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**The Financial Performance of the Automotive Industry
during the Semiconductor Crisis
from CSR, GRI and UNGC Perspectives**

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Abstract

The global semiconductor crisis, as a consequence of the SARS-CoV-2 pandemic, highlights a difficult period for the Automotive industry. According to the literature review, CSR promotes social good beyond the law and the interests of a firm and its shareholders, while the GRI and UNGC provide guidance to companies regarding the reporting of sustainability performance. This paper aims to identify the influence of Corporate Social Responsibility, Global Reporting Initiatives, and United Nations Global Compact on financial performance in the Automotive industry for 2021. In order to achieve the research purpose, a quantitative method was performed through statistical and econometric analysis. The econometric analysis is based on two regression equations, for CSR and GRI-UNGC, the data being collected from Thomson Reuters database. In the sample for the CSR model, there are 198 companies, while for the GRI-UNGC model, the total number is 213. This research aims to assess the influence of CSR, GRI and UNGC on the financial performance of companies in the Automotive industry. The results of the CSR model emphasise that there is a positive influence of the CSR Sustainability Committee, the CSR Sustainability External Audit, and the CSR Sustainability Report Global Activities on the financial performance. For the GRI-UNGC model, a positive influence has been found on the GRI Reporting Guidelines. On the other hand, negative influences have been identified on the CSR Sustainability Reporting and the Global Compact Signatory. This study fulfils the gap in research on the semiconductor crisis in relation to sustainability reporting, and it is useful in developing future research perspectives.

Keywords: CSR, GRI-UNGC, semiconductor crisis, sustainability, financial performance.

JEL Classification: L25, M41, Q56.

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1. Introduction

Standardisation of sustainability reporting preoccupied accounting researchers in the last decades (Albu et al., 2016), as well as the economic actors since new crises appeared. Therefore, both parties focused on analysing standards, initiatives, and tools for sustainability reporting. The perspectives of Corporate Social Responsibility (CSR), Global Reporting Initiative (GRI), and the United Nations Global Compact (UNGC) are used for reporting relevant sustainability information (Adams et al., 2022). Nowadays, the Automotive industry is facing a crisis due to the semiconductor shortage caused by the pandemic (Mohammad et al., 2022). This has resulted in significant earnings losses and delayed vehicle deliveries (Marinova, Bitri, 2021).

Despite the numerous articles published on CSR, GRI, and UNGC topics, such as Adams et al. (2022), Bețianu (2010), and Halkos and Nomikos (2021), to our knowledge, there is a gap in the investigation of influence on the above-mentioned topics on companies' financial performance in the context of semiconductor crisis. This study aims to identify the influence of CSR, GRI, and UNGC on financial performance in the Automotive industry for 2021, in the context of the global semiconductor crisis triggered by the SARS-CoV-2 pandemic. In order to achieve the research purpose, a quantitative method was performed through statistical and econometric analysis. The econometric analysis is based on two regression equations, for CSR and GRI-UNGC, the data being collected from Thomson Reuters database.

The findings of the CSR model highlight that the financial performance is positively impacted by the CSR Sustainability Committee, the CSR Sustainability External Audit, and the CSR Sustainability Report Global Activities. However, CSR Sustainability Reporting has negative effects. Furthermore, the GRI-UNGC model highlights a positive influence of the GRI Reporting Guidelines, while the negative influence of the Global Compact Signatory is found.

This paper is organised as follows: Section 2 includes an overview of the CSR, GRI, and UNGC within the area of sustainability. In Section 3 the aims of the research are presented. Section 4 presents the applied methodology, while the research findings of this paper are covered in Section 5 and the conclusions in Section 6.

2. Problem Statement

CSR emerged in 1970 with an initial focus on social issues, while in 1980 it extended its focus to environmental problems (Sun et al., 2022). Since 1990, it has been used to assess, manage, and govern a company's responsibilities to society and the environment (Christensen et al., 2021).

GRI is an NGO composed of businesses' investors, environmental researchers, and accounting representatives established in 1997. It became an independent organisation in 2002 and its aim is to ensure the quality of sustainability performance reports (Bețianu, 2010; Halkos, Nomikos, 2021). It developed a set of continuously

updated different standards, such as economic disclosures, market presence, labour, or materiality disclosures.

