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## Article

# Analysis of congruency effects of corporate responsibility code implementation on corporate sustainability in bio-economy

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# ANALYSIS OF CONGRUENCY EFFECTS OF CORPORATE RESPONSIBILITY CODE IMPLEMENTATION ON CORPORATE SUSTAINABILITY IN BIO-ECONOMY

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**Abstract**

The present study attempts at providing an overview of the congruency effect of social reporting on corporate sustainability in bio-economy. The paper was structured to identify the main congruency forces that can constitute both the strategic and operational dimensions linked to the implementation of a corporate responsibility code within companies from the bio-economy sector. Research has shown that the congruency effect is stronger when companies report a greater tendency towards social reporting and pay more attention to the relationships with stakeholders. Moreover, the results of the study aimed to shed a new light on the role of a company's social identity both in its internal process and in consolidating its position in the market by using CSR reporting elements.

**Keywords:** corporate responsibility code, bio-economy, congruency effect, sustainability.

**JEL Classification:** M14, Q56.

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## **Introduction**

Global concerns about the efficient and sustainable use of biological resources have generated in Romania a wide range of initiatives in order to stimulate this process, taking into account the unprecedented dynamics of different sectors as: food, agriculture, forestry, fishing, wood processing a.s.o. Starting from the capacities of active companies in this area to increase existing value chains and create new ones, it is imperative to take into account the role and the impact of social responsibility as a major factor that influences the formulation of companies' strategy. Bioeconomy has emerged in response to a series of challenges of today's society as: globalization, food security, waste management, climate change etc.

In this context, the bio-economy can be considered as a challenge for the new society and a strategic area for Romania, given that efficient and sustainable use of biological resources is facilitated by progress in the field, as it can generate new jobs and offer a wide range of organic products on market. In order to generate the desired results, the society should be involved in the process of knowing and understanding what the social identity of a company implies, both at the internal and external levels through social responsibility reporting tools.

The aims of this paper are to identify and present the congruence forces that can intervene at the strategic and operational levels, addressing the practices of reporting social responsibility for the companies involved in the bio-economy sector. In the study, the main challenge was to find answers to range of issues raised by stakeholders' pressures on bio-economy companies, as the extent to which the reliability of social responsibility reporting reflects the real performance and sustainability of sector-specific activities. In response to these current challenges, but also in our attempt to formalize and help business to strategically implement a social responsibility code, we highlighted the specific dimensions of social reporting that can support to increase the companies' sustainability.

The results of this research have emphasized that companies in the bio-economy sector need the existence of specialized tools of social responsibility reporting, starting from the extent to which the transparency of practices and results contributes to business sustainability. The analyses carried out also have economic value, as they are beneficial for the companies. The entire scientific approach was structured in five sections. Thus, after presenting the theoretical framework by reviewing the literature on the impact of reporting on social responsibility, the bio-economy sector was outlined in European context. Next, the paper reveals the methodology of the implemented research, followed by the presentation of the results of the investigation process and the implications of these approaches at the level of the companies and ends with final conclusions and challenges for future research.

## **1. Literature review**

Although extensive research has been conducted lately in the field on CSR, CSR reporting has been investigated only occasionally focussing more on certain dimensions (Solomon and Lewis, 2002) whereas very little academic research has been carried out on achieving a unified presentation of this concept (Kolk and Pinkse, 2015).

As noted in the literature, over the last decade, we have witnessed an amazing transition in which the concept of corporate social responsibility has become a fundamental strategic priority for both large and small companies. It can be said that the terms of corporate sustainability and social responsibility have fused over time. Votaw and Sethi (1973) considered social responsibility a special term, but that does not always mean the same for everyone.

According to Carroll (1979), „corporate social responsibility includes all the economic, legal, ethical and philanthropic expectations that society has in the organization at a certain point in time.” In line with International ISO 26000, Corporate Social Responsibility refers to „an organization’s responsibility for the impact of its decisions and activities on society and the environment through transparent and ethical behavior so as to contribute to sustainable development, including the health and wellbeing of society, taking into account the expectations of all stakeholders, in line with current legislation and international rules of conduct”.

In today’s business environment, companies’ transparency to stakeholders is an increasingly important aspect brought about by the constant need to build up and maintain a solid reputation in the market. In this context, companies must be able to provide more transparent linkage between the financial and non-financial results, focussing especially on the CSR-related initiatives (Servaes and Tamayo, 2013).

