

THE EFFECTS OF THE COVID-19 PANDEMIC ON CORPORATE SOCIAL RESPONSIBILITY AND BUSINESS PERFORMANCE IN COMPANIES LISTED ON THE WARSAW STOCK EXCHANGE

Ilija Stojanovic¹, Adis Puška², Seval Ozbalci³, Monika Bolek⁴

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¹ American University in the Emirates, Dubai, United Arab Emirates

² Government of Brčko District, Brčko, Bosnia and Herzegovina

³ University of the People, Business Administration Department, CA, USA

⁴ University of Lodz, Poland

Corresponding Author:

Ilija Stojanović

Email:

ilija.stojanovic1976@gmail.com

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ABSTRACT

The COVID-19 virus pandemic had an impact on all segments of life, including daily operations of companies. Companies had to adapt to market developments and change their business philosophy in order to survive in the market. This paper showed how the crisis caused by the COVID-19 virus pandemic affects the business of companies. This study aims to examine the business performance indicators (BPI) of companies listed on the Warsaw Stock Exchange (WSE) before and during the COVID-19 pandemic with a focus on corporate social responsibility (CSR). In order to examine this, a multivariate regression analysis was conducted. The findings show that there were no changes in the BPIs before and during the COVID-19 pandemic in companies in relation to CSR strategy. The only exception was found in the group of CSR companies that reported a lower profit margin during the COVID-19 pandemic. Companies with better BPIs may be willing to introduce CSR principles into their strategy and during the pandemic, intangibles influenced CSR strategy in a negative way. The limitations of the article are related to the study of only one market. Identified relationships allowed for a better understanding of the application of social responsibility principles among enterprises in Central Europe.

Keywords: business performance indicators; COVID-19; CSR; ESG; sustainability

1. INTRODUCTION

There is a lot of discussion about the negative impact of the COVID-19 pandemic on the economy and macroeconomic indicators, however, there are not many studies related to the effects of COVID-19 on a micro level or the performance of companies. In a period of sustainable development, when the market is not disturbed by any pandemic or war, the behavior and decisions of socially responsible enterprises may differ significantly from those that do not take such values into account.

The concept of corporate social responsibility (CSR) originates in the United States (Shemshad and Karim, 2023), where it was proposed at the end of the 18th century, referring to charity work at that time. However, it was not strictly related to the activities of the company itself. With time, organizations began to promote increasingly charitable activities, and as a result, companies enjoyed the respect of society. There are many definitions of CSR, and Dahlsrud (2008) concluded that most of them encompass economic, environmental, social, stakeholder,

and voluntarism dimensions. CSR refers to a company's voluntary initiatives to address embedded social and environmental issues within its operations. Although both sustainability and CSR aim at simultaneous economic development with social progress and equity while respecting the natural environment, the concept of CSR emphasizes more corporate business models. In contrast, the concept of sustainable development focuses on critical changes in the global environment (Fonseca et al., 2022). CSR is part of the wider ESG trend related to economic, governance, and social issues to which public enterprises should pay special attention.

The broad definition of ESG (Environmental, Social, and Governance) refers not only to corporations that consider these principles in their operations (CSR), but also to investors selecting assets for their portfolios under the same premise vit (SRI, Socially Responsible Investing, also called Sustainable and Responsible, Investing, Sustainable, Responsible and Impact Investing) (Starks, 2019). This concept is vital (Ahmić and Isković, 2023), and its importance is growing along with awareness of market participants, dwindling natural resources, and global changes in the political economy.

CSR enterprises stand for the concept that is increasingly being developed to improve their image in society (Dincer and Dincer, 2010). Additionally, as reported in many surveys, this approach to business influences the company's financial results (Barauskaite and Streimikiene, 2021), business performance, and reporting (Halkos and Nomikos, 2021). Companies are increasingly willing to implement the concept of corporate social responsibility by including it in their strategic plans (Vitolla et al., 2017). This idea can help solve social problems related to the company's environment. New CRS standards, codes, and guides are introduced, and more attention is paid to the protection of the natural environment (Fonseca et al., 2022).

CSR has related business activities (for example, environmental pollution) that can be improved to get the acceptance of stakeholders (Loureiro and Lopes, 2019). Furthermore, due to CSR activities, brand recognition increases (Liu et al., 2020), which can translate into higher profits, access to recruiting qualified employees, reduced costs, and increased shareholder confidence. However, the opponents' arguments state that the decisions can deviate from those adopted by the company (Štilić et al., 2023). CSR can be executed as a one-time advertisement to improve the image of an economic unit; it can often be a cynical and insincere game or greenwashing (Gatti et al., 2019).

The main goal of socially responsible enterprises on the capital market is to achieve positive financial results and increase value (Martin et al., 2009). During the COVID-19 pandemic, CSR could help maintain the market value of companies (Qiu et al., 2021).

This article aims to present social responsibility for the business performance of companies in times of health crisis. The empirical research presented in this article is twofold: to analyses whether different BPIs differ significantly before and during the COVID-19 pandemic in relation to the CSR strategy of companies belonging to the Respect Index in the WSE and to find the effects of different BPIs on the CSR orientation and to understand whether changes in these indicators during the COVID-19 pandemic affected an orientation towards principles and values.

The relationship between economic performances often leads to the question of ethical behavior that can result in a significant competitive advantage. Most authors (see, e.g., Berrone et al., 2007; Fonseca et al., 2016; Margolis and Walsh, 2003; Mattingly, 2017) argued that companies that implement a social responsibility policy gain greater economic benefits than companies that do not meet the expectations of stakeholders. However, other researchers found a neutral

or even negative relationship between social and economic performance and CSR (Aupperle et al., 1985; McGuire et al., 1988).

The article is divided into several sections where the authors present the review of the literature, data and methods, results, discussion, and conclusions. This article adds value to the literature and findings on social responsibility in corporate finance and shows the impact of the pandemic on CSR strategies.

