Research Article

Circular Economy Approaches as Support for Business Transformation Towards Excellence

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The article explores the current state of circular economy adoption in Romanian small and medium-sized companies and their conceptualization of organizational excellence through the lens of environmental concerns. A survey of 52 companies from diverse sectors was conducted by means of a questionnaire, and the results obtained were analyzed using descriptive and inferential statistics (correlation analysis, ANOVA, and variance testing). The results indicate a growing body of knowledge and best practices that, at the company level, are evolving beyond a focus on material and process efficiency and toward an emerging understanding of environmental excellence, with positive interest ranging between 40% and 86%. Also, respondents recognize strong complementarities between circularity, sustainability, and organizational excellence. The need for an advanced systemic strategy, support policies, resource management, and stakeholder engagement is highlighted as the path toward achieving sustainability goals in conjunction with market success and not in spite of it.

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1. Introduction

The transition toward a circular economy in Romania and in other economies is still largely at the discussion stage in most companies. Within this context, the current study is motivated by the need to provide an improved rationale for companies to invest time and resources in implementing environmental approaches. The main objective of the research is to establish the potential operational benefits derived from an increase in the circularity of their products and processes in line with current

literature that reports on the link between sustainability and excellence with mediating factors [1] or without [2].

A major issue faced by Romanian firms relates to the level of public awareness, which is still at an incipient level. Nevertheless, in recent years, an improvement in this regard can be observed, with visible progress being made both at the policy level and within the business environment. This is supported by the complex mechanisms developed by the European Union (EU) to steer the economy of its member states in line with the goals of the European Green Deal, an ambitious plan from 2019 to make the continent carbon-neutral by 2050. By providing know-how, funding opportunities, and incentives for the EU countries and their respective companies, this comprehensive transformation of all economic sectors, from agriculture to high-tech manufacturing, requires the large-scale implementation of circular economy (CE) practices, alongside other environmentally oriented methodologies. Romanian companies are working toward these goals at varying speeds, mostly depending on the characteristics of the sector to which they belong (e.g., packaging recycling and food waste reduction are highly successful, while freight transport is mostly dependent on the use of fossil fuels due to high transition costs).

The research questions addressed in this framework are related to the level of performance of current circular practices in Romanian companies and, respectively, to their improved adoption in light of business excellence advancement based on these. The proposed contributions are both conceptual (developing the mentioned connection) and practical, through the analysis of insights collected from companies, that can be compared to similar studies such as [3] that assess the advantages of integrated management systems in Romanian industry.

For the purpose of this study, the concept of excellence is envisioned as the coordinated and synergistic adoption and implementation of complex environmental initiatives (e.g., product-process circularity, environmental management systems, carbon emission accounting, eco-labeling, etc.) that deliver emergent and tangible benefits simultaneously for companies and their stakeholders. This aspect is important in supporting the increase of companies' competitiveness at national and international levels, enabling faster adaptation to market requirements and emerging regulations, as well as fostering organizational modernization, which in turn reinforces innovation capability.

By adopting various strategies and policies, companies can be considered to be gradually complying with the required standards and taking small steps toward integrating the circular economy approach into their strategic direction, closely linked to resource management, organizational excellence [4], and long-

term sustainability [5]. The present paper aims to analyze the impact of the circular economy approach and the potential benefits of its implementation in Romanian companies for stimulating exceptional corporate performance. The study directly addresses two important gaps: building a comparative baseline for reports on circularity implementation success and challenges and studying the deeper implications of this conversion on the long-term success of businesses.

The results of the industry survey conducted by the authors are integrated within the general trend of European Union companies becoming resilient actors in the socioeconomic environment. The firms are expected to be both successful on the market and part of integrated ecosystems that deliver social value such as jobs and community consolidation initiatives for a more cohesive society in the face of complex internal and external disturbances.

2. Literature Review

As the first step of the undertaking, a literature review has been conducted using the MEAL (Main idea, Evidence, Analysis, and Link) approach, focused on the strategic and tactical levels of management and operations. The literature on circular economy and organizational excellence and their connections can be structured around four main themes: strategic integration, organizational and technological enablers, SME (small and medium-sized enterprises) capabilities and barriers, and systemic policy and measurement frameworks.

2.1. Strategic integration of CE

Recent literature on the circular economy transition shows that success depends not only on isolated operational measures but on a comprehensive strategic approach integrating leadership, managerial capabilities, technology, and ecosystem support [6][7][8]. In the European Union, this is part of a larger transformation to align business practices with the efforts to bring about a competitive economy that does not negatively affect the environment while providing a strong social safety net.