The relationship between CSR and social responsibility reporting tools is explicit, so Kolk, van Tulder and Welters (1999) define these tools as recommendations or rules issued by various entities within the company with the intention of affecting the behavior of organizations in order to enhance the corporate responsibility.

In June 2000, Global Reporting Initiative (GRI) launched the first global framework for sustainability reporting, a tool which virtually expanded the area of reports covering the economic, environmental and social performance of companies. Thus, GRI turned CSR into a major concern adopted globally. This particular tool deals with the core values of a company, how it is managed as well as how its business processes contribute to the creation of the global economy (Orlitzky, Schmidt and Rynes, 2003).

The number of CSR reporting instruments has risen considerably since 2000 now reaching 413. They are distributed globally covering 4 main axes: environment, sustainability, management, social, out of which 65% are mandatory.

Specialists (Kolk and Mauser, 2002; KPMG, 2016) noticed that social responsibility reporting is a widespread practice among companies of the industrial sector and less in the service sector, which shows that certain sectors that face higher risks report more than those less vulnerable (Kitzmueller and Shimshack, 2012).

Sustainability reporting replaced responsibility reporting on environmental, social and economic performance (Hui, 2017) representing at the same time reliable information both for managers and stakeholders (Surroca, 2015).

Although this connection is apparently aimed to be obvious, Barnett & Salomon pointed out that performance in CSR enables a better relationship with stakeholders, easier access to resources, higher competitive advantage in the market (Barnett and Salomon, 2016). From the institutional theory perspective, it could be argued that implementing social

reporting tools at company level would enable the transmission of relevant information regarding social initiatives to stakeholders (Jacobs, Singhal and Subramanian, 2010).

Thus, while some analysts identified a positive correlation between social reporting and company performance (Russo and Fouts, 2007), others believe that there is no relationship between them (Teoh, Welch and Wazzan, 2010). Moreover, McWilliams and Siegel (2011) warned against certain limitations of these reports generated by the lack of variables related to the determinant factors of rentability, i.e. investments in research and development.

Previous studies from various fields demonstrated that the analysis of congruency effects of the company's internal image compared with its external image is positively linked to the stakeholders' assessments (Stern, Bush and Hair, 1977) and influences their intention to support the company in various situations (Albu et al., 2013). In the current context, a company's identity and social image influences its stakeholders' direct and indirect behaviour through functional congruency (Sirgy et al., 1991; 1997; 1998).

According to the Social Identity Theory, companies are looking to take action, behave according to the norms and requirements of society, motivated by the desire for positive distinctiveness in relation to other organizations. The previous research in business literature has investigated the social identity of organizations (Fisher, Malz and Jaworski, 1997) as a distinct function of an attitude that aims to symbolize and express the desired image in relation to the reference groups.

Functional congruency refers to the match between stakeholders' expectations regarding the implementation of a social responsibility code and their perceptions on how the company is assessed from the social perspective. Thus, the higher the congruency between the real perception and stakeholders' ideal image the more likely they would believe that the implementation of a social responsibility code contributes efficiently to increase of the company's sustainability.

The social responsibility reporting is considered as highly important at the level of large companies since investments in social responsibility influence positively the company's value (Marens, 2013).

## **2. Bioeconomy within the European context**

Currently the environment encompasses a variety of factors that witness an increasingly higher dynamics and interaction, determining various economic and social systems to respond promptly either in anticipation or by reaction to their rapid changes. It is common knowledge that the economy is a major pillar of these transformations, generating changes but at the same time undergoing transformations and experiencing effects of some other human-related fields. Economic processes are no longer local or regional; on the contrary they become global determining their participants to pay attention to an increasingly wider range of factors in the specific decision-making process.

Globalization is a phenomenon that refers to the integration of world countries, economies and cultures. Basically, globalization has fundamentally affected or influenced every aspect of human activity (Brătucu et al., 2019). Obviously globalization places a great emphasis on the use of various raw materials, financial resources, products and technologies but in addition to these above-mentioned elements some new, more subtle elements emerge with a stronger force

to shape the economy and society on the whole such as values, beliefs, behaviours, attitudes, know-how, etc. Moreover, there are some connections between certain needs of the community, groups or individuals and which relate to the way firms operate, generating opportunities or on the contrary, threats to these categories (Gabor, 2018).

Therefore CSR has become a management philosophy included among the major priorities of top managers (Năstase, Bibu and Gligor, 2010), in a proactive attitude towards creating bridges between achieving economic strategic objectives and the social ones thus harmonizing to a higher degree the legitimate interests of the business environment with those of the society both on communities and on the whole.