There are many sustainability reporting frameworks used such as the International Integrated Reporting Council, Sustainability Standards Board and World Business Council for Sustainable Development, but most notably ones are GRI and UNGC (Subramaniam, 2023). GRI is the best known and most dominant sustainability report framework used by businesses worldwide (Giannarakis et al., 2022).

The GRI standards are classified into three pillars: universal standards, sector standards, and topic-related standards. Adams et al. (2022) suggest that these standards are essential for reporting relevant information on materiality disclosures. GRI has established a strategic partnership with UNGC since 2010. This partnership developed a guide called "Making The Connection" that contains universal principles based on the GRI guidelines. Both initiatives are different reporting tools for Sustainable Development Goals (SDGs) (UNGC, 2010).

The UNGC is presented as a voluntary initiative, a self-regulatory agreement that empowers organisations to supervise their social activity (Orzes et al., 2020). UNGC is a policy tool, while GRI is a reporting framework. In 2010, UNGC announced and signed an agreement to align its work to GRI in advancing corporate responsibility and transparency (Rasche, 2009). This agreement allows companies to use the GRI guidelines to meet the mandatory annual disclosure requirement. This partnership set 17 Sustainable Development Goals (SDG), aimed at providing a clear roadmap to corporate sustainability (UNGC, 2010).

A new crisis generated by the SARS-CoV-2 pandemic has been observed in the Automotive industry. The semiconductor crisis had a big impact on companies that are closely connected to the semiconductor industry (Mohammad et al., 2022). Between 2020 and 2023, earnings lost by billions of dollars were a blow to automakers, while lack of supply prevented the Automotive industry from delivering its vehicles on time (Marinova, Bitri, 2021). Therefore, the originality of this study is reflected in the analysis of companies' financial performance in the Automotive industry during the semiconductor crisis.

3. Aims of the Research

This paper analyses the financial performance of the Automotive industry during the semiconductor crisis from CSR, GRI, and UNGC perspectives. The lack of clear methodologies for reporting non-financial information, and the pressure to report was observed in the Automotive industry in a study conducted by Perello-Marin (2022). The purpose of this research is to determine how the financial performance of the Automotive industry in 2021 is affected by CSR, GRI, and UNGC, considering the global semiconductor crisis caused by the SARS-CoV-2 pandemic.

Based on the literature review, two research hypotheses were formulated: (H1) The financial performance of the Automotive industry companies is influenced by CSR reporting in a crisis context, respectively, (H2) The financial performance of

the Automotive industry companies is influenced by GRI and commission to the UNGC principles in a crisis context.

4. Research Methods

From a methodological point of view, the financial performance of the Automotive industry during the semiconductor crisis is based on quantitative research performed through descriptive statistics and two econometric models. The scope of this research is to identify the influence of CSR, GRI, and UNGC on financial performance in the Automotive industry for 2021.

In this section, the following elements are presented: the sample data, the variables included in the analysis, followed by the econometric models.

4.1 Sample Data

The database size for the analysis of the influence of CSR, GRI, and UNGC on the financial performance in the Automotive industry initially totaled 198 (CSR model) and 213 (GRI-UNGC model) of observations. Considering the missing data, the following number of companies was removed: 5 from the CSR model and 17 from the GRI-UNGC model. To avoid distortion of the regression results, the outliers of the variables, 21 (CSR model) and 21 (GRI-UNGC model), were data trimmed from the database using the Interquartile Range method (Dash et al., 2023). The final statistical sample consists of 172 companies for the CSR model, and 175 companies for the GRI-UNGC model, which is detailed in Table 1.

Table 1. Final Sample Data

	CSR model		GRI-UNGC model	
Number of Companies	172		175	
Number of Countries	29		29	
Number of Observations by Region				
Africa	2	1.16%	2	1.14%
Asia	41	23.84%	41	23.43%
Americas	92	53.49%	92	52.57%
Europe	34	19.77%	37	21.14%
Oceania	3	1.74%	3	1.72%

Source: Refinitiv Eikon, 2023.