Studies conducted in various countries, such as Brazil and Scotland [6], show that proactive organizations led by sustainability-trained managers manage CE critical success factors more effectively and avoid the operational tensions faced by reactive firms. This highlights the importance of integrating circular economy principles into corporate strategy and of supportive institutional contexts in accelerating the transition. Organizational excellence represents a key dimension linking circular economy and sustainability. It involves coordinated interactions among processes, infrastructure, products, and human

resources. When managers maintain effective control and possess adequate expertise, they can formulate and implement coherent strategies that shape a clear organizational vision [9]. These relationships provide the conceptual foundation for the present study, with a focus on Romanian companies.

The authors of [10] show that circular transformation can begin even in the absence of a formal strategy, through the optimization of internal processes (Lean management) and investments in Industry 4.0 technologies (the previous, now changing industrial paradigm that was focused on digitalization). Over time, these aspects become the basis for the adoption of circular economy practices. The paper [11] reinterprets the concept of modularity, analyzed in Southeast Asian industries, as a strategic tool, not merely an operational one, enabling the integration of circularity into organizational governance and routines. In this process, collaboration with partners is essential to overcome resource and expertise constraints. Similar practices in the area of product design or process improvement can contribute to a better circularity of materials: Design for X, Design thinking, industrial symbiosis, Six Sigma, etc.

In a domain relevant to the area studied in the present research, the electrical and electronic equipment sector [7][12], circularity in supply chains is based on a holistic vision that combines government regulations, technological innovations (in accordance with the Industry 5.0 industrial paradigm that combines a human-centric approach and artificial intelligence for manufacturing processes), and the redesign of material flows. These elements jointly generate economic, social, and environmental benefits. At the operational level, supply-chain excellence and green transition practices translate strategic circular objectives into process-level implementation [13].

2.2. Organizational and technological enablers

A frequently cited barrier to circular economy adoption is the lack of internal expertise [14][15][16], particularly among SMEs in emerging economies. However, studies [14][15] show that Inbound Open Innovation, integrating external knowledge and co-creating with customers and suppliers, is an effective solution for addressing this gap. At the same time, implementing eco-processes is generally more accessible than developing eco-products, which require significant resources. Similarly, articles [17] [18] highlight the crucial role of education, both tertiary and continuing, in supporting the circular transition, with an emphasis on integrating CE into academic curricula and developing the skills required by the labor market. Thus, a well-trained and motivated workforce can be a contributing force to both sustainability and excellence.

Paper [19] highlights that the Industry 5.0 approach can have a positive impact on sustainability performance due to the enhanced focus on human creativity and social connections of enterprises as a complement to emerging digital technologies, which continue the trend established by Industry 4.0. Circular practices act as key linking factors between technological innovation and sustainability outcomes [20]. For example, the use of smart contracts and coordination mechanisms in IoT-connected supply chains improves stakeholder alignment and reduces failure risks in decentralized systems [21].

2.3. SME capabilities and barriers

The authors of [8][15][17] consider that government support and stakeholder engagement are essential drivers of transition, especially in emerging economies, where institutional barriers, weak infrastructure, and limited access to capital complicate CE implementation. Evidence from Thailand [15] and Ghana [17] shows that integrated public policies, educational programs, and financial incentives are critical for overcoming linear economic models and for adopting eco-processes in SMEs. Active collaboration with partners and local ecosystems reduces circular innovation risks and amplifies the economic benefits, transforming circularity into a sustainable competitive advantage [22][23]. Although the influence of external stakeholders is beyond the scope of the current study, the importance of these relations is acknowledged in the context of country-level studies.

Recent evidence reported in [24] indicates the circular transition cannot be supported exclusively through traditional fiscal measures—be they general green taxes or penalties on the use of materials. Circular performance depends on systemic mechanisms, from investments in advanced waste-to-energy technologies to robust economic instruments such as extended producer responsibility and production cost adjustments [25]. In the absence of these integrated policies, organizations remain trapped in a cost-efficient linear system, exactly as reported by the companies in our study. For these reasons, the effort to establish a functional CE must be undertaken by policy-making bodies, companies, and consumers together.

2.4. Systemic policy and measurement frameworks

Measuring progress is another fundamental aspect of circular transition. Tools such as the Circular Economy Maturity Framework (CEMAF) or the Circular Economy Index (CEI) enable companies and countries to monitor progress, set priorities, and identify the stages of transition [16][26][27]. This explains

why many companies continue to focus on optimizing internal processes and pilot projects, while infrastructure and incentives for product-level circular innovation remain limited [8][14][26].