The European Union has been devoted much attention to ensuring the proper conditions for sustainable development as the competition in the Triad (EU, USA and Japan) is increasingly higher. Bio-economy has become an essential component of the sustainable development, providing the opportunity of making a better use of both natural resources and waste generated by human activities, at the same time contributing to the creation of numerous jobs (estimated at around 1 million new job openings until 2030).

Bio-economy is regarded as a high-power engine that can be used in addressing certain major challenges the mankind has been facing such as global warming, pollution, unemployment, excessive use of natural resources and others. In order to outline the main directions of bio-economy and to highlight its major role it can play in the EU's economy, the Bio-economy Strategy was developed in 2018 as a pillar of the development efforts supported by the European Commission within the next period of time.

In recent years, the concept of bioeconomy has been analyzed in the specialized literature from several perspectives, being seen as „an economy that uses biological resources from the soil and sea, as well as waste, as raw materials for food, animal feed and for the industrial production and energy sector” (European Commission, 2012).

In order to prove that the preoccupations regarding bio-economy at the EU level go beyond intentions, we could mention the establishment of € 100 million Circular Bio-economy Thematic Investment Platform, funds intended for innovative bio-economy programmes across Europe.

Out of the activities that aim at developing bio-economy at the EU level, we mention the most important ones:

- Finding support methods for the EU countries to develop bio-economy policies, financed by H2020;
- Developing bio-economy projects both in rural and urban areas, covering the most diverse areas that range from agricultural systems, reforestation to solid waste management and recycling;
- Building and developing an effective surveillance and monitoring system which supports the efforts and effects of circular bio-economy;
- Establishment of research and development centres in bio-economy and creation of networks of experts and specialized institutions in the field to ensure the promotion of best practices at the EU level.

All these changes which are visible today at the EU level and which aim at developing circular bio-economy as an important part of the sustainable development are regarded as a major transformation of paradigm, perception and understanding of the environment in which firms operate and put massive pressure on them (Epuran, G., Brătucu, G., Bărbulescu, O., Neacșu, N.A. and Madar, A., 2018).

In order to achieve the expected results in bio-economy the EU member countries and other organizations will have to make significant changes in many aspects such as managerial decision-making, organisational flexibility, speed of reaction, values, organisational learning process, factors with a great impact on CSR manifested by organizations both at the community level and at the ecosystem level.

### **3. Research methodology**

This study aimed at investigating the most relevant aspects related to reporting tools on CSR in bioeconomy. In order to substantiate the elements that can be regarded as guidelines in addressing social reporting policy in bioeconomy, we investigated 67 companies. The companies operate in the SE region of Romania and are part of the Bioeconomic Modelling and Legislation in Aquaculture Laboratory of „Dunarea de Jos” University of Galati. The vast majority of the respondents (72%) operate in fishing and aquaculture, 15% are active in agriculture, 10% work in food sector and 3 % operate in biofuel.

The data collection was carried out with a questionnaire of 21 questions, structured in two parts: the first part included 16 questions and sought to identify the relevant aspects of how social reporting tools can contribute to increasing the business sustainability, benefits and challenges. For this purpose, a numerical scale of 5-level semantic differentiation was used (5-very important) and six synthetic items were assessed in order to identify the relevant aspects of how social reporting tools can contribute to increasing the business sustainability, benefits as well as their challenges. The second part included 5 questions that helped to identify the company's profile. The questionnaire was posted on Google Drive during September-November, 2018, its link was distributed by email and administered to business managers from this area of activity in order to identify the relevant issues regarding the role of social reporting tools in the companies management from the bio-economy sector and identifying the extent to which the transparency of company's policies and results can contribute to the business sustainability.

We thoroughly analysed the answers in order to substantiate a set of recommendations for managers and to create a conceptual model aiming at improving the company performance by using social reporting tools based on the dimensions associated with the implementation of social responsibility code in bio-economy companies' sustainability. The following hypotheses were formulated in the study:

- H1 – Between the implementation of a social responsibility code and the transparency of information related to the process of assessing corporate social responsibility performance is a direct correlation
- H2 – There is a positive link between the process of implementing a social responsibility code and the benefits of the company's stakeholders

- H3 – There is a direct association between the process of implementing a social responsibility code and the process of optimizing information flows between the management team and the stakeholders
- H4 – There is a positive correlation between the process of implementing a social responsibility code and the overall results of the firm
- H5 – There is a direct link between the process of implementing a social responsibility code and capitalizing on the opportunities for efficient allocation of company's resources
- H6 – There is a direct correlation between the process of implementing a social responsibility code and the strategic objectives of the company.

