked by circular economy when selecting a raw material for production processes;

- lack of special legislative rules concerning the circular economy and the implementation thereof (Circular Academy, 2017);

- inadequate investments into circular economy.

Opportunities:

- the economy could produce billions of dollars of savings by reducing the amount of material input required;

- using circular design in technical goods to secure access to better and cheaper materials;

- As a result of gaining expertise in legislative, technological, operational or cross-sectoral difficulties in circular solutions, business opportunities for enablers are emerging (Sariatli, 2017).

Threats:

- if producers were able to direct their own product-waste, it might be more difficult to reap benefits from management of waste for those in economy of scales;

- the ability to manage the entire product life cycle together with strong cooperation can lead to the emergence of cartel structures;

- due to complex and interlinked industries, a gradual or sequential financial disturbance in the system may trigger unpleasant results for the interdependent sectors (Van Ewijik, 2014).

2.4 *EU initiatives*

The Circular Economy package of the European Commission is assisted by programs like the EU Raw Materials Initiative. Switch to circular economy is by no means an easy feat, and it requires more than traditional R&D. Changes in entire structures and joint initiatives by academics, technology centers, industry and SMEs, the primary sector, entrepreneurs, consumers, governments and civil society, as well as favorable regulatory mechanisms and increased investment are needed in order for the switch to be successful (Circular economy research and innovation, 2017).

Together with the European Investment Bank (EIB), the European Commission works to encourage the growth of the circular economy and draw investors to related ventures. In addition to innovation efforts and regulatory policies, fundamental research is necessary for the adoption of this complex model, and this research will be supported through the European Research Council (ERC) (Circular economy research and innovation, 2017).

Europe's prosperity is dependent on the availability of resources, and transition to a more circular economic model would help Europe secure access to raw materials and boost competitiveness. If the model is moved to a more circular approach through these EU initiatives, the Europe expects to see following developments: "17-24% reduction in material inputs by 2030, 3.9% boost for EU GDP, EUR 600 billion of potential annual net savings per European industry, and 2-4% reduction in total annual greenhouse emissions" (Circular economy research and innovation, 2017).

EU also aims to achieve following goals by 2030: "boosting municipal waste reuse and recycling to a minimum of 65 percent, increasing the recycling rate for packaging waste to 75 percent, a binding 10 percent reduction target for landfills, promoting further market development for high-quality secondary raw materials" (Circular economy research and innovation, 2017).

Current actions that are being taken include: Actions aimed at reducing food waste by half by 2030 to achieve the global Sustainable Development Target, EUR 650 million under Horizon 2020 and EUR 5.5 billion under the Structural Funds, measures to promote product reparability, durability and reusability, along with energy conservation, rules to increase the use of organic and waste-based fertilizers and the function of bio-nutrients, requirements for the quality of secondary raw materials to boost market trust, a plastics initiative to tackle reuse and recycling, degradability, toxic materials and the Sustainable Development Targets to dramatically reduce marine pollution, as well as a series of reuse actions for waste water (Circular economy research and innovation, 2017).

Research and innovation are the main drivers of transition to circular economy. Under this model, waste is turned into resource, well-designed products emerge, owning is replaced by sharing, products become services, while environmental, economic and social benefits are obtained (Circular economy research and innovation, 2017).

2.5 *Barriers and enablers*

Research by Rizos et al. classifies barriers into following categories: environmental culture of the company, lack of resources, lack of government support/effective regulation, lack of knowledge, administrative burden, lack of technical and technological know-how, and lack of supply and demand network support (Rizos et al., 2016).

Barriers under company culture include company beliefs and habits, as well as personalities and values of the managers which were shown to influence the development of circular economy (Liu, 2014). One of main identified barriers is strong manager risk aversion (Liu, 2014). These conclusions are consistent with the work of Song et al. (2005) which indicated that leadership is very important for implementation of circular economy models, and that strong risk aversion hindered the progress. Attitudes of employees were found to be important as well, as employees with more positive attitudes were more likely to engage in implementation (Chan et al., 2014). Lack of awareness and sense of urgency, as well as resistance to change were also identified as potential obstacles (Kok et al., 2013). There is a lack of awareness regarding the importance of circular economy, which stems from product ownership being viewed as a way to boost self-esteem and in turn prevents the circular economy from becoming political priority. Resistance to change on the other hand comes mainly from stakeholders who have interest in keeping the status quo and avoiding uncertainty (Kok et al., 2013).