The secondary data source for this quantitative study was the Refinitiv Eikon (Thomson Reuters) database, which has also been used in other papers on sustainability field (Koseoglu et al., 2021; Nicolo et al., 2023). The analysis was carried out in the year 2021, taking into account the availability of the most recent data, considering the peak of the pandemic period (Ramani et al., 2022) and the increased demand for semiconductor manufacturing (White, 2021).

4.2 Variables

The models are based on a dependent variable that quantifies the financial performance of the companies analysed. Given that traditional rates of return are calculated based on net profit, in order to avoid differences in the tax systems of the countries, this study uses the Returns on Gross Profits-to-Assets as a dependent variable. This variable was used in studies performed by Kenchington et al. (2019) and Novy-Marx (2013).

Regarding the independent variables, the CSR model used four (CSR_SC, CSR_SEA, CSR_SRGA, and CSR_SR), while the GRI-UNGC model had two independent variables (GRI_RG, GCS) specific to sustainable development.

Furthermore, the size and operational efficiency of companies are used as control variables for the linear regressions. Detailed information on the description, sources, and references of the variables chosen for sustainability research during the global semiconductor crisis is found in Table 2.

Table 2. Variable definitions, sources, and references

	Definition	Source	Reference
Dependent variables			
RGPA: Returns on Gross Profits-to-Assets	Gross profit for the year divided by total assets value.	Refinitiv Eikon	(Kenchington et al., 2019; Novy-Marx, 2013)
Independent variables			
CSR_SC: CSR Sustainability Committee (0/1)	The company has a CSR committee or team (=1) or not (= 0).	Refinitiv Eikon	(Nicolo et al., 2023)
CSR_SEA: CSR Sustainability External Audit (0/1)	The company has an external auditor of its CSR/H&S/Sustainability report (=1) or not (= 0).		(Koseoglu et al., 2021)
CSR_SRGA: CSR Sustainability Report Global Activities (0/1)	The company's extra-financial report takes into account the global activities of the company (=1) or not (= 0).		(Koseoglu et al., 2021)
CSR_SR: CSR Sustainability Reporting (0/1)	The company publishes a separate CSR/H&S/Sustainability report or publishes a section in its annual report on CSR/H&S/Sustainability (=1) or not (= 0).		(Koseoglu et al., 2021)
GRI_RG: GRI Report Guidelines (0/1)	The company's CSR report is published in accordance with the GRI guidelines (=1) or not (= 0).		(Koseoglu et al., 2021; Mihai, Aleca, 2023)
GCS: Global Compact Signatory (0/1)	The company has signed the <i>United Nations Global Compact</i> which is a non-binding United Nations Pact to encourage businesses worldwide to adopt sustainable and socially responsible policies, and to report on their implementation (=1) or not (= 0).		(Anita et al., 2023; Ortas et al., 2015)
Control variables			
Ln(TA): Size	Logarithm of Total Assets	Refinitiv Eikon	(Koseoglu et al., 2021; Nicolo et al., 2023)
OE: Operational efficiency	Operating costs divided by total operating income		(Caby et al., 2022)

Source: Authors' own research.

In order to establish the influence exerted by the independent variables, the following two models were run to estimate the outcomes for the Automotive industry:

$$\text{CSR model: } \text{RGPA}_i = \beta_0 + \beta_1 \text{ CSR_SC}_i + \beta_2 \text{ CSR_SE}_i + \beta_3 \text{ CSR_SRGA}_i + \beta_4 \text{ CSR_SR}_i + \beta_5 \text{ Ln(TA)}_i + \beta_6 \text{ OE}_i + \epsilon_i \quad (1)$$

$$\text{GRI-UNGC model: } \text{RGPA}_i = \beta_0 + \beta_1 \text{ GRI_RG}_i + \beta_2 \text{ GCS}_i + \beta_3 \text{ Ln(TA)}_i + \beta_4 \text{ OE}_i + \epsilon_i \quad (2),$$

where RGPA_i is the dependent variable on the financial performance of the companies included in the econometric analysis. CSR_SC_i, CSR_SE_i, CSR_SRGA_i, CSR_SR_i, GRI_RG_i and GCS_i are independent variables specific to sustainable development, while Ln(TA)_i and OE_i represent control variables on companies' size and operational efficiency, and ε_i is the error. To validate econometric models, multifactorial linear regressions was performed using the SPSS Statistics software.