In the data analysis process both variability within the variables was analysed, but also the link between them in order to reduce their number and to retain those with significance for the topic of the study. For statistically testing the relevance of the used data, it has been calculated the KMO (Kaiser – Mayer – Olkin) coefficient and it was applied the Bartlett test.

The harmonization of reporting tools on CSR in bioeconomy can be facilitated by companies' willingness to implement a social responsibility code. Moreover, the monitoring of benefits, implications, opportunities and challenges generated by social reporting can be also facilitated by the implementation this code social responsibility. The present study aimed at conducting a complex multidimensional analysis of the congruency effects on the most relevant aspects of social reporting, grouped into the following cluster analysis internal and external.

The most relevant aspects related to social reporting at the level of the firms included in the present study are highlighted below:

- **Informational flows between managers and stakeholders**

Remaining in communication with key stakeholders is a major challenge for the companies operating in bioeconomy. When the flow of information between the company and stakeholders is not timely or smooth it could have serious consequences. Thus in order to ensure the proper conditions for two-way symmetrical communication both the quantity and quality of information must be considered. The main characteristics of this aspect are presented in the table no. 1.

**Table no. 1. Aspect description – Informational flows between managers and stakeholders**

Aspect	Informational flows between managers and stakeholders
<b>Cluster analysis</b>	Internal process
<b>Calculation method</b>	Percentage of companies that ensure efficient communication with stakeholders out of the total number of analysed companies
<b>Purpose</b>	Shows the quality of communication since efficient promotion of good practices linked to social reporting leads to increased business sustainability
<b>Type of measurement</b>	Quantitative
<b>Dimension of analysis</b>	Operational
<b>Limitations</b>	Reporting accuracy requires specific procedures

*Source: Data survey processed by the authors*



The relevance of this aspect is highlighted by the fact that in bio-economy the vulnerability of companies and their relationships with stakeholders is extremely sensitive to any change of environment configuration. In this context the managers of the companies included in this study need to continuously adapt the communication policy and reporting procedures to any changes that occur in the external environment.

- **Positive impact of social responsibility reporting on companies' results**

Achieving and maintaining a positive impact of social reporting on the company's results is an important aspect both to its management and to the stakeholders. Therefore, monitoring and evaluating a company's progress after every initiative, project, social innovation is of the utmost importance in decision-making that aim at meeting stakeholders' expectations on business performance. The main characteristics of this aspect are presented in the table no. 2.

**Table no. 2. Aspect description – Positive impact of social responsibility reporting on the company' results**

Aspect	Positive impact of social responsibility reporting on the company' results
Cluster analysis	Internal process
Calculation method	Percentage of the number of companies that evaluate and correlate their outcome with the degree of social innovation and the total number of analysed companies
Purpose	Demonstrates if a company's activities consider a certain innovation policy in achieving results and capitalizing resources and whether there is a positive relationship between reporting and profitability.
Type of measurement	Quantitative
Dimension of analysis	Operational
Limitations	A proper understanding of the connection between social reporting and business outcomes.

*Source: Data survey processed by the authors*

The majority of companies included in the present study aim at highlighting the links between the importance of getting involved into the social innovation, most efficient use of resources, community involvement and strengthening their market position and image. To achieve business performance and objectives related to performance indicators, managers need to adopt a proactive approach and proper corporate social reporting plan and tools.

- **Alignment of social responsibility indicators with the company's strategic objectives**

The set of indicators used by a company to report social activities and results has a great impact on its management strategy. Research has shown that there are companies that pay more attention to certain aspects which may contribute to business risk reduction, adopt plan which enable the rational use of resources and get involved with the local community. Moreover, there are companies that aim at gaining a competitive advantage in the market by enhancing communication with customers and developing an informed behaviour at the public level. The main characteristics of this aspect are presented in table no. 3.