Lack of capital emerged as one of the biggest issues related to circular economy (Trianni & Cango, 2012). Implementation of circular economy entails the creation of closed-loop systems, as well new management approaches and shared consumption model, which require creation of business model and technological innovations (Batista et al., 2018).

Lack of government support/effective legislation is also one of the issues SMEs face. These include inadequate policies (Van Buren et al., 2016), as well as resulting market signals which do not encourage people to re-use resources (Vanner et al., 2014). Circular economy model is affected by low resource taxes which prompt businesses to purchase new inputs rather than resorting to recycled ones (Sarkis et al.,2010; Linder & Williander, 2015).

Lack of information about the benefits also emerged as a problem. Study from FUSION EU co-funded project showed that most of surveyed companies had never heard about circular economy, or did not understand fully what it was (Fusion Observatory Report, 2014).

Companies also face obstacles related to administrative burden – strict reporting demands and need for external consultancy (Calogirou et al., 2010; OECD, 2010), and lack of

technical and technological know-how needed to transform their business model (Rademaekers et al., 2010; Van Eijk, 2015).

The last barrier listed, the lack of supply and demand network support, refers to the need for suppliers and consumers to be engaged in sustainable activities (Van Buren et al., 2016).

3. Methodology

Based on data from previous studies and circular economy praticies that were identified, it was decided that the study will be done by conducting a survey. Survey used is the survey that was developed and used by Mura et al. (2019), which has integrated numerous previous studies.

There are three primary areas the survey focuses on (Mura et al., 2019):

- Circular economy practices adopted or planned by SMEs over the next two years- 20 practices chosen from a mix of interviews and international sustainability frameworks;
- The principal barriers and enablers to the implementation of CE practices;
- The business strategies firms are adopting and their performance outcomes.

These areas were identified as follows:

Table 1. Circular economy practices implemented at company level (Mura et al., 2019)

N.	CE practices
1	Environmental certifications (e.g. ISO14001/EMAS)
2	Separated waste collection system
3	Recovery / reuse of plastic and derivative packaging
4	Biodegradable materials (i.e. no plastic and derivatives) for packaging
5	Incentive policies for the return of old / worn products to the company
6	Reduction of the material content into packaging
7	Energy saving programmes
8	Energy supply from renewable sources (100 %)
9	Environmental selection criteria for suppliers
10	Environmental criteria for purchasing electricity, gas or other supplies
11	Bio/natural raw materials used into their products (e.g. biopolymers, biodegradable materials)
12	Secondary raw materials as inputs of the production
13	Substitution of chemicals (e.g. solvents, dyes) with safer and environmentally friendly alternatives
14	Resource-saving production processes
15	Environmental impacts monitored in air/earth/water
16	Closed loop for water reuse
17	Captation/reuse of wastewater and/or rainwater
18	Evaluation of the product life cycle (life cycle assessment)
19	The company develops products or services promoting energy savings
20	The company develops products or technologies in the renewable energy sector (e.g. wind, sun, biomass, geothermal)

Table 2. Barriers to CE practices implementation (Mura et al. (2019)

N.	CE barriers
B1	Uncertainty about response times from public administrations in the area of sustainability
B2	Lack of coordination of regulations at EU, national, regional and local level in the field of sustainability
B3	Bureaucratic difficulty in applying the legislation on sustainability (e.g. waste, water) by companies
B4	Difficulty of orientation in the renewable energy market
B5	Lack of clear guidelines to define sustainability in small and medium-sized enterprises
B6	Perception of sustainability as a cost and not as an investment

Table 3. Enablers to CE practices implementation (Mura et al., 2019)

