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Social Responsibility: Opportunities for Integral Assessment and Analysis of Connections with Business Innovation

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Abstract: The paper proposes an approach to the integrated assessment of the social responsibility of EU countries with a combination of data from three international indices most relevant to the monitoring of social responsibility at the macroeconomic level: the Global Sustainable Competitiveness Index, the Sustainable Development Goals Index and the Social Progress Index. Applying the method of taxonomic analysis on the example of index values for EU countries, we assessed the differences and leaders in ensuring social responsibility. The authors do not consider country-level social responsibility only as a consequence of the development of responsible practices at all levels. Taking into account that social responsibility should be a prerequisite for expanding opportunities in all spheres, in particular, in business, the authors conducted a correlational analysis of the relationship between the taxonomic indicator of social responsibility and the development of innovative business. As a result, we confirmed significant connections with “Business sophistication” indicators (as part of the Global Innovation Index) and the share of innovative firms of total SMEs (according to OESD statistics). The obtained results strengthen the grounds for considering social responsibility not only as an important socially oriented concept, but also as a reliable basis for the development of innovative business due to the created comfortable institutional environment of business development.

Keywords: business innovation; social responsibility; taxonomic analysis; SMEs



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1. Introduction

Social responsibility is considered today as one of the most significant achievements of socially oriented institutions at various levels, which testifies to its level of ethics, compliance with global principles of sustainable development and readiness to contribute to positive changes in society. At the same time, social responsibility as a necessary condition for the activity of a developed modern business is not always associated with the special opportunities that social responsibility opens up at the level of the entire country for the development of the most effective forms of business. Very often, social responsibility is considered in the context of moral obligation [1,2], which is a set of shared obligations to comply with global goals of sustainable development [3–5]. This is the dominant context of scientific study on social responsibility at the business level—corporate social responsibility (CSR) is perceived as a means of realizing the goals of sustainable development through their implementation in the strategy of enterprises. At the same time, in addition to the socially oriented studies of the responsible interaction of business and their stakeholders, the economic benefits, due to the increase in consumer awareness of corporate social responsibility, are well researched and confirmed [6–9]. There is no doubt today that a responsible business can be more successful than its purely economically motivated

competitors. Of course, such a consequence is possible provided that the ideas of social responsibility find support in society.

Despite the significant development of scientific ideas about social responsibility, the possibilities of its provision, as well as the social, environmental and economic benefits resulting from the development of CSR strategies, we can agree that many aspects of social responsibility still remain insufficiently studied, as highlighted in the study by Ye et al. [10].

In our research, we intend to continue the scientific discussion on the insufficiently researched directions of the development of social responsibility. In particular, we want to answer the question “Can country-level social responsibility be a reliable basis for the development of innovative business?”. Such a question remains insufficiently researched, as the results of the development of social responsibility are most often studied at the microeconomic level—with the identification of connections between CSR and the economic success of enterprises. At the macroeconomic level, in the understanding of country-level social responsibility, attention is mainly focused on moral aspects, the importance of observing the specified norms and rules of interaction in order to achieve the goals of sustainable development, most of which are social and environmental. We offer a view of country-level social responsibility as an important institutional environment for the development of successful businesses. At the same time, it is important to obtain a comprehensive assessment of country-level social responsibility, which is currently assessed according to various approaches. The presence of links of the complex indicator of social responsibility with indicators that testify to the development of innovative business can be used as a basis for understanding the direction of further managerial actions at the macroeconomic level in terms of creating a favourable institutional environment for business activity. This approach determines the originality and scientific novelty of our research.

Therefore, the purpose of our research is to assess the level of social responsibility development in EU countries based on the calculation of the integral indicator, as well as to assess its links with the innovative business development.

The study was carried using the example of the European Union countries, using relevant information on social responsibility development available in three international indices: the Global Sustainable Competitiveness Index, the Sustainable Development Goals Index and the Social Progress Index. The relationship between the country-level social responsibility and the activity of innovative business was revealed using statistical data on business sophistication as part of the Global Innovation Index, as well as data on the share of innovatively active SMEs in the European Union according to OESD data [11].

The paper is organised in four sections. The literature review substantiates current research perspectives regarding social responsibility and its connections with the business activity results; this is the basis for substantiation of methodological bases for evaluating the complex indicator of the country social responsibility and its connections with the innovativeness of businesses in Section 2 with the presentation of results in the Section 3 of the study. Finally, the Section 4 summarises facts that can be used as a basis for developing recommendations for improving the country social responsibility as an environment for the growth of the business innovativeness.

2. Literature Review

The topic of social responsibility, definition of its essence, principles, levels and methods of implementation at different hierarchical levels are characterized by the scientists' increasing interest [12–16]. Research in the field of ensuring sustainable development and achieving sustainable development goals (SDGs) has strengthened its relevance [5,17,18]. CSR and SDGs complement each other, as both concepts contribute to environmental protection and socio-economic development. The SDGs help organisations achieve CSR goals because they are more comprehensive on a global scale. The SDGs are holistic and interrelated, meaning that advancing one goal can support others. SDGs results last longer; therefore, they save organisations time and money [19]. The adoption of the UN Sustainable Development Goals in 2015 embodied the theoretical concept of sustainable development

in practice. These goals have attracted keen interest among organisations, especially large enterprises, which have taken them to the next level and incorporated them into their corporate strategies [3]. In this context, businesses have a unique opportunity to use the SDGs as a framework for improving CSR engagement in line with changing societal expectations. Through impact assessment and strategic sensitivity to the global challenges of sustainable development, organisations can contribute to the creation of shared value, enhance positive impact by reducing poverty and improving livelihoods, health and education, and reduce negative impacts such as resource use, pollution, human rights violations, etc. [20]. By diagnosing the relationship between the organisation's orientation to the implementation of SDGs, the degree of implementation of the goals of the CSR strategy, as well as the creation of value, the existence of a positive correlation between the analysed variables was proven. Entrepreneurs guided by the principles of sustainable development strive for economic and non-economic values and have a more complete set of relevant measures that are oriented towards achieving economic, environmental and social goals [21].