2. REVIEW OF THE LITERATURE

The American industrialist Andrew Carnegie (2017; 1889) was the first to develop the idea of corporate social responsibility. In his opinion, it was the moral duty of every company to promote initiatives that would help society. This started a greater focus of the company on activities related to corporate responsibility (Stević et al., 2021; Kushnir et al., 2023). This phenomenon was further popularized in the 1960s and 1970s, and the term corporate social responsibility was first introduced by Carroll (1991), who presented a pyramid consisting of economic, legal, ethical, and philanthropic responsibility.

Today, socially responsible businesses benefit from the idea that has been developed as purely moral. The positive impact of the good environmental performance of companies on their financial situation was presented by Menguc et al. (2010), Russo and Fouts (1997), and Miroshnychenko et al. (2017). The negative impact of the good environmental performance of companies on their financial situation was presented by Cordeiro and Sarkis (1997), Filbeck and Gorman (2004), Lioui and Sharma (2012), Sarkis and Cordeiro (2001), and Wagner et al. (2002). The results are not unambiguous, and factors influencing social responsibility should be analyzed and answers to important questions about the role of CSR in the modern world should be sought.

The positive impact of the CSR principles implemented in companies on the results of their environmental activities was described by Apeaning and Thollander (2013). The negative impact of the financial situation of companies on the results of their environmental activities was presented by Gonenc and Scholtens (2017). The mutual positive relationship between the environmental performance of companies and their financial situation was presented by Clarkson et al. (2011). The non-linear dependence of the financial situation of enterprises on the result of their environmental activities was named by Tatsuo (2010). The lack of dependence between the results of the environmental activity of companies and their financial situation was presented in the research results of Dragomir (2013), Earnhart and Lizal (2007).

There have been three challenges related to social responsibility discussion in the literature since 1985. The post-letter period began with BlackRock CEO Lary Fink, advocating for a variety of issues and making specific public policy recommendations on the behavior of portfolio firms or disclosure choices of portfolio firms (Pawliczek et al., 2021).

Since then, the COVID-19 pandemic has significantly impacted the principles of ESG and investment strategies (Díaz et al., 2021). ESG disclosures based on firm practices are becoming more important as determinants (Joshi and Chauhan, 2021) and institutional investment in social factors (Park and Jang, 2021). In the analysis of the effects of the COVID-19 pandemic, the practices and principles of companies have changed, as well as business performance (Boffo and Patalano, 2020). New goals (shareholder rights, pollution, waste, greenhouse gas emissions, risks, and opportunity management) appear in the field of strategic management. Hoang et al. (2020) pointed out that environmental variables influence financial performance, with increasing importance attributed to the market after the global crisis period. Yang and others

with several studies are not more likely to corroborate this finding (Yang et al., 2021; Liu et al., 2022), especially in emerging markets. Although this may lead to assigning the benefits of ESG activities in doubt, it increases mainly to shareholders or creditors (Gregory, 2022).

When analyzing investments possibility on the BSE, Singh et al. (2021) concluded that there is no effect of the pandemic on the return and volatility of S&P ESG 100 index. Moreover, the results presented by Bangur et al. (2022) show that after COVID-19, the risk related to the market price of the S&P BSE 100 ESG Index has increased, and the certainty of investment decreased. Further findings indicate the presence of a large degree of persistency in the S&P BSE 100 ESG Index.

CSR activities significantly lower the cost of equity, the cost of debt, and the overall cost of capital (Yajymcuk et al., 2023). Companies that have the best application of ESG disclosure should also enjoy an advanced ranking in the index (Aboud and Diab, 2018). The scores of global activities show that there is a significant difference between 2009 and 2018 on behalf of European companies. Poland was in 2018 an average market for CSR application (Daugaard and Ding, 2022). Because the market plays a significant role in motivating CSR practises and the state and community reinforce the role of the 'free market' through the demand of social constituents, sanctions and boycotts, or mandatory requirements by the government (Eliwaab et al., 2021).

When taking into account financial instruments, Rozkov and Idema (2023) found that for investors the credibility of a green bond is a basic determinant for a purchase. The attractiveness of green bonds is influenced by financial factors such as tax incentives as well as interest rates (Vlasenko, 2023). In the German-speaking region of Europe, the environmental pillar is the most important for investors.

When corporate strategies are categorized according to quality and ease of assessment, it becomes clear that investors must often choose between those that are easy to understand but create little sustainable value and those that are hard to understand. but create sustainable value. The main issue is whether a company can derive positive benefits from social business in the name of social business maturity (Kane et al., 2014).

The latest research (Goh and Ang, 2021) writes that some internal stakeholders and boards of directors had backed because of higher operating costs instead of dampened sales caused by COVID-19. It is turning in the opposite direction and accepting refusing to maximize shareholder value but instead willing to move some benefits to other stakeholders (Soros, 2021).

Everyone is aware that business relationships are built on benefitted work and continuous investment to survive (Haenlein, 2017). The international market has made an interesting contribution to this relationship policy after COVID-19 (Adedotun, 2022; Badi and Elghoul, 2023), which tells that managerial initiatives completely support the adoption of CSR in innovative SMEs (De Falco et al., 2021). Some recent studies show that the pandemic had a negative impact on some sectors; for example, renewable electricity companies were suffering a sharper decline than traditional ones (Boldeanu et al., 2022).

It is also known that with the role of managerial attention and shareholder orientation, the governance and social dimensions of CSR can predict future distress (Dumitrescu et al., 2020). Long-term institutional ownership (IO) increases ESG performance, which leads to a higher IO ratio, and the demand for successful integration of key financial and CSR performance indicators (integrated reporting) is expected to increase (Velte, 2020). On the other hand, there are more studies on CSR to strengthen the relationship between corporate transformation towards Industry 4.0 (CTTI 4.0) and financial performance (Alkaraan et al., 2022). Some authors be-

lieve that this may be due to mandatory requirements taking away some opportunities for reputation-building via voluntary initiatives (Hoepner et al., 2021). Determinants, interactions, and pricing of sovereign credit risk accepted tools as critical determinants for macroeconomic dynamics should be considered and surveyed (Bajaj et al., 2022). Therefore, while macroeconomic indicators, including gross domestic product, show a decreasing trend after the COVID-19 pandemic, there are still not many recent studies on the effects at the micro level, and the fact that the disclosure of ESG has a positive influence on the competitive advantage at the firm level (Rabaya and Saleh, 2022).