N.	CE enablers
E1	Support for companies in the development of personnel training oriented to sustainability at multiple levels (e.g. actions aimed at individuals, firms, companies)
E2	Support for the participation of companies and entrepreneurs in European or transnational projects in the field of sustainability
E3	Dialogue between institutions, bodies and associations of the territory for the implementation of projects on the circular economy
E4	Support in the procurement of raw materials with low environmental impact / identification of suppliers with low environmental impact
E5	Facilitation of access to financial resources in the area of sustainability
E6	Promotion of policies dedicated to sustainability (e.g. tax benefits, loans, subsidies)

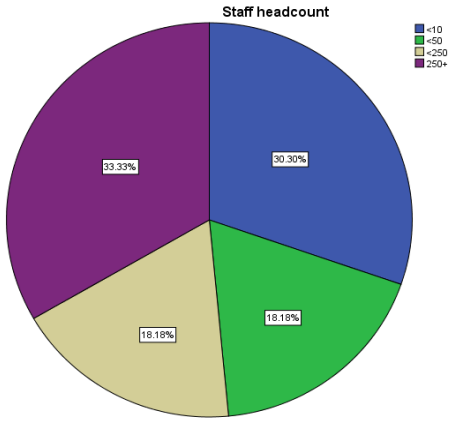
Table 4. Business strategies evaluated (Mura et al., 2019)

	Business strategies
1	Cost leadership
2	Differentiation
3	Operational performance / Efficiency
4	Innovation performance
5	Overall performance

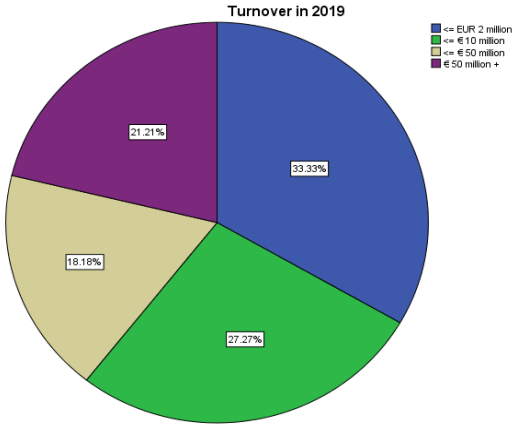
The questionnaire also includes control variables at company level (industry sector, turnover etc.) and individual level (position in the company etc.), and encompasses 57 questions, out of which 49 are based on 7-point Likert scale.

Around 197 companies were contacted, and survey was delivered to them through e-mail. The company list focused primarily on the 100 most successful companies as reported by Poslovne novine ("Oslobođenje – Ovo su najuspješnije kompanije u BiH," 2020), and was later expanded to include other companies. Out of all delivered surveys, total of 33 responses were collected. Due to the nature of the survey, the focus group were company managers which resulted in smaller sample size. Due to the small sample, the results were shown only descriptively.