The works of many scientists are devoted to the study of the categories of social responsibility and sustainable development; however, the study of common topics is still quite new and not fully explored. In [10], an in-depth bibliometric analysis using CiteSpace software was applied to analyse and visualise a knowledge map of CSR research related to sustainable development. The main findings show that the involvement of CSR in sustainable development is a long-standing but recently flourishing research topic. At the same time, researchers relate these concepts to each other in different ways. Gond points out that although CSR and sustainable development have different historical roots, the two concepts overlap significantly. Therefore, the use of the general term "CSR/SD" has been proposed, which is defined as encompassing corporate interaction with society and, in particular, with several groups of stakeholders from the corporate environment [22].

However, the understanding of social responsibility as a tool for the practical implementation of the concept of sustainable development prevails in the scientific international community today, in particular through the integration of SDGs into CSR strategies [4,8,23]. Ref. [7] proved that the aspects of CSR, such as communication with stakeholders, knowledge management and strategy, have the greatest impact on building a model of sustainable development in organizations. An instrument with four constructs (CSR-stakeholder communication, CSR-knowledge management, CSR-strategy and sustainable development) was prepared and administered to subjects from medium-sized organizations. The collected data were analysed by partial least squares structural equation modelling using the method of least squares. The results showed that all three constructs were positively and strongly related to the construction of a sustainable development model in organizations.

It is worth emphasising the studies that prove the importance of individual components of CSR in ensuring sustainable development. Among these, we can single out [24], in which the authors show that personnel management can become a decisive factor in sustainable development thanks to socially responsible practices of human resources. These include strategic multi-stakeholder collaboration, change management, inclusive knowledge sharing, sponsorship of educational research, curriculum coding, intelligent technologies for skill development and retention and holistic talent management [25]. The importance of the effective work of HR managers to achieve sustainable positive social effects has also been proven [26].

In the process of developing sustainable development, in the work of [27], attention is focused on the need for the wider disclosure of environmental aspects of economic activity and their coverage in social reports of organisations. The authors focus on the analysis of the indicators the organisations reveal the least. In large companies, the biggest gaps in environmental disclosure correspond to the categories of biodiversity, environmental complaints mechanisms, wastewater and wastes. In the case of small businesses, the least disclosed categories are biodiversity, environmental complaint mechanisms, and environmental spending and investments.

Gaur and Vazquez-Brust [28] point out that it is the improvement of supply chains that will contribute to the minimization of negative externalities and the maximization of positive externalities that directly affect the achievement of specific Sustainable Development Goals. According to the researchers, measures at the enterprise level, such as improving training, transparency, research and development, employee and team development, can be the basis for increasing sustainability in supply chains.

Thus, in global practice, CSR is recognized as an important component of the strategy of sustainable development; therefore, the governments of many countries pay considerable attention to the popularisation of CSR ideas at the national level, creating favourable conditions for the socially responsible behaviour of national and foreign organisations. Relations between organisations, both in countries in the European Union and in other countries, are increasingly based on the principles of social responsibility. Adherence to these principles becomes an important prerequisite for attracting foreign investments and obtaining state orders. In the international context, CSR is an effective tool for the development of partnership and cooperation between countries in the context of achieving the Millennium Development Goals, controlling the negative impact of the industrial sector on the environment, preventing social crises, and as a result, ensuring the sustainable development of world civilisation [29].

So, as we can see, an important and convincing result of the CSR development, especially in the case of including its principles and goals in business development strategies, is the general improvement of conditions for sustainable development in countries. This is possible due to the synergistic effect of the introduction of socially responsible practices in business activities, their support by stakeholders, and as a result, a general movement towards achieving the goals of sustainable development. Therefore, the mechanism of ensuring the positive impact of CSR programmes on the development of the general social responsibility of countries is clear and proven in the above-mentioned studies.

The positive impact of the social responsibility of enterprises on their economic results and the achievement of business goals in the form of maintaining stable competitive positions due to the preservation of consumer trust and loyalty [6,9,30] and the internal stakeholders of the company [31,32] is also known and empirically proven today. The consequences are known in the form of a positive impact on the productivity and profitability of the company [33–36]. They, in their turn, can be derived from the increase in CSR initiatives, particularly, those aimed at green practice development [37], managerial efforts to increase the corporate reputation and social performance [38], as well as measures on CSR reporting and comparing the results of companies with similar ones of other companies [39]. From these and many other similar studies, it is clear that at the business level, the benefits of implementing the principles and standards of social responsibility are well known. Gains in the form of increased competitiveness, productivity and profitability are strong incentives for CSR development. At the same time, a little-researched aspect of scientific research within the chosen subject area is the connection of the results of two levels, or rather in two environments of their manifestation: the external environment of entrepreneurship with its characteristic general development of social responsibility in society and the internal environment and the initiative of entrepreneurs in the development of innovative practices.

In the meantime, one of the directions (the research on the impact of CSR on the growth of general social responsibility in society) has significant scientific achievements and empirical evidence. However, feedback research also needs attention, i.e., checking whether the high social responsibility of society is a fruitful basis for creating innovative ideas at the business level. Activity and attention to the processes of strengthening the social responsibility of countries at the level of authorities largely depends on the obtained research results. If such connections are confirmed, another important incentive will appear for the development of social responsibility. These are precisely the connections we aim to evaluate in our research, taking into account current statistics on the development of innovative business and the social responsibility of EU countries.

3. Materials and Methods

The study of the social responsibility of countries as an institutional environment for the development of innovative business carried out using the example of EU countries is performed in two stages:

- (1) Calculation of a comprehensive indicator of country-level social responsibility;
- (2) Assessment of the links between the country-level social responsibility and indicators characterizing business innovation.