According to neoclassical theory, the company's main goal is to make a profit (Vranceanu, 2014). Implementing such assumptions can be obtained because of reducing production costs or implementing new technological solutions that reduce costs and lead to the development of the enterprise. Recently, managerial theory has appeared that presents the separation of the value of a given economic unit from the management of this enterprise (Zhukevych and Zhuk, 2023). As a result, individual approaches blur in favour of a jointly developed goal.

Freeman (1984) defined stakeholders as any group or individual who can affect or is affected by the achievement of the organization's objectives. Stakeholder theory integrates business and social issues (Crane and Ruebottom, 2011), and according to Freeman (1984), the success of an organization depends on its collaboration with multiple stakeholders. Authors such as Fonseca et al. (2016), based on empirical research, found that competitive position is strongly correlated with shareholders, suppliers, partners, employees, and customer satisfaction, legitimating Freeman's stakeholder theory". It can be concluded that stakeholder theory is based on the role of philosophy, law, ethics, economics, and other fields of knowledge (Wheeler et al., 2002). An enterprise must consider many groups, i.e. potential investors; political groups, customers, society, employees, and suppliers, to develop its business, but the decision to adopt a responsible business strategy may be the result of good financial results.

The existing literature on empirical studies related to pre-COVID and post-COVID situations in terms of social corporate responsibility lacks a comprehensive analysis of how the pandemic has reshaped corporate sustainability practices. There is a noticeable gap in the literature regarding the long-term impact of the pandemic on companies' CSR strategies, making it challenging to understand how businesses have adapted to new societal and environmental challenges. Thus, this study is going to provide a valuable insight into this topic.

A critical need exists for research that delves into the evolving dynamics of social corporate responsibility in the context of COVID-19, offering insights into the effectiveness of CSR initiatives and their alignment with changing global priorities.

3. DATA AND METHODS

The research sample consists of 425 nonfinancial companies listed on the Warsaw Stock Exchange, and their BPIs based on quarterly financial statements and shares quotations. The pre-pandemic period consists of the years 2019, 2020 and the first quarter of 2021 and pandemic time is represented by the year 2021 (3 quarters), when its impact on the economy was the most visible. A total of 3080 observations are analysed in relation to the pre-pandemic and, pandemic periods, and moreover, the CSR strategy performance implemented by surveyed companies is taken into consideration.

The WSE Respect Index includes companies that implement social responsibility strategies (CSR companies). The index was first published on November 19, 2009, and is the first index

in Central and Eastern Europe that brings together companies implementing corporate social responsibility. It includes 31 companies that have implemented socially responsible strategies for the environment, the community, and employees.

The following hypotheses are tested to achieve the research goal.

The first hypothesis that there is a difference between BPIS in relation to the pandemic and social responsibility is divided into two subhypotheses stated as follows:

$H_{1(a)}$: *There is a statistically significant difference in business performance indicators before and during the COVID-19 pandemic.*

In the second subhypothesis, the differences in business performance indicators between the so-called CSR and non-CSR companies before and during the COVID-19 pandemic are analysed. Thus, the next hypothesis is stated as follows.

$H_{1(b)}$: *There is a statistically significant difference in business performance indicators between types of business with CSR and non-CSR before and during the COVID-19 pandemic.*

For this hypothesis, we compare two groups: the CSR group of companies (1) and the non-CSR group of companies (0).

Both hypotheses are tested with a t-test for independent samples.

For the second part of our research, another hypothesis is tested:

H_2 : *There is a statistically significant effect of business performance indicators on the company's orientation towards CSR in relation to the COVID-19 pandemic period.*

To test this hypothesis, we developed a model and tested it with the multiple linear regression panel as follows:

$$CSR = a + b_1ROE + b_2MV + b_3CR + b_4D/E + b_5PM + b_6TQ + b_7FCF / TA + b_8IN + ei \quad (1)$$

where;

a dependent variable that presents the CSR performance recognized as a discrete variable:

- CSR – is a company included in Respect Index (binominal variable)

CSR = 0, a company does not belong to Respect Index,

CSR = 1, a company belongs to Respect Index.

Independent variables that may influence the CSR strategy:

- ROE - Return on equity (X_1),
- MV - Market Value (X_2)
- CR - Current ratio (X_3)
- D/E – Debt/equity (X_4)
- PM - Profit margin (X_5)
- TQ - Tobin's Q (X_6)
- FCF / TA - Free cash flow from operations/ Total assets (X_7)
- IN – level of Intangibles (X_8)

Variables are calculated according to the following formulas:

$$ROE = \frac{NI}{SE} \quad (2)$$

Where: NI – net income, SE – shareholders' equity.

$$MV = P * SO \quad (3)$$

Where: P – market price of a share, SO – number of shares outstanding.

$$CR = \frac{CA}{SL} \quad (4)$$

Where: CA – current assets, SL – short term liabilities.

$$D/E = \frac{D}{SE} \quad (5)$$

Where: D – debt, SE – shareholders' equity.

$$PM = \frac{NI}{S} \quad (6)$$

Where: NI – net income, S – sales.

$$TQ = \frac{MV}{ARC} \quad (7)$$

where: TQ - Tobin's Q, MV - market value of capital invested in the company, ARC - asset replacement cost.

$$FCF/TA = \frac{FCFFO}{TA} \quad (8)$$

Where: FCFFO – free cash flow from operations, TA – total assets.

IN - intangible assets represented in the balance sheet as part of the company's fixed assets.

BPIs such as ROE, CR, D/E, PM, and FCF/TA are the most popular financial indicators indicating the strategic operation of the company in the area of profitability, net working capital, capital structure, operational efficiency, and cash efficiency of assets. MV represents the company's market value calculated by multiplying the share price by the number of issued shares. The TQ ratio, also known as Tobin's Q, equals the market value of a company divided by its assets' replacement cost. This indicator can be interpreted as a measure of the company's growth potential. IN represents the value of intangible assets in the company's balance sheet. On the basis of the analysis of issues related to CSR, it can be assumed that TQ and IN may be related to this area. CSR can contribute to a better assessment of the company by investors and be a consequence of investing in innovative solutions. Intangibles have not been linked in theory with CSR so far, but may affect corporate social responsibility.