In conclusion, the literature [6][7][8][12] indicates that the transition to a circular economy is a gradual, complex, and context-dependent process. The success of this effort can depend on many intrinsic and extrinsic factors [14][15][18][27], with no universal solution. Organizational transformation therefore emerges through coordinated action among firms, institutions, and stakeholders within each economic ecosystem. In the medium and long term, validated economic, social, and environmental benefits position circularity as a pathway to sustainable competitiveness [20][22]. The present investigation in Romania builds on these insights in designing the questionnaire and interpreting the results.

3. Materials and Methods

The research methodology used for the current study consists of two stages: the development and application of a questionnaire and the analysis and interpretation of data using descriptive and inferential statistics. The questionnaire consists of 13 questions addressing operational aspects (3 items), circular economy implementation initiatives (7 items), and organizational excellence (3 items).

- Q1: operational imperatives for competitiveness and sustainability;
- Q2: possible sources of instability and pressure;
- Q3: supplier relations in the context of sustainability;
- Q4: the understanding of the circular economy for the specific domain;
- Q5: *processes that can be considered circular*;
- Q6: energy efficiency measures that have been adopted;
- Q7: *involvement in carbon emissions reduction;*
- Q8: resource and know-how needs for circularity;
- Q9: immediate investment plans for sustainability;
- Q10: challenges in adopting circular approaches;
- Q11: *importance of achieving organizational excellence;*
- Q12: types of activities that contribute to organizational excellence;
- Q13: supporting relationships between sustainability and excellence.

The structure is intended to identify both the level of complexity of the industrial approaches to environmental pressures and the interconnections between circularity and excellence. Questions marked

with italics in the list above (numbers 5, 7, and 11) are screening questions that are not assessed directly but are factored into the Discussion section to describe the overall veracity of the results.

A cross-sectoral sample of 52 SME companies from Romania was selected using the snowball sampling technique, centered on the manufacturing sector. The actual respondents in each company have responsibilities related to administering the environmental footprint of each organization and a detailed knowledge of each company's operations. This approach is exploratory, with the present study intended as a feasibility analysis for determining the interest of SMEs (especially small companies, in a variety of economic sectors) in adopting correlated sustainability-excellence approaches.

Data collection occurred through an online Google Forms questionnaire disseminated via email and messaging services in the period January 2025 – July 2025. Once the information was aggregated, it was analyzed statistically using the descriptors of the central tendency for each question, as well as the ANOVA technique to understand variance and linear regression to estimate the overlapping and reciprocal support of the two investigated topics. To carry out the analysis, the authors used Microsoft Excel's Data Analysis ToolPak functions.

3. Results

The first question refers to the activities that companies take into account within their operations to ensure survivability and competitiveness. A considerable proportion of companies emphasize the continuous optimization of processes (39 responses), the efficient utilization of resources (37 responses), and clearly defined work procedures and effective interdepartmental communication (32 responses). The companies primarily focus on technological investments, the continuous development of internal structures, and increased attention to the proper allocation of organizational resources. The importance given to human capital highlights a strong dependence on employee competencies: firms acknowledge that without sufficiently well-trained personnel, the practical implementation of circular economic strategies is not feasible. The emphasis on procedural clarity and optimization also indicates a firm orientation toward efficiency and quality—required elements of organizational excellence.

To achieve an operational profile for the investigated companies (as presented in Figure 1, which combines the answers to questions Q1–Q3), besides the main activities, the study identified the most consequential sources of instability and pressure (question 2) and the maturity of supplier relationships in the context of sustainability (question 3). For the former topic, the issues reported are mainly concentrated on frequent changes in legislation (41 responses), staff turnover (37 responses), and

legislative gaps and miscorrelations (34 responses), with a continuing list of milder complaints. In the case of the latter topic, two answers stand out significantly over the rest: service or product quality issues (45 responses) and cost and price issues (43 responses).

While the socioeconomic environment experiences instability and volatility, the surveyed companies can be assessed to have a thorough understanding of operational aspects and constraints, which increases their chances for success, although long-term orientation and strategic intent are still lagging, as the scores for social and environmental issues, certifications, or business model transformations register significantly lower scores, usually in the single-digit area.