Table no. 3. Aspect description – Alignment of social responsibility indicators with the company's strategic objectives

Aspect	Alignment of social responsibility indicators with the company's strategic objectives
Cluster analysis	Internal process
Calculation method	Percentage of the number of companies that include corporate social responsibility in company strategy and the total number of analysed companies
Purpose	Shows whether the activities related to the rational use of resources and risk management comply with the level desired by managers and whether the company policy meets stakeholders expectations
Type of measurement	Quantitative
Dimension of analysis	Strategic
Limitations	There is no conclusive evidence of all corporate social responsibility indicators

Source: Data survey processed by the authors

This approach is rather complex since companies need to overcome certain barriers identified within this study such as lack of education related to social reporting, lack of legal framework of social reporting, lack of business ethics and so on. In this context the dissemination of good practices concerning the use of social reporting tools to increase business sustainability is highly encouraged.

- **Opportunities to efficiently allocate the company resources**

This aspect shows the extent to which the managers of the companies included in the present study identified necessity and proper use of various social reports and employ them in decision-making. Basically, these synthetic situations can be beneficial both to the company's internal process and to the relationship with the stakeholders interested in the company's activities and results. The main characteristics of this aspect are outlined in the table no. 4.

Table no. 4. Aspect description – Opportunities to efficiently allocate the company resources

Aspect	Opportunities to efficiently allocate the company resources
Cluster analysis	Internal process
Calculation method	Percentage of the number of companies that use social responsibilities reporting in decision-making and the total number of companies included in the study
Purpose	Shows the degree of using social responsibilities reporting in the decision-making process in order to identify opportunities of efficient allocation of company resources
Type of measurement	Qualitative
Dimension of analysis	Operational
Limitations	Incomplete and not updated reports

Source: Data survey processed by the authors

CSR reports can be used in the decision-making process of a company in an attempt to identify the best solutions and opportunities to efficiently use the company's resources in

view of increasing the level of performance. The managers of the companies included in bio-economic sector must be aware, accept and use social reporting tools in order to achieve their objectives and to contribute to converting company's activities into more sustainable ones.

- **Transparency of information related to the company's social responsibility assessment** – is an aspect which provides details about social responsibility policy and it is therefore important for bioeconomy since it reveals the company's willingness and concerns to build new levels of trust in the business environment. Moreover, it provides details about the extent to which this process contributes to the development of a proactive organisational behaviour, improving the company's image and ensuring a better integration into the local community. The main characteristics of this aspect are shown in the table no. 5.

**Table no. 5. Aspect description – Transparency of information related  
to the company's social responsibility assessment**

Aspect	Transparency of information related to the company's social responsibility assessment
<b>Cluster analysis</b>	Feedback
<b>Calculation method</b>	Percentage of companies that report social responsibility initiatives and the total number of companies included in this research
<b>Purpose</b>	Determines the company's level of transparency at the opportunity to implement a social responsibility code in the near future.
<b>Type of measurement</b>	Qualitative/Quantitative
<b>Dimension of analysis</b>	Operational
<b>Limitations</b>	Assessing the degree of transparency does not necessarily highlight all activities carried out by the company

*Source: Data survey processed by the authors*

The vast majority of the investigated firms do not have system centralization for activities and social initiatives results. The activities that define a proactive behaviour as well as those defining a reactive behaviour are included in the company's transparency policy provided that they are properly monitored and reported.

- **Stakeholders' feedback**

Another major factor in creating business success in bioeconomy is related to stakeholders' satisfaction and loyalty since in this case it is reference-based marketing. The dialogue with stakeholders, protecting their interests and developing their loyalty are all very important criteria in selecting an offer. In this context tracking stakeholders' feedback can contribute to a proactive attitude regarding the corporate social reporting. The main characteristics of this aspect are shown in the table no. 6.

Table no. 6. Aspect description – Stakeholders’ feedback

Aspect	Stakeholders’ feedback
Cluster analysis	External process
Calculation method	Percentage of stakeholders that provide positive feedback out of the total number of stakeholders providing feedback
Purpose	Determines stakeholders’ level of satisfaction on corporate social reporting.
Type of measurement	Quantitative
Dimension of analysis	Strategic
Limitations	The outcome could be impacted by stakeholders’ subjectivity when providing feedback.