Taking into account the purpose of the study and the assessment of how the COVID-19 pandemic affected these relations, hypothesis H2 was tested for two subsamples:

- a) Subsample covering the period before the COVID-19 pandemic;
- b) Subsample covering the period during the COVID-19 pandemic.

To detect whether there is a statistical difference in coefficients in two linear regressions from two subsamples, an added Chow test was applied to analyse the existence of a structural difference in some parameters of a model between two subsamples. Thus, an additional hypothesis is developed:

H_3 : *There is a structural difference between the parameters in two linear regression models that cover the effects before and during the COVID-19 pandemic.*

4. RESULTS

In this section of the paper, the results of the tests and analysis are presented with respect to data statistics, differences between samples, and model parameters.

4.1 STATISTICS OF THE SAMPLES

There are 2697 observations related to non-CSR companies (companies not included in the Respect Index) - (87.6%) and 383 observations related to CSR companies (companies included in the Respect Index) - (12.4%). For the period before the COVID-19 pandemic, there are 1155 observations (37.5%), and during the COVID-19 pandemic, 1925 observations (62.5%). The results of the descriptive statistics for the variables in the model are presented in Table 1.

Table 1. Descriptive statistics of a sample

	N	Minimum	Maximum	Mean
ROE	2826	-4.66	4.33	0.05
MV	3080	-80.07	118452608.96	9223.37
CR	3062	0.00	1815.39	7.91
D/E	3061	-62.07	9223.37	31.24
PM	2786	-649.03	873.69	-0.06
TQ	3062	-13.41	1511.86	3.85
FCF/TA	3062	-2.31	1.36	0.05
IN	2554	0.10	413715000.00	9223.37

Source: Author's calculation

Since we are interested to see the situation of different indicators for non-CSR and CSR companies before and during the Covid-19 pandemic, the results of descriptive statistics for sub-samples are given in Table 2.

Table 2. Descriptive statistics of sub-samples*

BD	CSR		N	Minimum	Maximum	Mean
1	0	ROE	930	-4,66	2,44	0,01
		MV	1011	0,00	118452608,96	797377,54
		CR	1004	0,00	1815,39	10,18
		D/E	1004	-62,07	166,32	0,53
		PM	916	-649,03	601,97	-0,90
		TQ	1004	0,00	420,95	2,78
		FCF/TA	1004	0,00	0,85	0,05
		IN	818	0,10	207964000,00	766022,98
		Valid N (listwise)	730			
	1	ROE	135	-1,30	2,31	0,17
		MV	144	0,00	41805267,35	5087145,94
		CR	141	0,05	28,64	2,84
		D/E	140	-7,23	14035,83	202,14
		PM	129	-9,16	3,80	0,09
		TQ	141	-4,34	22,55	3,33
		FCF/TA	141	0,00	0,62	0,07
		IN	135	74,00	4660000,00	190612,94
		Valid N (listwise)	118			
2	0	ROE	1534	-3,59	4,33	0,03
		MV	1686	0,00	86162075,90	595253,01
		CR	1680	0,00	1663,17	7,63
		D/E	1680	-42,41	218,90	0,59
		PM	1528	-191,99	873,69	0,37
		TQ	1680	0,00	1511,86	4,54
		FCF/TA	1680	0,00	0,95	0,05
		IN	1376	0,93	413715000,00	1283805,21
		Valid N (listwise)	1212			
	1	ROE	227	-0,62	2,67	0,24
		MV	239	-80,07	37558361,34	5072393,20
		CR	237	0,04	37,92	3,27
		D/E	237	-1,91	14501,11	277,62
		PM	213	-3,16	6,74	0,35
		TQ	237	-13,41	49,44	3,80
		FCF/TA	237	-2,31	1,36	0,06
		IN	225	15,00	4341000,00	191124,03
		Valid N (listwise)	191			

Source: Author's calculation

* BD-1, CSR-0 = Before Covid 19 for non-CSR companies; BD-1, CSR-1 = Before Covid 19 for CSR companies; BD-2, CSR-0 = During Covid 19 for non-CSR companies, BD-2, CSR 1 = During Covid 19 for CSR companies

4. 2 DIFFERENCES BETWEEN SAMPLES

An independent sample t-test was calculated to compare different indicators of business performance before and during the COVID-19 pandemic to test *hypothesis H1 (a)*. The results are presented in Table 3.

Table 3. Independent Sample Test before and during the COVID-19 Pandemic

EVA: Equal variances assumed		Levene's test for Equality of Variances		t-test for Equality of Means				
EVNA: Equal variances not assumed		F	Sig. p-value	t	df	Sig. (2-tailed) p-value	Mean Difference	Std. Error Difference
ROE	EVA	3.298	0.069	-1.166	2824	0.244	-0.018645	0.0159844
	EVNA			-1.196	2419.101	0.232	-0.018645	0.0155956
MV	EVA	3.484	0.062	0.842	3078	0.4	9223.372	9223.372
	EVNA			0.765	1776.894	0.444	9223.372	9223.372
CR	EVA	3.012	0.083	0.842	3060	0.4	2.1874556	2.5969647
	EVNA			0.746	1634.665	0.456	2.1874556	2.9311209
D/E	EVA	0.633	0.426	-0.403	3059	0.687	-9.632073	23.921784
	EVNA			-0.417	2662.958	0.677	-9.632073	23.112174
PM	EVA	0.073	0.787	-0.792	2784	0.428	-1.147094	1.448407
	EVNA			-0.782	2111.251	0.434	-1.147094	1.4667981
TQ	EVA	4.211	0.04	-1.227	3060	0.22	-1.597958	1.3026823
	EVNA			-1.445	2915.388	0.149	-1.597958	1.1058015
FCF/TA	EVA	0	0.987	0.343	3060	0.731	0.0016868	0.0049125
	EVNA			0.353	2614.784	0.724	0.0016868	0.004779
IN	EVA	1.605	0.205	-0.64	2552	0.522	-9223.372	9223.372
	EVNA			-0.729	2546.592	0.466	-9223.372	9223.372

Source: Author's calculation

Differences for ROE, Levene's test for equality of variances with $p = 0.069$, indicate that equal variances are assumed. In that case, there is no significant difference ($t(2,844) = -1.166$, $p=0.244$) in ROE scores before the COVID-19 pandemic ($M=0.034$, $SD=0.386$) and during the COVID-19 pandemic ($M=0.0529$, $SD=0.427$). Therefore, there are no significant differences in ROE levels before and during the COVID-19 pandemic.