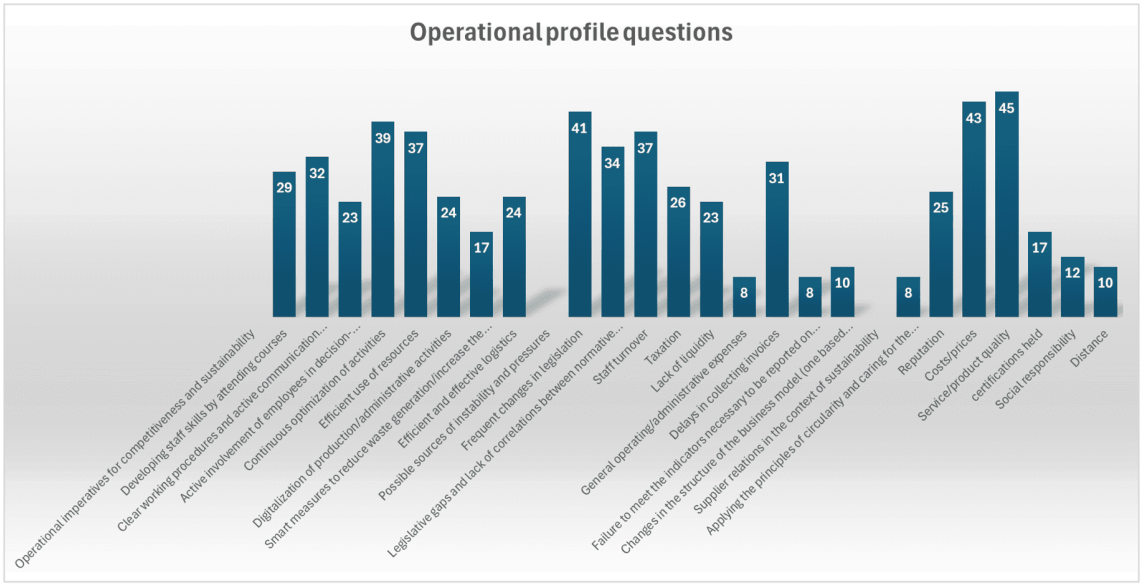

Figure 1. Operational profile of companies based on responses to questions Q1–Q3.

Next, the questions pertaining to circular economy involvement have been analyzed (Q4, Q8, Q10) and are presented in Figure 2. In this area, question Q4 aims to highlight how the circular economy is conceptualized by the companies surveyed. A substantial portion of respondents identify the circular economy primarily with the efficient use of available resources (22 responses). Others associate it with reducing waste through innovative production processes (9 responses), while still others associate it with environmental protection reinforced by updated internal procedures aligned with market and legislative evolutions (8 responses). The data obtained suggest varying levels of complexity and maturity. Many Romanian firms interpret the circular economy predominantly from an ecological perspective, highlighting an emerging yet growing organizational commitment to sustainability. Nevertheless, the

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emergence of uneven perspectives—ranging from efficiency-oriented views to those focused on circular-economy principles—indicates that the levels of comprehension and adherence remain unbalanced across firms.

For question Q8, the responses illustrate the resources that companies consider essential for strengthening circular economic initiatives. The most frequently mentioned are qualified human resources (31 responses), intelligent resource management (30 responses), and financial capital (26 responses). Romania is facing a structural deficit of qualified labor, exacerbated by emigration and the increasing fiscal burden. Without trained personnel and adequate managerial instruments, firms cannot effectively monitor progress, which makes implementation difficult. Intelligent resource management emerges as a fundamental benchmark, intricately linked to the need for continued financial resources. In many companies, the ability to invest is limited, and insufficient access to credible data further restricts strategic development. The principal limitation that can be inferred therefore stems more from the lack of expertise and monitoring tools than from the absence of an intention to implement circular initiatives.

The main barriers identified through question Q10 include human resources/lack of qualified personnel (28 responses), lack of understanding of the concept (26 responses), and lack of knowledge about the economic and financial impacts (23 responses). These constraints suggest that firms require external support mechanisms—training programs, non-reimbursable funding, and incentives. The obstacles do not arise from a lack of willingness but from insufficient resources and the limited dissemination of information regarding the specific topics of the circular economy.