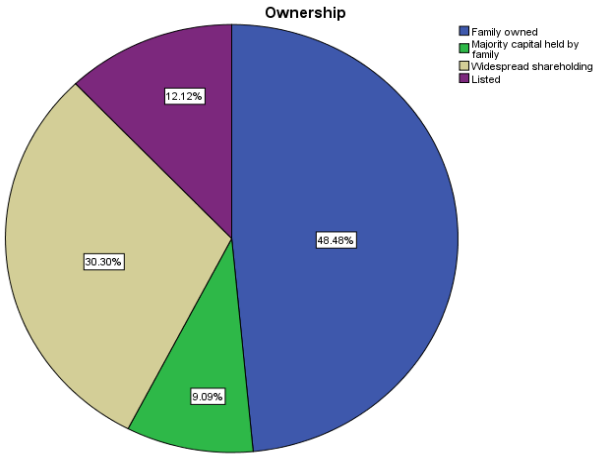
4. Data and findings



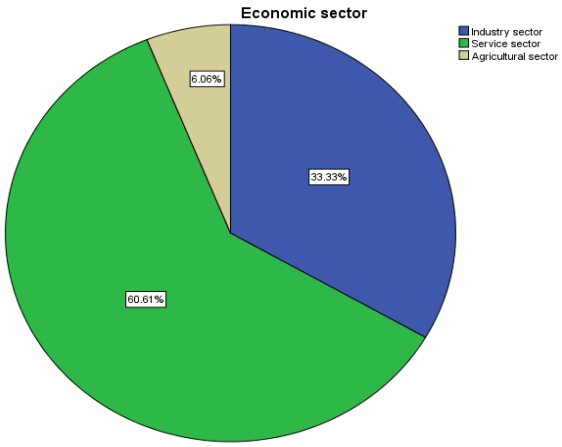
Out of the surveyed companies, around the same percentage accounted for companies with less than 10 employees (30.3%), and companies with more than 250 employees (33.3%).



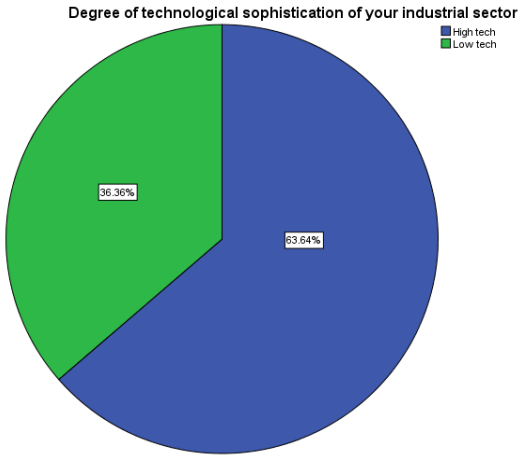
As seen in the graph above, a third of surveyed companies (33.3%) reported a 2019 turnover of less than EUR 2 million, while 21.2% companies reported a turnover of more than EUR 50 million.



Most of the companies reported to be family owned (48.5%), while 30.3% reported to have majority capital held by family.



Most of surveyed companies (60.6%) also belong to the service sector, followed by 33.3% in industry sector and 6.1% in agricultural sector.



Most of the companies (63.6%) also reported to be high tech companies, while the remaining 36.4% reported to be low tech.

CE practices

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Environmental certifications (e.g., ISO14001/EMAS)	33	1	7	3.85	2.320	5.383
Separated waste collection system	33	1	7	4.70	1.976	3.905
Recovery / reuse of plastic and derivative packaging	33	1	7	4.48	2.048	4.195
Biodegradable materials (i.e., no plastic and derivatives) for packaging	33	1	7	3.61	2.091	4.371
Incentive policies for the return of old / worn products to the company	33	1	7	3.39	2.045	4.184
Reduction of the material content into packaging	33	1	7	4.21	2.162	4.672
Energy saving programs	33	1	7	5.00	2.092	4.375
Energy supply from renewable sources (100 %)	33	1	7	3.76	2.194	4.814
Environmental selection criteria for suppliers	33	1	7	3.82	2.098	4.403
Environmental criteria for purchasing electricity, gas or other supplies	33	1	7	3.97	2.417	5.843
Bio/natural raw materials used into their products (e.g., biopolymers, biodegradable materials)	33	1	7	3.42	1.969	3.877
Secondary raw materials as inputs of the production	33	1	7	3.64	1.729	2.989
Substitution of chemicals (e.g., solvents, dyes) with safer and environmentally friendly alternatives	33	1	7	3.85	2.048	4.195
Resource-saving production processes	33	1	7	4.48	2.078	4.320
Environmental impacts monitored in air/earth/water	33	1	7	3.85	2.138	4.570
Closed loop for water reuse	33	1	7	3.36	2.028	4.114
Captation/reuse of wastewater and/or rainwater	33	1	7	3.00	1.904	3.625
Evaluation of the product life cycle (life cycle assessment)	33	1	7	3.36	2.148	4.614

The company develops products or services promoting energy savings	33	1	7	4.55	2.181	4.756
The company develops products or technologies in the renewable energy sector (e.g., wind, sun, biomass, geothermal)	33	1	7	3.33	2.087	4.354
Valid N (listwise)	33					

In the part of the survey regarding the CE practices, the question and the scale were as follows:

"Which of the following sustainability practices are you implementing in the company?" (1 = No implementation; 4 = it will be implemented in the next two years; 7 = already implemented).