In the case of MV, Levene's test for equality of variances with $p = 0.069$ indicates that equal variances are assumed. There is no significant difference ($t(3078) = 0.842$, $p=0.4$) in MV before COVID-19 pandemic ($M=9223.372$, $SD=9223.372$) and during COVID-19 pandemic ($M = 923.372$, $SD = 923.372$). Therefore, the hypothesis for MV can be rejected and it can be concluded that there are no significant differences in MV levels before and during the COVID-19 pandemic.

In the case of CR, Levene's test for equality of variances shows that equal variances are assumed ($p < 0.05$). It was found that ($t(3060) = 0.842$, $p = 0.4$) and this result does not show significant differences in CR scores before the COVID-19 pandemic ($M=9.278$, $SD=90.122$) and during the COVID-19 pandemic ($M = 7.90$, $SD = 53.588$). With this result, the hypothesis of the

difference in CR can be rejected and it can be concluded that there is no significant difference in the level of CR before and during the COVID-19 pandemic.

In the case of D/E, Levene's test for equality of variances shows that equal variances are not assumed $p \geq 0.05$. There are no significant differences ($t(3059) = -0.403, p = 0.687$) in D/E scores before the COVID-19 pandemic ($M = 25.206, SD = 585.102$) and during the COVID-19 pandemic ($M = 34.838, SD = 671.075$). Based on this result, the $H_{1(a)}$ hypothesis H1 (a) for D/E can be rejected.

Equal variances are also assumed for PM using Levene's Test ($p \geq 0.05$). The t-test does not show significant differences ($t(2744) = -0.792, p = 0.428$) in PM levels before the COVID-19 pandemic ($M = -0.781, SD = 38.177$) and during the COVID-19 pandemic ($M = 0.365, SD = 36.297$). Based on this result, the $H_{1(a)}$ hypothesis H1 (a) for PE can be rejected.

Levene's test for TQ is equal to $p \leq 0.05$, thus equal variances are not assumed. Taking this into account, it was found that ($t(2925.388) = -1.445, p = 0.149$) in the TQ for TQ before the COVID-19 pandemic ($M = -2.846, SD = 19.302$) and during the COVID-19 pandemic ($M = 4.444, SD = 41.477$). Based on the result, the hypothesis can be rejected, and it can be concluded that there are no significant differences in TQ before and during the COVID-19 pandemic.

For FCF/TA, Levene's test assumes equal variances ($p < 0.05$). The t-test does not show significant differences ($t(3060) = 0.343, p = 0.731$) in FCF/TA levels before the COVID-19 pandemic ($M = 0.051, SD = 0.122$) and during the COVID-19 pandemic ($M = 0.049, SD = 0.137$). As a result, the $H_{1(a)}$ hypothesis is rejected for FCF/TA.

Finally, for IN, equal variances are assumed based on Levene's test ($p > 0.05$). There is no significant difference because ($t(2552) = -0.64, p = 0.522$) before the COVID-19 pandemic ($M = 923.372, SD = 11176576.911$) and during the COVID-19 pandemic ($M = 923.372, SD = 1908869.955$). As a result, the $H_{1(a)}$ hypothesis is rejected.

In all cases, the mean values of the variables did not differ with respect to the periods before and during the COVID-19 pandemic. When all companies are considered, it is found that the pandemic did not influence PBI levels in a significant way on the WSE.

In the next step, the companies implementing or not the social responsibility principles (CSR companies and non-CSR companies) are tested for differences of BPis.

Furthermore, using independent samples, business performance indicators between CSR and non-CSR types of businesses were analysed before and during the COVID-19 pandemic to test *hypothesis H1 (b)*. The results are provided in Tables 4 and 5.

Table 4. Independent Samples Test for non-CSR companies (before and during the Covid-19 pandemic)

CSR (1) Non-CSR (0) EVA: Equal variances assumed EVNA: Equal variances not assumed			Levene's Test for Equality of Variances		t-test for Equality of Means				
			F	Sig. p-value	t	df	Sig. (2-tailed) p-value	Mean Dif- ference	Std. Error Difference
0	ROE	EVA	2.331	0.127	-0.716	2462	0.474	-0.01191	0.016641
		EVNA			-0.733	2112.265	0.463	-0.01191	0.016239
	MV	EVA	3.927	0.048	0.966	2695	0.334	9223.372	9223.372
		EVNA			0.852	1421.801	0.394	9223.372	9223.372
	CR	EVA	3.205	0.074	0.862	2682	0.389	2.552374	2.960696
		EVNA			0.764	1433.221	0.445	2.552374	3.341399
	D/E	EVA	0.051	0.821	-0.218	2682	0.827	-0.05517	0.252877
		EVNA			-0.215	2021.116	0.83	-0.05517	0.25631
	PM	EVA	0.08	0.778	-0.77	2442	0.441	-1.27227	1.651324
		EVNA			-0.761	1848.913	0.447	-1.27227	1.672592
	TQ	EVA	4.168	0.041	-1.185	2682	0.236	-1.75705	1.48337
		EVNA			-1.396	2552.268	0.163	-1.75705	1.25885
	FCF/TA	EVA	0.048	0.826	0.128	2682	0.898	0.000611	0.004787
		EVNA			0.127	2091.329	0.899	0.000611	0.0048
	IN	EVA	1.621	0.203	-0.638	2192	0.523	-9223.37	9223.372
		EVNA			-0.728	2187.703	0.467	-9223.37	9223.372

Source: Author's calculation

If we independently compare non-CSR and CSR companies to verify the hypothesis of H2(a), the results are as follows. Levene's test for Equality of Variances shows in both types of companies with $p < 0.01$, thus assuming equal variances. For non-CSR companies, there is no significant difference ($t(2462) = -0.716, p = 0.474$) in the level of ROE for the period before the COVID-19 pandemic and during the COVID-19 pandemic. In the case of CSR companies, there is no significant difference ($t(360) = -1.262, p = 0.208$) in ROE before the COVID-19 pandemic and during the COVID-19 pandemic. Therefore, H1 (b) should be rejected for both types of companies and it can be concluded that regardless of the type of company, no significant changes in ROE occurred before and during the COVID-19 pandemic.