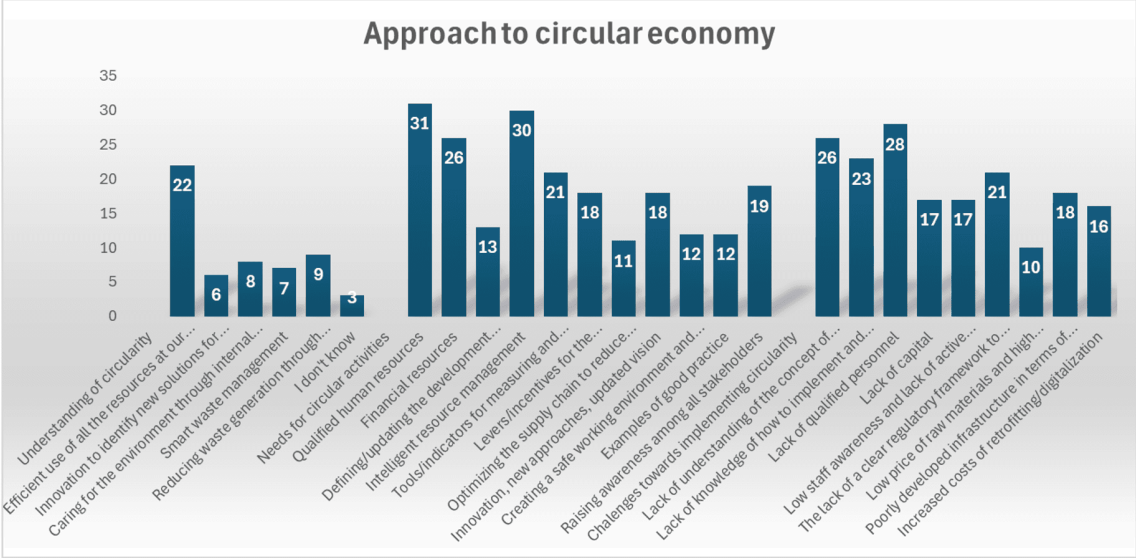

Figure 2. Circular economy involvement of companies based on responses to questions Q4, Q8, and Q10.

The next combination of questions (Q6 and Q9) describes the overarching sustainability issues that form the context in which circularity measures are envisaged and implemented by the responding companies, as presented in Figure 3. This section is designed to identify the main support structures on which companies have constructed their circular approach. As such, the first topic (Q6) relates to the most pressing issue on a European level, the implementation of energy efficiency and energy diversification strategies, with the main answers reporting the installation of low-transfer heat insulation (34 responses), intelligent lighting and temperature control (34 responses), and energy-efficient doors and windows (29 responses). These measures are likely linked to the rising costs of energy in the past few years, while the orientation toward renewable sources to protect the environment remains a secondary concern (the installation of photovoltaic panels received 25 responses). Next, question Q9 studied investments in sustainability strategies and discovered that most companies will invest in the upskilling of staff (28 responses), product or service innovation for sustainability (22 responses), and the acquisition of sustainable/environmentally friendly technologies (21 responses).

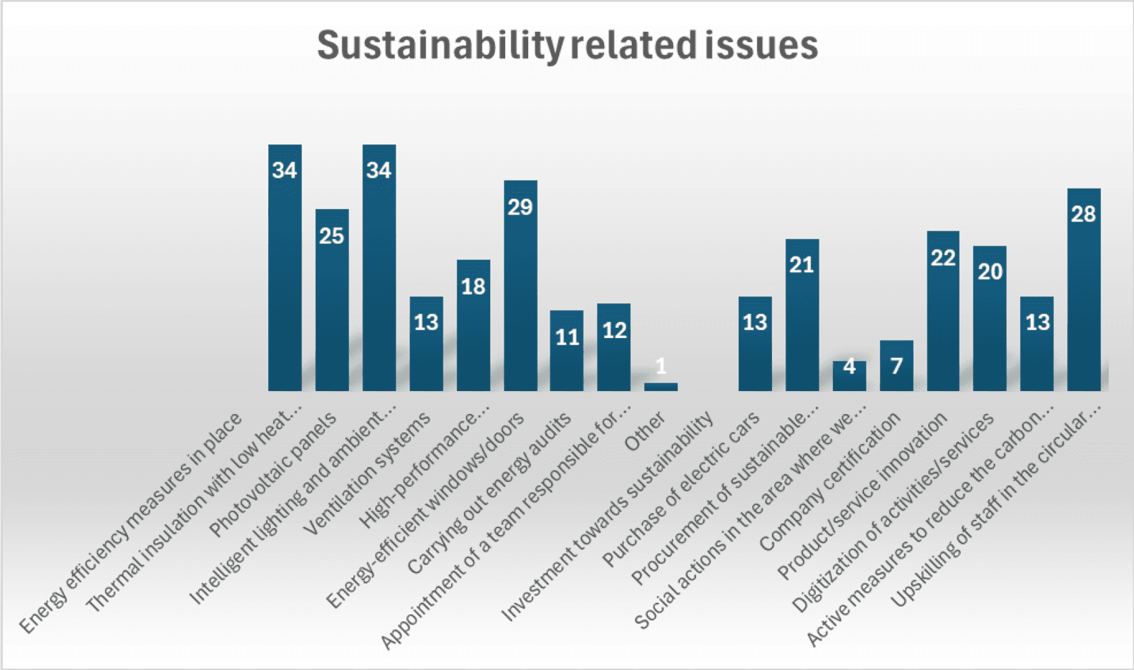

Figure 3. Sustainability practices and planned investments based on responses to questions Q6 and Q9.