At the first stage, for a comprehensive assessment of the level of social responsibility development, we suggest combining data from international indices: the Global Sustainable Competitiveness Index, the Sustainable Development Goals Index and the Social Progress Index. These are the most well-known and widespread information bases on various aspects of social responsibility at the national level.

The selection of the Global Sustainable Competitiveness Index [40] is due to the fact that it allows assessing a country's ability to create and maintain inclusive wealth and a decent standard of living for all citizens in a globalised world of competing economies. The GSCI measures the competitiveness of countries based on 131 quantitative indicators obtained from reliable sources such as the World Bank, the IMF and various UN agencies. GSCI is derived from a three-dimensional model of sustainable development. The combination of economy, environment and society is used in the corporate environment to assess and manage the issues of sustainable development and the efficiency of activities, and therefore, takes into account all aspects of the concept of social responsibility.

The conceptual framework of the Sustainable Development Goals Index [41] corresponds to the 17 Sustainable Development Goals adopted by world leaders at the UN General Assembly in September 2015. Analysing the methodology for calculating this index, it is possible to highlight the following two main aspects that shape its value. First, the authors believe that official indicators are not sufficient to comprehensively monitor the implementation of the SDGs and that unofficial sources can help to bridge this gap. Non-official sources include data obtained from research institutions, universities, civil society and other partners. Sometimes new methods of data collection are used, such as satellite image data. The use of non-official datasets to measure some SDGs complements ongoing efforts by international statistical committees to create new standardised indicators for monitoring the SDGs. Second, monitoring the SDGs requires the assessment of country-level absolute performance based on their distance to unchanging SDGs; the index focuses on a country-level absolute performance (rather than relative to other countries), and normalises each indicator from 0 to 100, where 100 corresponds to a defined "technical optimum".

The Social Progress Index [42] offers a framework for measuring many areas of social progress, benchmarking a country's success and promotion of the well-being of its people. The index aggregates 53 social and environmental performance indicators to calculate an overall country score based on multi-level scores that include health, safety, education, technology, rights, etc. The index of social progress is based on social and environmental indicators, while offering a vivid picture of the levels of development of social responsibility for different countries. At the same time, the results that matter to the lives of real people are measured, not the contributions to their achievement.

Generalized characteristics and components of these indices are given in Table 1.

Table 1. International indices in the field of social responsibility.

Name	Publisher	Coverage of Countries	Components
The Global Sustainable Competitiveness Index	SolAbility	180	Natural capital (the given natural environment and climate, minus human-induced degradation and pollution), social capital, intellectual capital (the ability to compete in a globalised market through sustained innovation), resource management (the ability to extract the highest possible value from existing resources (natural, human and financial)), governance (the framework given, normally by government policies and investments in which a national economy operates)
The Sustainable Development Goals Index	Cambridge	163	SDG1—no poverty; SDG2—zero hunger; SDG3—good health and well-being; SDG4—quality education; SDG5—gender equality; SDG6—clean water and sanitation; SDG7—affordable and clean energy; SDG8—decent work and economic growth; SDG9—industry, innovation and infrastructure; SDG10—reduced inequalities; SDG11—sustainable cities and communities; SDG12—responsible consumption and production; SDG13—climate action; SDG14—life below water; SDG15—life on land; SDG16—peace, justice and strong institutions; SDG17—partnerships for the goals
The Social Progress Index	The Social Progress Imperative	168	Basic human needs (nutrition and basic medical care, water and sanitation, shelter and personal safety); foundations of well-being (access to basic knowledge, access to information and communications, health and wellness and environmental quality); opportunity (personal rights, personal freedom and choice, inclusiveness and access to advanced education)

Source: compiled from [40–42].

As we can see from the above data, the indices we have chosen allow us to comprehensively evaluate the results of efforts to increase social responsibility according to its various components, which are in demand in society.

Meanwhile, the comprehensive assessment most closely corresponds to the logic of applying the method of taxonomic analysis, which is described in the work of Pluta [43]. The calculation of the taxonomic indicator allows the use of indicators with different units of measurement to bring them to a single quantitative assessment and make reasonable conclusions about the level of social responsibility development. The advantages of using this method are [5,44,45]:

- The indicator is normalised and varies between 0 and 1, which makes it easy to interpret its value (values close to 1 correspond to a high level of development; values close to 0 correspond to a low level of development);
- The indicator is focused on the study of objects or processes characterised by a large number of heterogeneous parameters;
- The indicator is a synthetic value that considers the influence of the values of all individual indicators;
- The indicator allows organising multidimensional objects or processes with respect to a given normative reference vector.

In the process of calculating the taxonomic indicator of social responsibility, we carried out the following stages typical of the taxonomic analysis method:

- (1) Standardisation of initial data for their reduction into a single scale of measurement, which is carried out according to the formula

$$Z_{ij} = \frac{x_{ij} - \bar{x}_{ij}}{\sigma_i}, \quad (1)$$

where Z_{ij} is a standardised value of the i -th indicator for the j -th EU country ($i = \overline{1, n}$; $j = \overline{1, m}$); \bar{x}_{ij} is an arithmetic mean value of the i -th indicator for the j -th EU country; σ_i is a root mean square deviation of the i -th indicator;

- (2) Formation of a reference point Z_{0i} ($Z_{01}, Z_{02}, \dots, Z_{0m}$). Since the proposed indicators are stimulators, i.e., they exert a direct positive influence on the development of social responsibility in EU countries, the maximum values of the indicator are chosen for them

$$Z_{0i} = \max z'_{ij}; i \in I, \quad (2)$$

where I is a set of indicators–stimulators.