For non-CSR companies, Levene's Test indicates that equal variances are not assumed ($p \leq 0.05$), while in the case of CSR companies, equal variances are assumed ($p \geq 0.05$). For non-CSR companies, it was found ($t(0.852) = 1421.801, p = 0.394$) in ROE level before the COVID-19 pandemic and during the COVID-19 pandemic, so the $H_{1(b)}$ hypothesis can be rejected. For CSR companies, ($t(381) = 0.019, p = 0.985$) no significant differences for MV before and during the COVID-19 pandemic were identified, and $H_{1(b)}$ hypothesis should be rejected also in this case.

Levene's Test for Equality of Variances shows that equal variances are assumed for both non-CSR and CSR companies ($p \geq 0.05$). In the case of non-CSR companies, the result ($t(2682) = 0.862, p = 0.389$) indicated that there are no significant differences in CR before and during the COVID-19 pandemic. For CSR companies, the result ($t(376) = -0.834, p = 0.405$) says a similar conclusion. For both types of companies, the $H_{1(b)}$ hypothesis should be rejected and it can be

concluded that there are no statistically significant differences in CR levels before and during the COVID-19 pandemic.

Table 5. Independent Samples Test for CSR companies (before and during the Covid-19 pandemic)

CSR (1) Non-CSR (0) EVA: Equal variances assumed EVNA: Equal variances not assumed			Levene's Test for Equality of Vari- ances		t-test for Equality of Means				
			F	Sig. p-value	t	df	Sig. (2-tailed) p-value	Mean Dif- ference	Std. Error Difference
0	ROE	EVA	2.807	.095	-1.262	360	.208	-.061	.048
		EVNA			-1.286	297.990	.199	-.061	.0478
	MV	EVA	.909	.341	.019	381	.985	9223.372	9223.372
		EVNA			0.018	286.467	0.985	9223.372	9223.372
	CR	EVA	1.705	0.192	-0.834	376	0.405	-0.4282	0.513202
		EVNA			-0.893	353.598	0.373	-0.4282	0.479655
	D/E	EVA	0.629	0.428	-0.39	375	0.696	-75.4756	193.2941
		EVNA			-0.403	321.69	0.687	-75.4756	187.0556
	PM	EVA	0.365	0.546	-2.171	340	0.031	-0.25803	0.118842
		EVNA			-2.041	220.203	0.042	-0.25803	0.126429
	TQ	EVA	1.084	0.298	-0.733	376	0.464	-0.46805	0.638727
		EVNA			-0.784	353.785	0.433	-0.46805	0.596822
	FCF/TA	EVA	0.098	0.755	0.454	376	0.65	0.009392	0.020699
		EVNA			0.513	376	0.608	0.009392	0.018313
	IN	EVA	0	0.998	-0.007	358	0.994	-511.09	9223.372
		EVNA			-0.007	265.466	0.994	-511.09	9223.372

Source: Author's calculation

For D/E Levene's Test with $p \geq 0.05$ for both, non-CSR and CSR types of companies, allows to assume equality of variances. For companies that do not implement CSR, the $H_{1(b)}$ hypothesis should be rejected since ($t(2682) = -0.218, p=0.827$). The same conclusion can be stated also for CSR companies based on ($t(375) = -0.39, p=0.696$). Therefore, there were no statistical differences in D/E before and during the COVID-19 pandemic for both types of companies.

For both types of companies, Levene's Test is characterised by $p \geq 0.05$ assuming equal variances. For companies that do not implement the CSR strategy, the result ($t(242) = -0.77, p=0.441$) shows no differences in PM levels before and during the COVID-19 pandemic. Since this result, the $H_{1(b)}$ hypothesis should be rejected. However, for companies that implement the CSR principles, different results ($t(34) = -2.171, p=0.031$) were achieved that confirm *hypothesis H1(b)*. Therefore, in the case of CSR companies, there is a statistical difference in PM levels before and during the COVID-19 pandemic.

For companies not implementing the CSR strategy, Levene's Test does not assume equal variances ($p \leq 0.05$) for TQ while for CSR companies it assumes ($p \geq 0.05$). For both types of companies, $H_{1(b)}$ hypothesis can be rejected since for non-CSR companies it was found ($t(2552) = -1.396, p=0.163$) and for CSR companies ($t(376) = -0.733, p=0.464$). There is no significant differences in TQ before and during COVID-19 for both types of companies.

For FCF/TA in the case of non-CSR companies, Levene's Test does not assume equal variances ($p \leq 0.05$) while for CSR companies it is assumed ($p \geq 0.05$). Following this result, for

non-CSR companies, the result ($t(2091.329) = 0.127, p=0.899$) and for CSR companies, the result ($t(376) = 0.454, p = 0.65$) do not show any differences in FCF/TA before and during the COVID-19 pandemic; therefore, the hypothesis of H1 (b) should be rejected.

Regarding the Intangible Assets for non-CSR and CSR companies, Levene's Test ($p \geq 0.05$) assumes equal variances. For both types of companies, the hypothesis should be rejected, since for non-CSR companies the result is ($t(2192) = -0.638, p=0.523$), while for CSR companies the result is ($t(358) = -0.007, p=0.994$). It can be concluded that for both types of companies, there is no significant difference in IN before and during the COVID-19 pandemic.

The results show that significant differences were found before and during the COVID-19 pandemic in the case of PM in the CSR group of companies.

4.3 FACTORS INFLUENCING CSR IMPLEMENTATION IN WSE COMPANIES

For the second part of this study, the effects of business performance indicators on the CSR strategy are analysed and the results are presented in Table 6.