Finally, the survey investigated the connection between circularity, sustainability, and organizational excellence (questions Q12 and Q13), as presented in Figure 4. In relation to organizational excellence, the first of these questions aims to evaluate which elements or key activities are considered essential for companies as part of it. According to the chart, the most essential elements are those referring to the quality of products and services (36 responses), efficient resource management (34 responses), and innovation (29 responses). This can be interpreted as a mix of people, processes, innovation, and quality —a mix that respondents correctly associate with organizational excellence as described in the literature. Companies understand that they cannot perform without any of these elements, as they work together in close interconnection.

The benefits of the excellence approach through environmental sustainability are also highlighted in Figure 4 below. It can be observed that these benefits are mainly related to adaptation to market conditions and to new sustainable technologies (32 responses), as well as to the continuous improvement of activities and human resources (31 responses). This is a notable aspect and highlights the growing awareness among Romanian companies regarding the circular economy and its implications, with a particular emphasis placed on its contribution to organizational excellence. Innovation, economic

growth, and ensuring the company's longevity are perceived as important advantages that are reinforced by the adoption of circular economy and other sustainability practices.

While this awareness is incipient, it is detectable (see the Discussion section for a detailed analysis), and the authors posit that it can be further supported through adequate measures and policies that can be implemented with government support. By contrast, direct competitive advantages and access to new markets are considered less significant benefits in this context, as they are perceived as less directly linked to competitive market leadership in synchronicity with the requirements of the stakeholders. Companies view excellence as a factor that both supports and benefits from sustainable development and organizational modernization.

It is also important to mention that compared to the three previous analysis sections, which had clear dominant answers, in this case there is a significantly more balanced output among the responses. This likely results from the developing understanding mentioned before.

Figure 4. Organizational excellence priorities and perceived sustainability benefits based on responses to questions Q12 and Q13.

In the next stage, the four main question clusters have been investigated in detail using correlation analysis, the ANOVA methodology, and the F-test for variance.

For the Q1–Q3 operational profile group, correlations among answers (Table 1) show no or low interdependence, thus describing a large diversity of strategies used by companies to pursue competitiveness. The results suggest this is due to the heterogeneity of the sample and the varied socioeconomic conditions and pressures in which they conduct their core activities.

	Q1	Q2	Q3
Q1	1		
Q2	0.082027	1	
Q3	0.36464	0.161496	1

Table 1. Correlation analysis for operational profile variables (Q1–Q3).

However, by performing the ANOVA single-factor analysis (Table 2) on the same group of answers, the results obtained, with $p > 0.05$ and $F < F\text{-crit}$ by a large margin, point to the failure to reject the null hypothesis. This points to the fact that even if the companies follow the constraints of their sector and operating environment, they ultimately have a similar approach that is defined by the need to deliver financial, staff, and customer results in the same market within the same country, under the same regulatory framework.

ANOVA						
Source of Variation	*Sum of squares*	*degrees of freedom*	*Mean Squares*	*F*	*P-value*	*F crit*
Between Groups	115.3373	2	57.66865	0.383813	0.68594	3.4668
Within Groups	3155.288	21	150.2518			
Total	3270.625	23				

Table 2. One-way ANOVA results for operational profile variables (Q1–Q3).

In the case of the Q4–Q8–Q10 circularity approach group, correlations (Table 3) have values in the weak correlation range. By factoring in the diversity of answers to questions Q5 and Q7, the analysis shows an important but recent and unfocused interest in the circular economy. This appears to be a possible intervention domain to accelerate the transition.

	Q4	**Q8**	**Q10**
Q4	1		
Q8	0.515748	1	
Q10	0.391092	0.353594	1

Table 3. Correlation matrix for circular economy variables (Q4, Q8, Q10).

The ANOVA single-factor results (Table 4) of the group yield a $p < 0.05$ and $F > F\text{-crit}$ by a significant margin, leading to the rejection of the null hypothesis. As such, it can be deduced that this variance stems from an increased but underdeveloped concern with the topic and disparate measures that are being tested for results. As it matures, it is expected to coalesce more at the sector, company size, or operational area level and lead to more commonalities under a coherent framework.

ANOVA						
Source of Variation	***Sum of squares***	***degrees of freedom***	***Mean Squares***	***F***	***P-value***	***F crit***
Between Groups	479.308081	2	239.654	5.609126	0.010373	3.422132
Within Groups	982.691919	23	42.72574			
Total	1462	25				

Table 4. One-way ANOVA results for circular economy variables (Q4, Q8, Q10).

Questions Q6 and Q9—the sustainability approach group—have a correlation coefficient of -0.30087, also a low-strength relationship. The possible interpretation that can be given to this result is similar to the previous cluster—an incompletely defined or unfinished effort—but the negative value also signals that investments in energy measures and those in technology are not possible at the same time.