- (3) Construction of the Euclidean distance, which characterises the distance of the value of each indicator to the reference point

$$d_{0i} = \sqrt{\sum_{i,j=1}^{n,m} (Z_{ij} - Z_{0i})^2}, \quad (3)$$

where d_{0i} is the Euclidean distance of the indicator value to the reference point;

- (4) Calculation of a taxonomic indicator reflecting a comprehensive assessment of the level of social responsibility development in EU countries (K_i)

$$K_i = 1 - \frac{d_{0i}}{d_0}, \quad (4)$$

$$d_0 = \bar{d}_0 + 2 \cdot \sigma_0, \quad \sigma_0 = \sqrt{\frac{\sum (d_{0i} - \bar{d}_0)^2}{n}}, \quad (5)$$

where K_i is a comprehensive assessment of the level of social responsibility development in a separate EU country; \bar{d}_0 is the arithmetic mean value of the corresponding Euclidean distance; σ_0 is the root mean square deviation of the corresponding Euclidean distance.

At the second stage, we used the method of correlation analysis to assess the relationship between social responsibility, characteristic of a country in general, and the development of innovative business.

In the meantime, the taxonomic indicator of the level of social responsibility in the selected group of countries was checked for the presence of connections with the following indicators that characterise the development of innovative business:

- (1) Indicators of the “Business sophistication” sub-index in the Global Innovation Index [46];
- (2) Innovative firms (product/process), as a percentage of total SMEs [11].

Meanwhile, it is taken into account that the first of the above indicators (1) characterises the level of business sophistication to assess how conducive firms are to innovation activity [47] (p. 51), and can be used as a general indicator of business innovation in a country regardless of the forms, size, and type of enterprise activity. Instead, Indicator (2) characterises the development of innovative business in the segment of SMEs, and therefore, we can assess the influence of the institutional environment of business development in the form of the development of social responsibility in a country on the activity of innovative activities of enterprises of various sizes. This will reveal common or distinctive

features of the influence of social responsibility of a country on business initiatives for different types of enterprises.

4. Results

In accordance with the defined research goal and the first stage of the research (the estimation of the level of social responsibility development in EU countries based on a complex taxonomic indicator), the values of the selected international indices were collected during 2019–2021 (Table 2).

Table 2. Indicators for evaluating the level of social responsibility development in EU countries.

Country	The Global Sustainable Competitiveness Index, Score			The SDG Index, Score			The Social Progress Index, Score		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
Belgium	51.30	52.10	53.00	70.30	71.70	72.50	86.77	89.46	88.68
Bulgaria	49.20	51.60	49.60	57.10	55.80	57.60	76.17	79.86	78.81
Czech Republic	53.10	55.20	52.90	71.80	72.70	72.60	84.36	86.69	86.60
Denmark	57.00	61.00	60.20	79.80	80.10	79.30	90.09	92.11	92.15
Germany	53.50	54.60	56.60	75.30	74.60	75.30	88.84	90.56	90.32
Estonia	54.90	59.40	56.1	70.40	71.80	73.70	83.98	87.26	87.38
Ireland	53.60	56.80	57.6	68.20	68.70	70.60	87.97	90.35	89.47
Greece	47.40	50.00	49.60	58.90	62.00	64.80	82.48	85.78	84.37
Spain	48.50	51.80	52.70	66.80	67.80	68.50	87.47	88.71	87.53
France	52.00	55.50	56.80	74.70	73.00	72.70	87.79	88.78	88.23
Croatia	54.20	57.20	55.10	63.20	66.40	68.00	79.21	81.92	82.82
Italy	49.90	51.60	51.70	65.30	67.10	68.50	85.69	87.36	86.56
Cyprus	45.80	47.60	47.50	55.00	60.30	58.60	83.14	86.64	85.03
Latvia	54.40	58.20	53.50	65.20	68.30	69.30	80.42	83.19	83.43
Lithuania	50.60	55.90	53.00	62.60	64.40	66.10	81.30	83.97	85.58
Luxembourg	54.50	58.00	53.90	66.00	64.20	65.80	87.66	89.56	88.75
Hungary	49.20	52.90	50.80	65.10	68.70	68.50	78.77	81.02	80.15
Malta	46.60	50.90	51.70	62.30	62.40	63.60	82.63	84.89	85.24
The Netherlands	50.50	52.90	53.90	71.80	71.70	72.10	88.31	91.06	90.57
Austria	54.20	56.70	56.60	76.70	77.40	78.00	86.40	89.50	89.44
Poland	51.90	52.80	51.20	66.10	69.60	71.00	81.25	84.32	83.08
Portugal	51.10	55.00	54.80	66.20	67.50	69.10	87.12	87.79	85.97
Romania	50.80	54.50	52.30	55.90	58.30	61.60	74.81	78.35	78.41
Slovenia	53.80	55.90	54.30	71.70	74.00	73.50	85.80	87.71	85.83
Slovakia	51.60	54.90	53.10	65.20	68.80	70.00	80.43	83.15	83.69
Finland	59.50	60.40	60.70	79.10	81.10	80.80	89.56	91.89	92.26
Sweden	60.60	62.10	61.20	79.40	81.00	80.60	89.45	91.62	91.20

Source: compiled from [40–42,48–52].

The standardised values of the indicators and the values of reference points, calculated according to Formulas (1) and (2), are given in Table 3. Accordingly, the calculations of the Euclidean distance and the taxonomic indicator of country-level social responsibility, carried out according to Formulas (3)–(5), are given in Table 4.

Table 3. Standardized values of initial data for comprehensive assessment of the level of social responsibility development in EU countries in 2019–2021.