CE practice with the highest mean (5.00) was "Energy saving programs" which indicates that this practice is the most implemented one among the companies. "Energy saving programs" are closely followed by "Recovery / reuse of plastic and derivative packaging" and "Resource-saving production processes", both with mean of 4.48.

Meanwhile, CE practice with the lowest mean is "Captation/reuse of wastewater and/or rainwater" with the mean of 3.00, which means that in most companies this practice will not be implemented over the next two years.

Barriers

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Uncertainty about response times from public administrations in the area of sustainability	33	1	7	4.55	1.641	2.693
Lack of coordination of regulations at EU, national, regional and local level in the field of sustainability	33	1	7	4.36	1.711	2.926
Bureaucratic difficulty in applying the legislation on sustainability (e.g. waste, water) by companie	33	1	7	4.42	1.921	3.689
Difficulty of orientation in the renewable energy market	33	1	7	4.24	1.714	2.939
Lack of clear guidelines to define sustainability in small and medium-sized enterprises	33	1	7	4.33	1.671	2.792
Perception of sustainability as a cost and not as an investment	33	1	7	4.21	1.728	2.985
Valid N (listwise)	33					

The question and the scale for the barrier-related part of the survey were as follows:

"Indicate on a scale from 1 (very low barrier) to 7 (very high barrier) how much you think the following factors represent obstacles to entrepreneurship in the field of sustainability".

When it comes to the perception of barriers, all six barriers had a similar perception. Barrier that was perceived as the highest was "Uncertainty about response times from public administrations in the area of sustainability" with mean of 4.55, while "Perception of sustainability as a cost and not as an investment" was perceived as the lowest barrier with the mean of 4.21.

Enablers

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Support for companies in the development of personnel training oriented to sustainability at multiple levels (e.g. actions aimed at individuals, firms, companies)	33	1	7	4.64	1.834	3.364
Support for the participation of companies and entrepreneurs in European or transnational projects in the field of sustainability	33	1	7	4.70	1.944	3.780
Dialogue between institutions, bodies and associations of the territory for the implementation of projects on the circular economy	33	1	7	4.88	1.867	3.485
Support in the procurement of raw materials with low environmental impact / identification of suppliers with low environmental impact	33	1	7	4.48	1.955	3.820
Facilitation of access to financial resources in the area of sustainability	33	1	7	4.61	1.853	3.434
Promotion of policies dedicated to sustainability (e.g. tax benefits, loans, subsidies)	33	1	7	4.67	1.979	3.917
Valid N (listwise)	33					

The question and the scale for the enabler-related part of the survey were as follows:

"Indicate on a scale from 1 (very weak enabler) to 7 (very strong enabler) how much you think the following factors represent an enabler to entrepreneurship in the field of sustainability".

All the factors in regards to enabler perception had close means. "Dialogue between institutions, bodies and associations of the territory for the implementation of projects on the

circular economy" was perceived as the strongest enabler with mean of 4.88, while "Support in the procurement of raw materials with low environmental impact / identification of suppliers with low environmental impact" was perceived as the lowest one with mean of 4.48.

Business strategy

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Develop new ways to reduce costs	33	2	7	5.73	1.547	2.392
Increase the efficiency of operational processes (e.g., in production or in logistics)	33	2	7	5.73	1.420	2.017
Develop strong control over sales / general / administrative costs	33	2	7	5.36	1.388	1.926
Develop new methodologies and technologies to create better products	33	1	7	4.76	2.031	4.127
Develop new products or improve existing ones to better serve our customers	33	1	7	5.24	1.821	3.314
Increase product differentiation compared to competitors	33	1	7	5.06	1.749	3.059
Valid N (listwise)	33					

The question and the scale for the business strategy-related part of the survey were as follows:

"In the last five years our main strategic objectives have been (1 = Do not agree; 7 = Completely agree)".