Source: Data survey processed by the authors

In order to collect and assess stakeholders’ feedback, companies can use surveys and printed questionnaires, online feedback forms and so on. We believe that the approach that aims at analysing the most relevant aspects of corporate social reporting as a result of the following two types of analysis operational and strategic is important both to performance-related research in bio-economy and subsequently in an attempt to achieve a deeper exploration of corporate social responsibility research in order to identify the typology of social behaviour. Therefore, the most relevant aspects have been examined, monitored and quantified to assess the social behaviour of the investigated companies for social reporting perspective. Thus we identified companies which have an anticipative behaviour and which make public their social responsibility activities and results, companies that have a reflexive behaviour, paying more attention to analysing and complying their social responsibility activities and process with the company’s declared mission and values, companies which have an inclusive and deliberative behaviour and rely on stakeholders involvement in transmitting the flux of information to business executives and companies which have a proactive behaviour and act towards changing public perceptions, attitudes and behaviours. The combination of elements on which the present study is based on, focusing on the relevant ones in order to define the two –dimensions of analysis (operational and strategic) to achieve good results in business policies in bio-economics.

#### 4. Implications of the two dimensions associated with the implementation of a social responsibility code on companies’ sustainability in bio-economics

Increasing the number of competitive advantages of companies in bio-economics in addition to other numerous aspects implies a great emphasis placed on role of CSR tools implementation and especially a social responsibility code. Thus, by employing some adequate statistical methods (ANOVA, linear regressions) we shall identify the congruency effects of the elements that highlight the contribution of the types of analysis associated with social responsibility code implementation to the increase of companies’ sustainability in bio-economy. The two types of analysis that can be associated with the social responsibility code implementation are the following:

- *Operational dimension* – aims at standardizing the company’s CSR reporting and resource allocation.
- *Strategic dimension* – shows how social responsibility code can support the transition of the company’s process to more sustainable business forms.

The two types of analysis integrate the entire range of benefits generated by the implementation of the social responsibility code into a company and contribute significantly to the transition towards sustainable business.

This research has focused mainly on the identification of CSR specific dimensions which contribute to the increase of the company's suitability within a sample of 67 companies selected from bioeconomy, whose managers accepted our invitation to contribute their knowledge and experience to this study.

In the correlation analysis, based on the formulated hypotheses, 6 representative items were selected, that were grouped in the questionnaire and evaluated through the following scales:

- **ICRS<sub>1</sub>**: the implementation of a social responsibility code determined the increase of transparency of information related to the evaluation process of the company's CSR performance.
- **ICRS<sub>2</sub>**: as a result of the implementation of a social responsibility code, stakeholders benefit from the transparency related to company's CSR policies and results.
- **ICRS<sub>3</sub>**: the implementation of a social responsibility code optimized the flux of information between the management and stakeholders.
- **ICRS<sub>4</sub>**: the implementation of a social responsibility code had a positive impact on the company's results.
- **ICRS<sub>5</sub>**: the implementation of a social responsibility code enabled managers' access to multidimensional analyses related to more efficient allocation of resources.
- **ICRS<sub>6</sub>**: the implementation of a social responsibility code enabled the alignment between CSR indicators and the company's strategic objectives.

The results of the present study, as a result of principal components analysis, show the existence of a bi-dimensional structure of the scale that assesses the company's performance if a social responsibility code is implemented (table no. 7).

**Table no. 7. Results of the principal components analysis**

(KMO: 0,759; determinant: 0,009; Barlett's test of sphericity (being significant at 0.004))	Analysis of implementing a corporate social responsibility code (ICRS)	
	Operational	Strategic
ICRS <sub>1</sub>	0.320	0.252
ICRS <sub>2</sub>	0.654	0.103
ICRS <sub>3</sub>	0.620	0.298
ICRS <sub>4</sub>	0.647	0.112
ICRS <sub>5</sub>	0.607	0.274
ICRS <sub>6</sub>	0.609	0.179

*Source: Authors processing*

The statistical indicator Kaiser-Meyer-Olkin (KMO) is an index used to evaluate the validity of factor analysis; the values of this indicator (between 0.5 and 1.0) demonstrates

that factor analysis is required. Barlett's test of sphericity is used to investigate whether there are certain correlations between the variables included in the factor analysis. In this case the value of KMO index – 0.759 shows the necessity of employing factor analysis and the significance level associated to Barlett's test of sphericity is below 0.05, which demonstrates that there is a correlation between the variables included in the research conceptual model. As a result of the first stage of exploratory analysis, the results of the principal components analysis were interpreted based on factor analysis to validate the analysis model. Thus we notice that the following statistical indicators CFI (Comparative Fit Index), NFI (Normed Fit Index) and IFI (Incremental Fit Index) have a value exceeds 0.8%, which demonstrates validity of the analysis model. Moreover, the error of the root means square error approximation (RMSEA) is low (0.0231).