Country	The Global Sustainable Competitiveness Index			The SDG Index			The Social Progress Index		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
Belgium	−0.25907	0.361203	0.57012	−0.83261	0.377384	−0.19084	−0.32374	0.020421	0.618998
Bulgaria	−0.85618	−1.53193	−1.94326	−0.97525	−2.05887	−0.1966	−1.33462	−1.72761	−2.00728
Czech Republic	0.252746	0.576331	−0.00132	0.051774	0.530608	−0.1925	−0.35348	0.269764	0.065536
Denmark	1.361672	1.723682	1.357329	1.706423	1.664464	−0.18924	1.816936	1.939992	1.542321
Germany	0.366482	1.078297	1.06094	−0.1194	0.821733	−0.19018	0.746596	0.823492	1.055381
Estonia	0.764558	0.375545	−0.09142	1.249968	0.392707	−0.19216	0.597937	0.318396	0.273084
Ireland	0.394916	0.060023	0.854653	0.508229	−0.08229	−0.1903	1.043912	0.333606	0.829207
Greece	−1.36799	−1.27377	−0.44709	−1.4317	−1.10889	−0.19305	−1.33462	−0.91306	−0.52784
Spain	−1.05522	−0.14076	0.736098	−0.91819	−0.22019	−0.19129	−0.41294	0.086168	0.312998
France	−0.06003	0.992246	0.811973	0.137359	0.576575	−0.19124	0.806059	0.519903	0.499259
Croatia	0.56552	−0.65707	−1.22244	0.622342	−0.4347	−0.19537	0.30062	−0.27012	−0.94027
Italy	−0.65714	−0.35589	0.31404	−0.97525	−0.32744	5.003689	−0.71026	−0.41801	0.054893
Cyprus	−1.82293	−1.8331	−0.29059	−2.11639	−1.36937	−0.19253	−1.95899	−1.74474	−0.35222
Latvia	0.622388	−0.37023	−0.93553	0.907627	−0.14358	−0.1946	−0.17509	0.209511	−0.77796
Lithuania	−0.4581	−0.74312	−0.72688	0.251473	−0.74115	−0.19413	−0.32374	−1.35945	−0.20587
Luxembourg	0.650822	−0.2555	0.781149	0.85057	−0.77179	−0.19078	−0.05616	−1.25612	0.637624
Hungary	−0.85618	−0.38457	−1.32677	−0.60438	−0.08229	−0.19591	−0.97784	−0.2012	−1.65073
Malta	−1.59546	−0.78615	−0.41152	−1.17495	−1.0476	−0.19358	−0.71026	−0.92475	−0.29634
The Netherlands	−0.48654	0.576331	0.935271	−0.60438	0.377384	−0.18988	−0.05616	0.071758	1.121903
Austria	0.56552	1.279083	0.482389	0.4797	1.25076	−0.19081	0.746596	0.867597	0.821224
Poland	−0.08846	−0.24116	−0.73873	−0.63291	0.055615	−0.19392	−0.85892	0.292805	−0.87109
Portugal	−0.31593	−0.22681	0.653109	−0.00528	−0.26616	−0.19184	0.211425	−0.13068	−0.1021
Romania	−0.40124	−1.70403	−2.26573	−0.14793	−1.67581	−0.19751	−0.53187	−0.61718	−2.11372
Slovenia	0.451784	0.561989	0.340123	0.251473	0.729799	−0.19189	0.062767	0.103269	−0.13935
Slovakia	−0.17376	−0.37023	−0.93316	−0.03381	−0.06696	−0.19463	−0.29401	−0.31318	−0.70878
Finland	2.072521	1.623289	1.23166	1.535252	1.817687	−0.18938	1.965595	2.22293	1.571591
Sweden	2.385295	1.666314	1.205578	2.020236	1.802365	−0.18954	2.114253	1.796486	1.289538
Etalon	2.385295	1.723682	1.357329	2.020236	1.817687	5.003689	2.114253	2.22293	1.571591

Table 4. Calculation of the integral assessment of the level of social responsibility development in EU countries.