The ANOVA single-factor results (Table 5) are $p > 0.05$ and $F < F\text{-crit}$, so the null hypothesis should be accepted. Since sustainability approaches, including energy efficiency and renewable energy measures, have been implemented for decades, it is possible for the convergence of answers to show an emerging consensus at the level of the Romanian economy in terms of implementation directions and resource commitment that companies are accepting as typical.

ANOVA						
Source of Variation	*Sum of squares*	*degrees of freedom*	*Mean Squares*	*F*	*P-value*	*F crit*
Between Groups	56.94118	1	56.94118	0.56192	0.465083	4.543077
Within Groups	1520	15	101.3333			
Total	1576.941	16				

Table 5. One-way ANOVA results for sustainability variables (Q6, Q9).

Questions Q12 and Q13—the organizational excellence adoption group—also have a negative correlation coefficient with a value of -0.63055. This value shows a significant strength, close to the strong correlation range. Since the first question deals with typical activities leading to excellence (mostly operational ones) and the second one deals with supporting relationships with sustainability issues, this can be interpreted as a desirable association that is hindered by limited resources. It also directs the analysis toward more possible government support measures intended to foster this process within companies for extended economic benefits.

In this case, the ANOVA single-factor results (Table 6) are $p > 0.05$ and $F < F\text{-crit}$ by a large margin, so the null hypothesis should be accepted. It can be inferred that companies have developed a common tacit

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understanding of the mechanisms through which sustainability and circularity can support the achievement of organizational excellence. Even if they perceive the end state differently, depending on their context, the companies appear to agree on the notion that circularity efforts and costs are not wasted and can actually lead to a better competitive position. When also considering the overwhelmingly positive response to screen question Q11, this conclusion becomes much more plausible.

ANOVA						
Source of Variation	*Sum of squares*	*degrees of freedom*	*Mean Squares*	*F*	*P-value*	*F crit*
Between Groups	4.429762	1	4.429762	0.070632	0.794586	4.667193
Within Groups	815.3036	13	62.71566			
Total	819.7333	14				

Table 6. One-way ANOVA results for organizational excellence variables (Q12, Q13).

Finally, to assess the connection between these managerial approaches, the F-Test with Two-Sample for Variances has been applied across two different clusters, comparing the answers to questions Q8 – needs for circular activities and Q12 – activities that contribute to organizational excellence (Table 7).

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F-Test Two-Sample for Variances		
	Q8	*Q12*
Mean	19.18181818	24.375
Variance	51.76363636	80.26785714
Observations	11	8
df	10	7
F	0.644886237	
P(F<=f) one-tail	0.255234403	
F Critical one-tail	0.318931981	

Table 7. F-Test applied for assessing circularity (Q8) – excellence (Q12) cross-linkage

The results of the test show that p > 0.05, but also that F > F-crit, which means that the null hypothesis can be partially accepted. More so than ANOVA, this test looks for similarities in the variances of the two answer sets, arriving at a mixed result that can be interpreted as a parallelism between the perceived inputs and outputs of the two organizational transformation frameworks. As the p-value does not point to rejection, the null hypothesis has a dominant position in the interpretation, which reinforces the idea that government intervention could prove positive and influential. However, since the F-value does not fall below the critical threshold, it is recommendable to further expand the study by increasing the number of answers and focusing on particular economic sectors.

4. Discussion

As positive interest presented above ranges between 40% and 86%, depending on the question, for a detailed understanding of the collected responses two tasks are performed: a qualitative analysis of the three screening questions that describe the overall commitment of the companies to circular economy-based organizational excellence.

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Question Q5 aims to determine and highlight the specific organizational activities that fall within the scope of the circular economy. According to the data collected, 28 respondents evaluate their services as the main activity associated with circularity, followed by waste management (25 respondents), production (20 respondents), procurement (19 respondents), logistics (16 respondents), administration (16 respondents), storage (15 respondents), and others (3 respondents). The results show that firms currently associate circularity less with core operational areas (48 responses for production and services from the multiple selection) and more with support activities (94 responses for the other six categories from the multiple selection). Although some progress is observed in innovative production or product design, most organizations remain in an exploratory phase, hesitating to implement deep structural changes, which brings about an important lens through which their answers to the technical questions must be viewed – as early commitments that have yet to mature. Thus, circular economy practices are applied with caution and remain largely tangential rather than central to business models.