"Develop new ways to reduce costs" and „Increase the efficiency of operational processes (e.g., in production or in logistics)" were listed as most prevailing strategic objectives with mean of 5.73, while "Develop new methodologies and technologies to create" was the least prevailing one with mean of 4.76.

Overall performace

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
The company is reaching its full potential	33	1	7	4.73	1.719	2.955
Management is satisfied with the company's performance	33	1	7	5.12	1.691	2.860
The company is satisfying its customers	33	3	7	5.42	1.393	1.939
Valid N (listwise)	33					

The question and the scale for the overall performance-related part of the survey were as follows:

"Considering your company's performance in the last 5 years, indicate whether you agree or disagree with the following statements (1 = Do not agree; 7 = Completely agree)".

Surveyed companies overall agreed with all statements in regard to overall performance. The companies agreed the most with the statement "The company is satisfying its customers" (mean 5.42), and the least with statement "The company is reaching its full potential" (mean 4.73).

Innovation and operational performance

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Introduction of new generations of products	33	1	7	5.06	1.456	2.121
Increased product range	33	1	7	4.85	1.698	2.883
Opening new markets	33	1	7	5.03	1.591	2.530
Entry into new technological areas	33	1	7	4.91	1.721	2.960
Costs reduction	33	2	7	5.12	1.616	2.610
Improve the quality of products and services	33	2	7	5.55	1.583	2.506
Reduce lead-times (production times)	33	1	7	5.12	1.596	2.547
Improve operational processes	33	2	7	5.42	1.542	2.377
Valid N (listwise)	33					

The question and the scale for the Innovation and operational performance-related part of the survey were as follows:

"Regarding your main competitors, what is the level of performance achieved by your company in the following areas (1 = Far worse than competitors; 7 = Far better than competitors)".

Surveyed companies reported that they considered to be the most ahead of competition in terms of "Improve the quality of products and services" with mean of 5.55, and the least in terms of "Increased product range" with mean of 4.85.

5. Conclusion

The aim of this study was to understand what SMEs are doing to deal with challenges and reap the benefits of circular economy. The study focused on identifying the practices that SMEs use, as well as barriers and enablers related to adoption of circular economy.

According to the survey results, CE practice which were the most implemented among the companies are "Energy saving programs", "Recovery / reuse of plastic and derivative packaging" and "Resource-saving production processes". Meanwhile, CE practice which was the least implemented was "Captation/reuse of wastewater and/or rainwater".

When it comes to barriers and enablers, "Uncertainty about response times from public" was perceived as the highest barrier, while "Dialogue between institutions, bodies and associations of the territory for the implementation of projects on the circular economy" was perceived as the strongest enabler.

In the area of business strategy, "Develop new ways to reduce costs" and "Increase the efficiency of operational processes (e.g., in production or in logistics)" were listed as most prevailing strategic objectives.

Surveyed companies also overall agreed with all statements in regard to overall performance. The companies agreed the most with the statement "The company is satisfying its customers", while companies reported that they considered to be the most ahead of competition in terms of "Improve the quality of products and services".

Overall, the research suggested that the CE practices were not very widely implemented among the SMEs in Bosnia and Herzegovina (means ranging from 3.00 to 5.00).

This could be attributed to the barriers which were all classified as medium-high with means ranging between 4.21 and 4.55. This indicates that SMEs in Bosnia and Herzegovina could benefit from improvements regarding all of the aforementioned barriers, especially from reduction in uncertainty about response times from public administrations in the area of sustainability, and reduction in bureaucratic difficulty in applying the legislation on sustainability.

Research also indicated that the institutions in Bosnia and Herzegovina should focus on improvement of dialogue between institutions, bodies and associations of the territory for the implementation of projects on the circular economy, and support for the participation of companies and entrepreneurs in European or transnational projects in the field of sustainability, as these were identified as the strongest enablers for the implementation of circular economy.

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