	2019				2020				2021									
	$(d_{0i} - \bar{d}_0)$	$\Sigma (d_{0i} - \bar{d}_0)^2$	Euclidean Distance	K_i	$(d_{0i} - \bar{d}_0)$	$\Sigma (d_{0i} - \bar{d}_0)^2$	Euclidean Distance	K_i	$(d_{0i} - \bar{d}_0)$	$\Sigma (d_{0i} - \bar{d}_0)^2$	Euclidean Distance	K_i						
Belgium	-2.6444	-1.3625	-0.7872	9.4687	3.0771	0.9072	-2.8528	-1.4403	-5.1945	37.1963	6.0989	0.8882	-2.4380	-2.2025	-0.9526	11.7023	3.4209	0.9017
Bulgaria	-3.2415	-3.2556	-3.3006	32.0000	5.6569	0.8294	-2.9955	-3.8766	-5.2003	51.0437	7.1445	0.8690	-3.4489	-3.9505	-3.5789	40.3099	6.3490	0.8176
Czech Republic	-2.1325	-1.1474	-1.3586	7.7101	2.7767	0.9163	-1.9685	-1.2871	-5.1962	32.5318	5.7037	0.8954	-2.4677	-1.9532	-1.5061	12.1727	3.4889	0.8997
Denmark	-1.0236	0.0000	0.0000	1.0478	1.0236	0.9691	-0.3138	-0.1532	-5.1929	27.0885	5.2047	0.9046	-0.2973	-0.2829	-0.0293	0.1693	0.4115	0.9882
Germany	-2.0188	-0.6454	-0.2964	4.5800	2.1401	0.9355	-2.1396	-0.9960	-5.1939	32.5462	5.7049	0.8954	-1.3677	-1.3994	-0.5162	4.0954	2.0237	0.9418
Estonia	-1.6207	-1.3481	-1.4487	6.5431	2.5580	0.9229	-0.7703	-1.4250	-5.1958	29.6207	5.4425	0.9002	-1.5163	-1.9045	-1.2985	7.6126	2.7591	0.9207
Ireland	-1.9904	-1.6637	-0.5027	6.9820	2.6424	0.9203	-1.5120	-1.9000	-5.1940	32.8736	5.7336	0.8949	-1.0703	-1.8893	-0.7424	5.2663	2.2948	0.9341
Greece	-3.7533	-2.9975	-1.8044	26.3278	5.1311	0.8453	-3.4519	-2.9266	-5.1967	47.4868	6.8911	0.8736	-3.4489	-3.1360	-2.0994	26.1368	5.1124	0.8531
Spain	-3.4405	-1.8644	-0.6212	15.6992	3.9622	0.8805	-2.9384	-2.0379	-5.1950	39.7751	6.3067	0.8844	-2.5272	-2.1368	-1.2586	12.5365	3.5407	0.8983
France	-2.4453	-0.7314	-0.5454	6.8120	2.6100	0.9213	-1.8829	-1.2411	-5.1949	32.0729	5.6633	0.8962	-1.3082	-1.7030	-1.0723	5.7616	2.4003	0.9310
Croatia	-1.8198	-2.3808	-2.5798	15.6348	3.9541	0.8808	-1.3979	-2.2524	-5.1991	34.0575	5.8359	0.8930	-1.8136	-2.4930	-2.5119	15.8140	3.9767	0.8857
Italy	-3.0424	-2.0796	-1.0433	14.6695	3.8301	0.8845	-2.9955	-2.1451	0.0000	13.5745	3.6844	0.9324	-2.8245	-2.6409	-1.5167	17.2528	4.1536	0.8806
Cyprus	-4.2082	-3.5568	-1.6479	33.0756	5.7511	0.8266	-4.1366	-3.1871	-5.1962	54.2697	7.3668	0.8649	-4.0732	-3.9677	-1.9238	36.0347	6.0029	0.8275
Latvia	-1.7629	-2.0939	-2.2929	12.7495	3.5707	0.8923	-1.1126	-1.9613	-5.1983	32.1067	5.6663	0.8961	-2.2893	-2.0134	-2.3496	14.8153	3.8491	0.8894
Lithuania	-2.8434	-2.4668	-2.0842	18.5139	4.3028	0.8703	-1.7688	-2.5588	-5.1978	36.6935	6.0575	0.8889	-2.4380	-3.5824	-1.7775	21.9366	4.6837	0.8654
Luxembourg	-1.7345	-1.9792	-0.5762	7.2575	2.6940	0.9188	-1.1697	-2.5895	-5.1945	35.0560	5.9208	0.8914	-2.1704	-3.4790	-0.9340	17.6867	4.2056	0.8792
Hungary	-3.2415	-2.1083	-2.6841	22.1563	4.7070	0.8581	-2.6246	-1.9000	-5.1996	37.5343	6.1265	0.8877	-3.0921	-2.4241	-3.2223	25.8208	5.0814	0.8540
Malta	-3.9808	-2.5098	-1.7688	25.2745	5.0274	0.8484	-3.1952	-2.8653	-5.1973	45.4307	6.7402	0.8764	-2.8245	-3.1477	-1.8679	21.3749	4.6233	0.8671
The Netherlands	-2.8718	-1.1474	-0.4221	9.7420	3.1212	0.9059	-2.6246	-1.4403	-5.1936	35.9362	5.9947	0.8901	-2.1704	-2.1512	-0.4497	9.5404	3.0888	0.9112
Austria	-1.8198	-0.4446	-0.8749	4.2748	2.0676	0.9377	-1.5405	-0.5669	-5.1945	29.6775	5.4477	0.9001	-1.3677	-1.3553	-0.7504	4.2705	2.0665	0.9406
Poland	-2.4738	-1.9648	-2.0961	14.3735	3.7912	0.8857	-2.6531	-1.7621	-5.1976	37.1593	6.0958	0.8882	-2.9732	-1.9301	-2.4427	18.5318	4.3049	0.8763
Portugal	-2.7012	-1.9505	-0.7042	11.5970	3.4054	0.8973	-2.0255	-2.0838	-5.1955	35.4386	5.9530	0.8908	-1.9028	-2.3536	-1.6737	11.9615	3.4585	0.9006
Romania	-2.7865	-3.4277	-3.6231	32.6405	5.7132	0.8277	-2.1682	-3.4935	-5.2012	43.9580	6.6301	0.8784	-2.6461	-2.8401	-3.6853	28.6497	5.3525	0.8462
Slovenia	-1.9335	-1.1617	-1.0172	6.1227	2.4744	0.9254	-1.7688	-1.0879	-5.1956	31.3060	5.5952	0.8974	-2.0515	-2.1197	-1.7109	11.6289	3.4101	0.9020
Slovakia	-2.5591	-2.0939	-2.2905	16.1796	4.0224	0.8787	-2.0540	-1.8847	-5.1983	34.7935	5.8986	0.8918	-2.4083	-2.5361	-2.2804	17.4317	4.1751	0.8800
Finland	-0.3128	-0.1004	-0.1257	0.1237	0.3517	0.9894	-0.4850	0.0000	-5.1931	27.2031	5.2157	0.9044	-0.1487	0.0000	0.0000	0.0221	0.1487	0.9957
Sweden	0.0000	-0.0574	-0.1518	0.0263	0.1622	0.9951	0.0000	-0.0153	-5.1932	26.9699	5.1933	0.9048	0.0000	-0.4264	-0.2821	0.2614	0.5113	0.9853

The obtained results of the taxonomic analysis demonstrate a high level of social responsibility development in EU countries during the studied period, as all values of the integral indicator exceed 0.8. Therefore, it can be asserted that there is significant interest in the European community in the implementation of social responsibility in the process of forming the concept of sustainable development. However, the results of the dynamic analysis illustrate a differentiation of EU countries in terms of trends in their value during 2019–2021. Sweden, Denmark and Finland form the unchanged top three countries in terms of the level of social responsibility development. However, in 2019 Sweden ranked first; in 2021, it was replaced by Finland. It is worth noting the significant decrease in the value of the integral indicator for these countries in 2020 (to 0.9). It can be assumed that the main reason for this situation was the crisis caused by the COVID-19 pandemic, which affected all the countries of the world, depending on the level of their economic development. Its negative consequences covered all spheres of activity of economic entities at different levels, at the same time halting the progress of individual countries on their way to achieving the goals of sustainable development. This thesis is confirmed by the decrease in the value of the integral index in 2020 also in such EU countries as Belgium, Germany, Estonia, Ireland, France, The Netherlands, Austria, Slovenia and Slovakia.