In the case of question Q7, companies were asked whether they implement measures aimed at reducing carbon emissions. A majority (31 responses) indicates that their companies have adopted such measures, while 21 report the absence of these initiatives. Firms that have adopted such approaches demonstrate a proactive environmental initiative; however, the intensity and scale of these actions remain under debate. On the other hand, companies that report the absence of such measures indicate either limited awareness, insufficient resources, or a lack of technical expertise. The current landscape reflects a transitional stage: the direction is positive, yet the level of adoption is not sufficiently developed to generate system-wide influence and make a central theme of the companies' sustainability efforts.

According to question Q11, almost all companies state the importance of organizational excellence in the context of the circular economy (49 responses for "important" and 2 for "slightly important"), demonstrating an understanding of its relevance for long-term competitiveness. Therefore, improvement efforts should focus on capitalizing on the existing goodwill through support measures and projects, to which the current study contributes.

By including these distributed questions, the interest of the respondents is both strengthened across the questionnaire and monitored to ensure consistency and proper selection of the responding companies. This is implemented as a countermeasure to the non-random convenience sampling of the population that was done based on previous collaboration with the firms.

By integrating the ANOVA results of the specific question clusters and the general perspective presented by the screening questions, it can be inferred that the study performed reaches the following actionable

insights:

- SMEs share a similar understanding and conception of operational competitiveness, although they use different paths towards it, a finding which is in line with similar studies [28] that showed there is a strong diversity in ways to measure performance improvement;
- circular economy practices are still emerging in Romania, but they attract cross-sectoral interest and are well known within the economy of the country, which correlates with previous results obtained by studies in the same setting [29];
- sustainability initiatives are already at a mature stage, a finding aligned with recently published results [30] which investigated more advanced and niche topics such as low-carbon approaches;
- organizational excellence is an appealing prospect that can be reinforced by circular and sustainable initiatives as there is a considerable overlap between the stakeholder needs targeted by these frameworks, which concurs with recent results reported in [31];
- the preoccupation for circular economy transition should be a national one (or in the case of the European Union, a continental one), as the benefits achieved by individual players can be compounded and multiplied by other economic actors within the same industry, region, or supply chain, as extrapolated from research performed in other regions [32].

5. Conclusions

This study assessed the state of circular economy implementation and organizational excellence within companies in Romania, placing emphasis on the advantages, obstacles, and enabling factors that support the transition toward environmentally sustainable practices. The findings highlight that the circular economy in Romania is mainly approached at an introductory level and is not yet fully integrated into core business models. Empirical evidence shows that Romanian firms are positioned at an early to intermediate stage of circular economy development. Although there is a decided willingness to adopt circular principles, implementation is hindered by structural challenges, particularly the lack of qualified personnel, insufficient financial resources, limited understanding of the circular economy concept and its benefits, and a lack of knowledge regarding implementation methods and the effects of adoption on performance. These limitations do not signal a lack of commitment but rather a deficit in skills, data, and institutional support required for the effective scaling of circular initiatives.

A central contribution of this paper is the explicit conceptualization of the relationship between circular practices and organizational excellence. Respondents identified product and service quality, efficient resource management, and innovation as key elements of organizational excellence and as foundational drivers of its development. These aspects form an integrated model in which people, processes, and innovation interact synergistically, enhancing both circular performance and long-term competitiveness.

Furthermore, the analysis suggests that companies perceive environmental sustainability as a key enabler of organizational excellence but fail to completely internalize this commitment in terms of operational structures and processes, consistent with prior studies. The F-test linking these domains only partially accepts the null hypotheses, in accordance with published results such as those reported by [33] in Poland, [34] in Jordan, and [35] in India.

Perceived benefits, such as adaptation to market dynamics, the adoption of sustainable technologies, continuous improvement through management systems and models, innovation toward net-zero and less pollution and waste, resilient economic growth, and organizational longevity are prioritized over short-term competitive advantage or immediate access to new business markets. This orientation indicates a strategic focus on adaptability and value creation within their local ecosystems, which is correlated with the ambitions of the United Nations' Sustainable Development Goals, particularly Goal 8 – Decent Work and Economic Growth and Goal 12 – Responsible Consumption and Production.

Possible policy recommendations to support the long-term success of this ongoing transformation include government support programs, dedicated awareness-raising and consumer policies, educational programs, specific financial instruments such as sustainability-oriented investment funds, and merger with digitalization [36] efforts.

Among the study's limitations is the relatively small, voluntary sample of respondents drawn from diverse backgrounds and industries, which may limit the generalizability of the results. In addition, participants are currently operating in a complex economic environment that may shift their focus toward short-term survival rather than long-term development. Future research should therefore expand the sample size and tailor the questionnaire to specific major sectors (e.g., manufacturing or waste management).

Statements and Declarations

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Conflicts of Interest

No potential competing interests to declare.

Data Availability

The dataset(s) supporting the conclusions of this article is(are) included within the article.

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