5. Findings

The main statistical indicators are calculated for all the variables included in the analysis, using descriptive statistics, before performing the regression analysis. In Table 3 the descriptive statistics of the dependent variable, as well as those of the independent and control variables, considering the total number of valid observations after removing outliers, are presented.

Table 3. Descriptive statistics

Variables	N	Mean	St. Dev	Min	Q1	Q2	Q3	Max
Dependent variables								
RGPA_CSR model	172	0.163	0.087	-0.0001	0.099	0.138	0.217	0.422
RGPA_GRI-UNGC model	175	0.164	0.088	-0.0001	0.100	0.139	0.219	0.422
Independent variables								
CSR_SC	172	0.80	0.404	0	1	1	1	1
CSR_SEA	172	0.38	0.488	0	0	0	1	1
CSR_SRGA	172	0.72	0.450	0	0	1	1	1
CSR_SR	172	0.87	0.335	0	1	1	1	1
GRI_RG	175	0.56	0.498	0	0	1	1	1
GCS	175	0.15	0.362	0	0	0	0	1
Control variables								
Ln(TA)_CSR model	172	22.233	1.817	17.900	20.912	22.190	23.465	26.990
Ln(TA)_GRI-UNGC model	175	22.253	1.817	17.902	20.990	22.190	23.490	26.994
OE_CSR model	172	0.805	0.094	0.490	0.763	0.825	0.873	1.000
OE_GRI-UNGC model	175	0.803	0.097	0.487	0.750	0.820	0.870	1.000

The N is total number of valid observations after data trimming outliers. The Q1, Q2, and Q3 are 25%, 50% (median), and 75% percentiles.

Source: Authors' own research, using SPSS Statistics.

A RGPA of 16.3% (CSR model) and 16.4% (GRI-UNGC model) is observed for companies in the Automotive industry. Also, the operational efficiency (operating

costs divided by total operating income) of the companies included in the sample is 80.5 % (CSR model), respectively, 80.3 % (GRI-UNGC model). All the operational efficiency indicators reported by companies in the Automotive industry are positive, which suggests revenues are higher than the operational costs for the entire sample.

It is noticed that over 70 % of companies in the Automotive industry have taken steps to address CSR concerns. These include forming a dedicated CSR committee or team, creating an extra-financial report that covers their global operations, publishing a distinct CSR/H&S/Sustainability report, or incorporating a section on CSR/H&S/Sustainability in their annual reports. On the other hand, a finding is related to the existence of an external auditor on the company's CSR / H&S / Sustainability report, where only 38 % of the sample applied this measure. CSR was also measured using dummy variables by Koseoglu et al. (2021) and Nicolo et al. (2023). For example, Koseoglu et al. (2021) stated that 49.42 % of selected companies prepared CSR reports, and 30.97 % implemented external audits of their reports. Nicolo et al. (2023) presented that 69.20 % of the analysed companies organised a CSR committee or team.

Based on the findings, the mean results for GRI_RG and GCS could be compared, and the Automotive industry tendency to report according to GRI Guidelines (56 %) is highlighted, while a small number of companies (15 %) commit to the United Nations Global Compact. Moreover, Koseoglu et al. (2021) found that only 48.46% of the companies which carry out activities in the Hospitality and Tourism industry, analysed for the period between 2012-2018, prepare the CSR report as a result of adopting the GRI framework.

The results of the linear parametric regressions used to define the valid and statistically significant econometric models are presented in Table 4. The validity of the regression models is supported by the F-Test, which registers a significant threshold lower than 0.01, in the case of both models. Therefore, there is sufficient evidence to state with a probability of 99 % that the econometric models are statistically valid.

The intensity of the link between the variables is assessed based on the correlation ratio (R), highlighting there is a strong association between the variables ($R > 0.6$). Moreover, the R Square indicator emphasises that the variability of the dependent variable (RGPA) is explained by the independent variables as follows: 52.9 % for the CSR model and 52.3 % for the GRI-UNGC model.