The internal consistency of the rating scale is confirmed since the values associated to Cronbach's alpha coefficient for all the investigated items exceed the recommended threshold of 0.7. According to the Fornell&Larcker criterion, discriminant validity is confirmed ( $\rho_{vc} > (r_{ij}^2)$ ). All these statistical analyses led to the confirmation of the model's convergent validity (table no. 8).

**Table no. 8. Factor analysis results, based on the report generated by SPSS software**

Dimension	Item	Square multiple correlation	Standard error	Critical rate	Cronbach's alpha coefficient $\alpha > 0.7$	Raycov fidelity $\rho (A) > 0.7$	Convergen t validity $\rho_{vc} > 0.5$	Discriminant validity $\rho_{vc} > r_{ij}^2 (0.732)$
$X^2/df = 65.610/20 = 3.280$ ; CFI= 0.992; NFI= 0.950; IFI= 0.881; RMR=0.064; RMSEA= 0.0231								
Operational	ICRS <sub>1</sub>	0.482	0.607	7.701	0.742	0.822	0.541	0.541 > 0.536
	ICRS <sub>2</sub>	0.547	0.568	7.325				
	ICRS <sub>3</sub>	0.608	0.523	-				
Strategic	ICRS <sub>4</sub>	0.704	0.803	13.117	0.767	0.764	0.645	0.645 > 0.536
	ICRS <sub>5</sub>	0.562	0.708	12.031				
	ICRS <sub>6</sub>	0.565	0.712	-				

Source: Authors processing

Within the conceptual model associated to this study, the independent variable is the performance of the investigated companies as a result of the implementation of a social responsibility code whereas the dependent variables are the increase of the transparency degree of companies' policies and results related to CSR on the one hand and the efficient allocation resources, on the other.

According to one-factor analysis of variance ANOVA (table no. 9) of the investigated companies, stakeholders believe both at the operational and the strategic level that the implementation of a social responsibility code will have a positive impact by creating new models of trust building both in bio-economy and in the entire business environment.

**Table no. 9. Stakeholders' perception on the implementation of a social responsibility code, according to one-factor analysis of variance ANOVA**

	Stakeholders	Sum of squares	Degrees of freedom	Median squares	F	Significance level
<b>Operational dimension of ICRS</b>	Between groups	21.042	1	21.042	23.378	0.001
	Within groups	177.958	198	0.899		
	<b>Total</b>	199.000	199			
<b>Strategic dimension of ICRS</b>	Between groups	11.192	1	11.192	11.812	0.003
	Within groups	187.808	198	0.949		
	<b>Total</b>	199.000	199			

*Source: Authors processing*

The results of bi-factorial ANOVA analysis (table no. 10) shows that the score associated to the 6 items exceeds the value 5, which demonstrates a positive perception of stakeholders, related to the social responsibility code implementation in the investigated companies results. The highest score was recorded by the stakeholders' perception of the following items: ICRS<sub>2</sub> – 6.61, ICRS<sub>6</sub> – 5.98 and ICRS<sub>5</sub> – 5.62. The lowest scores were recorded by the following items: ICRS<sub>1</sub> – 5.40, ICRS<sub>4</sub> – 5.20 and ICRS<sub>3</sub> – 5.16.

**Table no. 10. Results of bi-factorial ANOVA analysis**

Item	Average score Respondents (n=100)	Test F (Fisher)	Significance level
ICRS <sub>1</sub>	<b>5.40</b>	17.258	0.002
ICRS <sub>2</sub>	<b>6.61</b>	18.205	0.003
ICRS <sub>3</sub>	<b>5.16</b>	21.321	0.001
ICRS <sub>4</sub>	<b>5.20</b>	16.352	0.002
ICRS <sub>5</sub>	<b>5.62</b>	16.792	0.001
ICRS <sub>6</sub>	<b>5.98</b>	17.241	0.001

*Source: Authors processing*

In order to assess the dimension associated to a social responsibility code implementation which contributes to the acceleration of the transition of the investigated companies' processes to more sustainable business forms, two linear regression analyses were conducted, where the dependent variables were the degree of transparency of policies and results related to CSR on the one hand and efficient allocation of the company resources, on the other. The independent variables were the two ICSR dimensions (operational and strategic).