Additionally, for some EU countries, there is a positive trend in the level of social responsibility development during 2019–2021. Their cohort includes Spain and Portugal, which adhere to the principles of social responsibility at a high level, regardless of external and internal challenges.

In terms of dynamic analysis, one cannot ignore Luxembourg as the only country that demonstrates a constant gradual decrease in the value of the integral indicator. In 2019, it was 0.9188, and it decreased to 0.8792 in 2021.

The calculated values of the taxonomic indicator made it possible rank EU countries by the level of social responsibility development (Figure 1).

In 2021, Finland ranks highest. Denmark and Sweden rank second and third, respectively. It is worth noting that the value of the integral indicator of these countries practically reaches 1, which allows talking about an extremely high level of social responsibility development. Bulgaria and Cyprus rank last with values of 0.8176 and 0.8275, respectively.

Answering the question we posed at the beginning of the article, we proceed from the assumption that a high level of social responsibility development creates a positive environment for the introduction of innovations. It is innovation that can help not only to better meet the needs of different groups of stakeholders, but also to go beyond their expectations, getting involved in the construction and implementation of social responsibility. At the same time, there is a feedback loop; the formed high level of social responsibility contributes to the support of innovative practices in business and creates a sense of stability and reliability of the operating environment, which is important for innovation and research.

To substantiate the interdependence of the level of social responsibility development and the introduction of innovations in business, the authors conducted a correlation analysis between the calculated integral indicators, the sub-index “Business sophistication” in the Global Innovation Index [46] and innovative firms (product/process), as a percentage of total SMEs [11]. At the same time, according to the last indicator, the sample of EU countries was reduced to 16 according to the availability of the information base (Table 5).

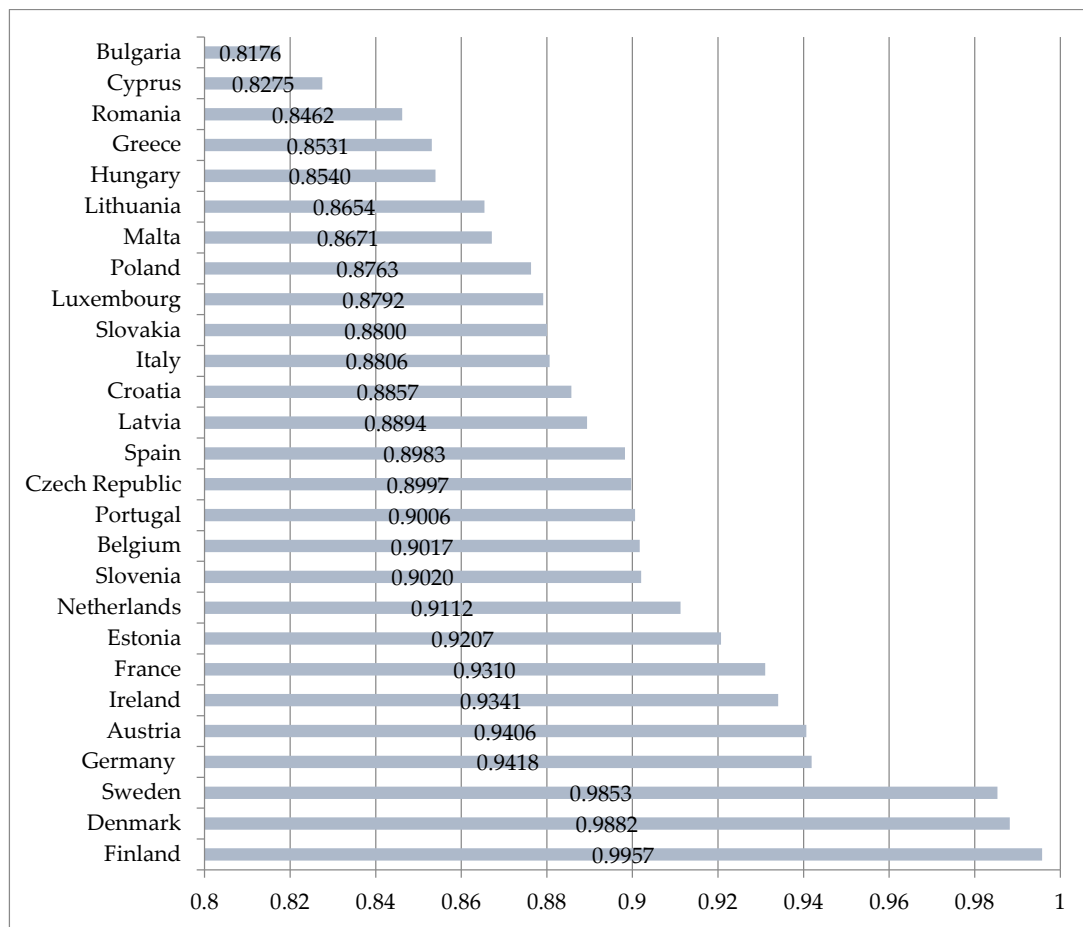


Figure 1. Ranking of EU countries by the level of social responsibility development in 2021. Source: author's own research.

Table 5. The relationship between the level of social responsibility development of and innovative development in EU countries in 2021.

Country	K_i	Business Sophistication	Innovative Firms (Product/Process), as a Percentage of Total SMEs
Belgium	0.9017	51.7	60.88
Bulgaria	0.8176	32.6	*
Czech Republic	0.8997	43.5	*
Denmark	0.9882	55.2	56.50
Germany	0.9418	54.5	62.63
Estonia	0.9207	39.9	65.59
Ireland	0.9341	51.5	*
Greece	0.8531	25.9	*
Spain	0.8983	35.5	26.46
France	0.9310	50.4	45.73

Table 5. Cont.