Table 6. Summary of the entire sample

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.350 ^a	0.123	0.12	0.32351351	0.123	41.034	8	2349	0
a. Predictors: (Constant), ROE, MV, CR, D/E, PM, TQ, FCF/TA, IN									

Source: Author's calculation

The model presented in Table 6 explains 12% of the variation in the level of CSR of companies listed on WSE. The general model of multiple linear regression is significantly useful for explaining the level of CSR for the dependent variable with the result $F(8, 2349) = 41.03, p < 0.001$. Therefore, Hypothesis H2 can be concluded that there is a statistically significant effect of business performance indicators on the orientation towards CSR principles.

The impact of individual BPI on CSR strategies is presented in Table 7.

Table 7. Effects of individual factors of business performance on CSR strategy for the entire sample

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.078	.008		9.290	.000
	ROE	.117	.018	.132	6.647	.000
	MV	9.313E-9	.000	.173	8.420	.000
	CR	.000	.001	-.009	-.432	.666
	D/E	.001	.001	.028	1.470	.142
	PM	.000	.001	.010	.480	.631
	TQ	.025	.002	.220	10.540	.000
	FCF/TA	-.078	.056	-.028	-1.393	.164
	IN	-8.832E-10	.000	-.045	-2.302	.021
a. Dependent Variable: CSR						

Source: Author's calculation

Based on the results presented in Table 7, the following results can be found.

- ROE has a significant effect on the CSR strategy, $F(2349) = 6.647, p < .001$
- MV has a significant effect on the CSR strategy, $F(2349) = 8.420, p < .001$
- CR does not have a significant effect on the CSR strategy, $F(2349) = -.432, p = .666$
- D/E does not have a significant effect on the CSR strategy, $F(2349) = 1.470, p = .142$
- PM does not have a significant effect on the CSR strategy, $F(2349) = .480, p = .631$
- TQ has a significant effect on the CSR strategy, $F(2349) = 10.540, p < .001$
- FCF/TA does not have a significant effect on the CSR strategy, $F(2349) = -1.393, p = .164$
- IN has a significant effect on the CSR strategy, $F(2349) = -2.302, p < .05$

For the subsample covering the period before the COVID-19 pandemic, the results presented in Table 8 show that the model covering the period before the COVID-19 pandemic explains 10% of the variation in the CSR group of companies. The model is still significant and useful in explaining the CSR for the dependent variable with the result $F(8, 885) = 12.47, p \leq 0.001$. Thus, the H_2 hypothesis can be confirmed for this subsample, and it can be concluded that there is a statistically significant effect of business performance indicators on the orientation toward CSR principles prior to the COVID-19 pandemic.

Table 8. Model Summary for the Subsample Before COVID-19

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.318 ^a	.101	.093	.32932

Source: Author's calculation

The results presented in Table 9 explain how individual performance indicators affect the CSR strategy in the period prior to the COVID-19 pandemic.

Table 9. Effects of Individual Factors of Business Performance on CSR the Subsample Before COVID-19

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.078	.014		5.584	.000
	ROE	.129	.034	.127	3.830	.000
	MV	4.549E-9	.000	.106	2.949	.003
	CR	.000	.002	.003	.085	.932
	D/E	.001	.001	.041	1.277	.202
	PM	.001	.002	.013	.398	.691
	TQ	.028	.005	.226	6.258	.000
	FCF/TA	-.044	.091	-.016	-.481	.631
	IN	-1.089E-9	.000	-.036	-1.108	.268

Source: Author's calculation

As presented in Table 9 the following variables ROE, MV, and TQ have a significant effect on CSR at the level of $p < 0.05$.

For the subsample covering the period during the COVID-19 pandemic, the results presented in Table 10 indicate that the model explains 15% of the variation in the CSR strategy of WSE companies. The model is statistically significant with the result of the F statistics at the level $(8, 1455) = 32.78$, $p < 0.001$ allowing us to confirm the hypothesis H2 for this subsample. Therefore, even during the period during the COVID-19 pandemic, there is a statistically significant effect of business performance indicators on the orientation towards CSR principles.

Table 10. Summary of the Model for the Subsample during the COVID-19

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.391 ^a	.153	.148	.31777

Source: Author's calculation

During the period during the COVID-19 pandemic, there was a slightly different situation, and it is presented in Table 11.

Table 11. Effects of individual factors of business performance on the CSR subsample during COVID-19

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.070	.011		6.246	.000
	ROE	.112	.021	.135	5.391	.000
	MV	1.601E-8	.000	.240	9.483	.000
	CR	.000	.001	-.011	-.443	.658
	D/E	.005	.007	.018	.718	.473
	PM	.000	.001	.008	.337	.736
	TQ	.023	.003	.221	8.638	.000
	FCF/TA	-.102	.070	-.036	-1.450	.147
	IN	-1.057E-9	.000	-.063	-2.560	.011

Source: Author's calculation

For this subsample, ROE, IN, MV and TQ have a statistically significant effect on the CSR strategy at the level of $p < 0.05$.

4. 4 DIFFERENCES BETWEEN MODELS

Chow test results are presented in Table 12 with tests as follows $F(8, 2340) = 3.539$, $p \leq 0.05$. This result shows the presence of a structural difference between the parameters in two linear regression models covering the effects before and during the COVID-19 pandemic. This means that there is a break-point between two regression lines of the two different models. Practically, this indicates that the regression coefficients are statistically different between two subsamples, before and during the COVID-19 pandemic. In conclusion, the H3 hypothesis is confirmed.

Table 12. Chow test results

Dependent Variable: CSR					
Source	Sum of Squares	df	Mean Square	F	Sig.
Contrast	2.939	8	.367	3.539	.000
Error	242.902	2340	.104		

Source: Author's calculation

The contrast results (K-matrix) presented in Table 13, provide more detailed information. The results show that MV affects the CSR strategy as the only statistically different regression coefficient between the two subsamples, before and during the COVID-19 pandemic at the level of $p < 0.05$. All other coefficients are not statistically different within the two models standing for two sub-samples. Although there was no difference in performance between periods, the market value (MV) changed its impact on CSR.