In the first linear regression analysis, where the dependent variable was the degree of transparency of policies and results related to CSR (table no.11), the adjusted value associated to R-square was 0.612, which shows that the two ICSR dimensions generated a variation of 61.2% within the variable: the increase of CSR policies transparency; the effects of this investigated dependant variable are listed below in order of importance:

- Strategic dimension of ICSR ( $\beta=0.516$ );
- Operational dimension of ICSR ( $\beta=0.452$ ).

**Table no. 11. Results of linear regression analysis, where the dependent variable was the increase of the transparency degree**

	Unstandardized coefficients	Standard error	Standardized coefficients ( $\beta$ )	Result T Test	Significance level
<b>Operational dimension of ICRS</b>	0.732	0.060	0.563	12.345	0.001
<b>Strategic dimension of ICRS</b>	0.641	0.046	0.627	13.228	0.001

*Note: the adjusted value associated to R-square =0.612; F=167.211; significance level =0.001.*

*Source: Authors processing*

In the second linear regression analysis where the dependent variable was the efficient allocation of the company resources (table no.12), the adjusted value associated to R-square was 0.701, which demonstrates the two ICRS dimensions generated a variation of 70.1% within the variable – efficient allocation of resources; the effects of these dimensions on the investigated dependent variable are listed below in order of importance:

- Strategic dimension of ICRS ( $\beta$ =0.570);
- Operational dimension of ICRS ( $\beta$ =0.458).

**Table no. 12. Results of linear regression analysis, where the dependent variable was the efficient allocation of resources**

	Unstandardized coefficients	Standard error	Standardized coefficients ( $\beta$ )	Result T Test	Significance level
<b>Operational dimension of ICRS</b>	0.501	0.034	0.548	10.413	0.001
<b>Strategic dimension of ICRS</b>	0.541	0.036	0.570	12.012	0.001

*Note: the adjusted value associated to R-square =0.701; F=198.702; Sig. =0.001.*

*Source: Authors processing*

The results of the two linear regression analyses show that the most important predictor both in terms of the transparency degree and efficient allocation of resources was the strategic dimension associated to the effects of the social responsibility code implementation.

## Conclusions

In recent years CSR reporting has increased mainly in large companies. However, it is not a common practice due to the fact that this type of reporting is not yet mandatory. In order to ensure the standardization and transparency of the information provided by companies, the development of a social responsibility code is highly required, and it should become a benchmark for all companies regardless of size or field of activity.



The implementation of a social responsibility code can provide a wide range of opportunities. It can establish some relevant data sources for complex decision-making, where CSR reporting can be regarded both as a key success factor and an element that could make a difference. Among the factors that promote CSR reports in companies from bio-economics we can mention the following: increasing market globalization, climatic changes, pollution and natural resource management, new concerns related to financial risk prevention and meeting stakeholders' expectations to a higher degree. In the current context the monitoring CSR instruments is required in order to ensure the congruency effect as well as a rigorous social responsibility code in order to achieve better results in assessing the impact of CSR regulations.

However, the major challenge experienced by the managers of firms in bio-economy, who intend to implement a social responsibility code is the stakeholders' answer to the necessity of transferring organizational skills. Thus, they must be aware of the impact of a CSR code implementation on the company's performance and sustainability of specific activities.

The results of the present study can be used by the managers of firms in bio-economy in the decision-making process in order to implement a social responsibility code, aiming to increase the congruency effect of the operational and strategic dimensions and to stimulate the transition to more sustainable business forms.

The combination of social responsibility tools and the need for performance at the level of companies aimed at highlighting the models that, using a range of interdisciplinary approaches and variables, can generate managerial models and structures at the organization level.

Basically, the implementation of a social responsibility code generates a new perspective of the role which the CSR plays in the business environment and of how the transparency of companies' policies and results related to CSR contribute to the increase of sustainability. It can be observed the alignment of companies in bioeconomy to the CSR standards can have an ascending harmonizing effect. Moreover, from an operational point of view the implementation of a social responsibility code is necessary for companies that intend to improve their CSR activities.

Determining managers' expectations regarding the results of a social responsibility code implementation contributes to the identification of the most relevant aspects that influence proactively a company's specific activities. We strongly believe that by including the specific dimensions of a social responsibility code (operational and strategic) within the strategies of the firms activating in the bio-economy sector, it would significantly contribute to the increase of their long-term performance.

A future research challenge is to coordinate the comparative analysis conducted on the effects of a social responsibility code implementation in companies from various regions; the main objective will be to identify the performance differences recorded by the investigated companies as a result of the social responsibility code implementation through benchmarking studies, where the types of analysis are correlated with cross-cultural management models.

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