Country	K_i	Business Sophistication	Innovative Firms (Product/Process), as a Percentage of Total SMEs
Croatia	0.8857	27.7	*
Italy	0.8806	36.7	56.16
Cyprus	0.8275	42.6	*
Latvia	0.8894	34.1	29.39
Lithuania	0.8654	31.5	46.96
Luxembourg	0.8792	57.8	*
Hungary	0.8540	37.5	24.60
Malta	0.8671	53.7	*
The Netherlands	0.9112	61	*
Austria	0.9406	52.3	57.30
Poland	0.8763	34.2	20.34
Portugal	0.9006	33.6	35.34
Romania	0.8462	28	*
Slovenia	0.9020	42.8	*
Slovakia	0.8800	32.5	25.05
Finland	0.9957	61	54.41
Sweden	0.9853	68.1	60.25
Correlation coefficient		0.7002	0.6217

* Data is not available.

The calculated correlation coefficients prove a direct positive impact of the implementation of socially responsible practices on the innovative development of small and medium-sized enterprises. At the same time, a closer dependence is characteristic of the “Business sophistication” sub-index. Thus, a high level of social responsibility significantly affects innovation and creates a favourable environment for the development of production processes of higher complexity. In the meantime, the connection between the innovativeness of SMEs and country-level social responsibility is less strong, but still very high. Such results indicate that the institutional environment for the development of innovative business must necessarily include high social responsibility in society in its various manifestations.

5. Discussion and Conclusions

The results obtained allow concluding that a comprehensive assessment of the social responsibility of countries is much more informative if it is carried out using the data of various international indices that characterize the development of ethical principles of interaction in society from different viewpoints. Thus, the assessment carried out in our work by the method of taxonomic analysis made it possible to significantly supplement the existing ideas about the social responsibility of countries, measured within the limits of individual indices (sustainable competitiveness and achievement of sustainable development goals), taking into account the values of the index of the social progress of countries. Thus, our approach allows for the development of a theoretical background of complex analysis of social responsibility in the institutional environment of business and its links with the innovative activity of enterprises, including SMEs.

The obtained results and the ranking of countries based on the value of the taxonomic indicator of social responsibility made it possible to identify the leading countries and the place of each EU country in this ranking. As you can see, the distribution of countries

is very similar to the rankings compiled as a result of monitoring other macroeconomic and social success of countries—rankings of human development, global competitiveness, prosperity, etc. Countries that are successful in various aspects necessarily have high social responsibility. The question remains debatable and open; what is the basis and what is the consequence—does social responsibility leads to economic success, or vice versa? Economically successful countries have reached such a level of development where economic well-being is not the main incentive, but only a source of social progress and the development of responsible interaction.

The answer to the question we asked allows confirming the existence of relations, which we see as bilateral and interconnected; social responsibility as an important institutional component of business development has an important impact on the innovative aspirations of business. At the same time, innovative and successful business also contributes to the further development of country-level social responsibility through the spread of useful CSR practices.

In an economic sense, the results obtained are consistent with the ideas that innovative practices, having a synergistic effect at the macroeconomic level, contribute to increasing the overall economic efficiency in countries, which is confirmed in the work of Salas-Velasco [53]. Therefore, social responsibility is ultimately an important institution of general economic progress, and not only of innovative activity and the success of individual enterprises.

Regarding the mechanism of social responsibility's influence on innovation, the results of empirical studies prove the positive impact of CSR on innovation in the service sector and in the production sector by increasing employee involvement and improving cooperation with suppliers [54]. At the same time, positive effects are characteristic not only of large, but also of small and medium-sized enterprises. Social responsibility through a genuine commitment to the principles of equality and diversity can help small and medium-sized enterprises obtain positive returns from innovative products or processes [55].

Despite the fact that the study on the influence of social responsibility of countries on the results of business activities, such as innovation in the form of business sophistication and the spread of innovations in the segment of SMEs is not yet widespread enough; the assessment of such relationships is important for understanding the influence of the institutional environment on the development of modern innovative business and the formation of appropriate managerial decisions regarding social responsibility development.

As confirmed in our research, such connections are quite close. Moreover, a comfortable business environment in the form of high social responsibility in the country has an almost equally high impact both on the development of complex business processes in general and on the innovative development of small and medium-sized enterprises.

Therefore, socially responsible initiatives in all their manifestations form an environment of confidence, stability, a sense of support for innovative projects and business models of innovative development. At the same time, based on the conclusions of previous studies [8,34–36,54–57], we can assume that such support is possible if business innovations do not contradict the ethical norms of society. This type of innovation development can be transferred to other organisations through supply chains. However, in addition to market self-regulation, the active participation of the state in creating a responsible environment of interaction in all its manifestations is also important. As we have proven using the data applied to construct the Global Sustainable Competitiveness Index, the Sustainable Development Goals Index and the Social Progress Index, the comprehensive consideration of various dimensions of social responsibility in society sufficiently and informatively characterises the general institutional environment of innovative business development in this aspect. The sensitivity analysis between these global indices allows us to assert the complexity of the assessment because each of the three selected indices assesses separate aspects of social responsibility and sustainable development. Thus, the Sustainable Development Goals Index is clearly focused on assessing the progress of countries on their way to achieving clear targets—the Sustainable Development Goals 2030. The Social Progress

Index is a measurement tool that comprehensively and systematically focuses exclusively on the non-economic aspects of social performance worldwide with the help of transparent data. The Global Sustainable Competitiveness Index is currently the most comprehensive and accurate measurement of the competitiveness of nations in terms of their ability to generate and sustain inclusive wealth without diminishing their future ability to sustain or increase their current levels of wealth. It is used to assess not only the current level of sustainable competitiveness of countries, but also their future potential.

The practical value of the proposed methodology is the most obvious in its possibilities to find and analyse the relationship between the social responsibility and business innovation of a country, and thereby promote the development of territories. Therefore, the proposed approach can be implemented in activities aimed at institutional surrounding development using the capabilities of the authorities. The regulatory influence on the components of the indices, the values of which are far from the reference ones, will allow strengthening the development of social responsibility by obtaining not only positive social and environmental effects, achieving the goals of sustainable development, but also strengthening the motivation of businesses to develop innovative projects, the result of which is economic and social progress of countries.

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