Table 13. Contrast results of the CHOW test

Contrast			Dependent Variable
			CSR
L1 BD * ROE	Contrast Estimate		.017
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		.017
	Std. Error		.039
	Sig.		.659
	95% Confidence Interval for Difference	Lower Bound	-.060
		Upper Bound	.094
L2 BD * MV	Contrast Estimate		-1.146E-8
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		-1.146E-8
	Std. Error		.000
	Sig.		.000
	95% Confidence Interval for Difference	Lower Bound	-1.594E-8
		Upper Bound	-6.987E-9
L3 BD * CR	Contrast Estimate		.000
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		.000
	Std. Error		.002
	Sig.		.777
	95% Confidence Interval for Difference	Lower Bound	-.003
		Upper Bound	.004
L4 BD * D/E	Contrast Estimate		-.004
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		-.004
	Std. Error		.007
	Sig.		.609
	95% Confidence Interval for Difference	Lower Bound	-.018
		Upper Bound	.010

L5 BD * PM	Contrast Estimate		.000
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		.000
	Std. Error		.002
	Sig.		.822
	95% Confidence Interval for Difference	Lower Bound	-.003
		Upper Bound	.004
L6 BD * TQ	Contrast Estimate		.005
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		.005
	Std. Error		.005
	Sig.		.338
	95% Confidence Interval for Difference	Lower Bound	-.005
		Upper Bound	.015
L7 BD * FCF/TA	Contrast Estimate		.058
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		.058
	Std. Error		.114
	Sig.		.612
	95% Confidence Interval for Difference	Lower Bound	-.166
		Upper Bound	.282
L8 BD * IN	Contrast Estimate		-3.194E-11
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		-3.194E-11
	Std. Error		.000
	Sig.		.976
	95% Confidence Interval for Difference	Lower Bound	-2.089E-9
		Upper Bound	2.025E-9

Source: Author's calculation

5. DISCUSSION

CSR disclosures based on firm practises are becoming more important as determinants of institutional investment in social factors (Joshi and Chauhan, 2021; Park and Jang, 2021). In this sense, the objective of this study was twofold, first to analyse whether different business performance indicators differ significantly before and during the COVID-19 pandemic as performing with or without CSR principles, and second to identify the effects of different business performance indicators on the CSR orientation, and, moreover, to understand whether changes in these indicators during the COVID-19 pandemic affected an orientation towards the principles and values. Data analysis showed that there were no significant differences in the level of all indicators before and during the COVID-19 pandemic. Comparable results on the lack of dependence between the results of the environmental activity of companies and their financial situation were also presented in other studies (Dragomir, 2013; Earnhart and Lizal, 2007).

When the CSR factor was added to the study, it was found that only the profit margin (PM) was significantly different in both analyzed periods in the group of companies included in the WSE Respect Index and it can be concluded that the pandemic influenced profitability in the CSR group in a negative way. Yang et al. and Liu et al. presented similar findings (Yang et al.,

2021; Liu et al., 2022), especially in emerging markets. Rabaya and Saleh (2022), while macro-economic indicators were analyzed, showed a decreasing trend after the COVID-19 pandemic, there were still not many recent studies on the effects at the microlevel, and moreover, CSR had a positive influence on the competitive advantage at the firm level (Rabaya and Saleh, 2022).

While defining the effects of the COVID-19 pandemic in the world (Olviana et al., 2022; Rahmadana et al., 2022), companies are developing CSR orientation practises and principles (Boffo and Patalano, 2020). On the other hand, there are more studies on CSR to strengthen the relationship between corporate transformation toward Industry 4.0 (CTTI 4.0) and financial performance (Alkaraan et al., 2022). Furthermore, novel business models (such as the EFQM 2020 model) foster alignment and connections between purpose, strategy, and results while aligning with the United Nations Sustainable Development Goals (SDGs) and encompassing digital transformation. These models aim to deliver performance and ensure transformation, create lasting value for its key stakeholders and achieve remarkable results (Fonseca, 2022). In line with these emerging trends, in the second part of this study, the focus was on the effects of business performance indicators on CSR orientation. The general model of multiple linear regressions is significantly useful for explaining the CSR strategy for the dependent variable, thus concluding that there was a statistically significant effect of business performance indicators on the orientation towards CSR principles. Profitability, market value, and growth potential positively influenced CSR orientation positively in both periods, but in the COVID-19 period, intangibles negatively influenced it. Regression models differ in these two periods, and the MV coefficient is statistically different (Puška et al., 2018). Thus, it can be concluded that the COVID-19 pandemic affected CSR strategies (Díaz et al., 2021).

6. CONCLUSION

Although statistical data confirmed the negative effects of the COVID-19 pandemic on macroeconomic indicators, the findings of this research present a different view related to the microeconomic approach. The results show that there were no changes in business performance indicators before and during the COVID-19 pandemic for companies listed on the Warsaw Stock Exchange. The study also does not show differences in business performance indicators regardless of their membership in the Respect Index. The only exception was found in CSR companies that reported a significantly lower profit margin during the COVID-19 pandemic. These results show the resilience of Polish companies to the consequences of the COVID-19 pandemic.

The results presented show that business performance indicators, particularly ROE, Market Value, Tobin's Q and Intangible Assets, affect the level of application of environmental, social and governance principles. Profitability, Market Value, and growth potential as measured by TQ influenced the orientation of CSR in a positive way, showing that social responsibility is related to better-performing companies. Intangibles negatively affected the orientation of CSR during the COVID-19 period, and it can be concluded that during the health crisis, innovative companies stopped thinking about social responsibility. Although there was no difference in performance between periods, the market value (MV) changed its impact on CSR. Given the importance of these principles for long-term sustainable development, government policies should aim to preserve the ability of companies to achieve and maintain positive business performance.

Future research will discuss on the possible influence of COVID-19 in different industries regarding CSR. Sectors that have been significantly impacted by the sharp decreases in demand and supply shortages include Transportation (airlines, cruise operators, Shipping companies),

Tourism (Hotels, Restaurants, Hospitality), Oil, Gas, Mining, and Metals (with a decrease in demand and commodity prices), Manufacturers (e.g., those with complex supply chains such as Automotive and Technology) and Retailers, and they will be surveyed to add value to the knowledge about CSR on a micro level related to corporate finance.

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