Table 4. Regressions Results

Variables	CSR model	GRI-UNGC model	Statistics VIF	
			CSR model	GRI-UNGC model
CSR_SC	0.029**		1.494	
CSR_SEA	0.022**		1.358	
CSR_SRGA	0.015		1.795	
CSR_SR	-0.030		2.479	
GRI_RG		0.010		1.201
GCS		-0.001		1.102
Ln(TA)	-0.013***	-0.010***	1.484	1.274
OE	-0.575***	-0.616***	1.112	1.015

Variables	CSR model	GRI-UNGC model	Statistics VIF	
			CSR model	GRI-UNGC model
R	0.739	0.730		
R Square	0.546	0.534		
Adjusted R Square	0.529	0.523		
F test	33.055***	48.626***		
Observations	172	175		

Note. Dependent variables: *RGPA_CSR model*, *RGPA_UNGC model*

***, **, * indicate statistical significance at levels of 1, 5, and 10%, respectively.

Source: Authors' own research, using SPSS Statistics.

The collinearity statistics analysis was interpreted based on the Variance Inflation Factor (VIF) values, similarly to Baker et al. (2022) coefficient interpretation. The results of this study show that the independent variables are not correlated. The VIF measures the multicollinearity that could exist between the variables included in the regression model. If a correlation is identified between more independent variables, the results may be skewed. Based on the regression analysis performed in this research, the value of the VIF is around 1 for all variables. This suggests that independent variables are not correlated, which ensures the validity of the analysis.

Considering the results of the developed econometric models, it is concluded that the financial performance of companies in the Automotive industry is positively and statistically significantly influenced by CSR (H1 is accepted). However, GRI and the UNGC principles do not have a statistically significant influence on the RGPA recorded by the companies (H2 is rejected). The findings for the CSR model and the GRI-UNGC model are based on previous research (Fuente et al., 2017; Koseoglu et al., 2021; Mihai, Aleca, 2023; Nicolo et al., 2023).

5.1 Financial Performance and CSR Reporting

The results of the CSR model emphasise that the existence of a CSR committee or team, as well as external auditing of the CSR / H&S / Sustainability report positively and statistically significantly influence the financial performance of companies in the Automotive industry. Furthermore, the CSR model is complemented by the negative and statistically significant influence of the size and operational efficiency of the companies included in the sample on RGPA. It is worth noting that the preparation of the extra-financial report taking into account the company's global activities, as well as the publication of a separate CSR / H&S/ Sustainability report or publishing a section in its annual report on CSR / H&S / Sustainability do not significantly influence the financial performance of companies in Automotive industry.

The negative influence exerted by publishing the CSR/H&S/Sustainability report on the financial performance of companies in the Automotive industry suggests that the related costs to the preparation of the report are higher than the post-publication benefits. Similarly, Ruan and Liu (2021) concluded that reporting ESG factors imposes costs that negatively affect companies' financial performance.

5.2 Financial Performance, GRI Standards and UNGC Principles

The evolution of RGPA is directly proportional to the evolution of GRI_RG, which highlights that financial performance of companies in the Automotive industry is positively influenced by CSR reporting in accordance with GRI guidelines. The other three variables (GCS, size, and operational efficiency) are negatively correlated with RGPA, as they are considered to evolve inversely proportionally. Specifically, these results suggest that the variable size and operational efficiency are the only statistically significant.

6. Conclusions

This research analysed the influence of CSR, GRI-UNGC on financial performance in the Automotive industry using a quantitative approach through statistical analysis and econometric models in the context of the semiconductor crisis. The econometric models used in the study provide valuable information on CSR, GRI-UNGC, and the financial performance in the Automotive industry. The literature review and the aims of the research have exposed the global semiconductor crisis, which has created a difficult period for the Automotive industry.

The first hypothesis (H1: The financial performance of the Automotive industry companies is influenced by CSR reporting in a crisis context) is validated through the first econometric model. The companies in the Automotive industry that focus on sustainability reporting, through the organisation of a CSR committee or team, and external auditing of the CSR / H&S / Sustainability report, lead to financial performance.

To test the second hypothesis (H2: The financial performance of the Automotive industry companies is influenced by GRI and commission to the UNGC principles in a crisis context), the analysis is performed based on GRI and UNGC variables. Although the findings of the GRI-UNGC model conclude there is no influence exerted by independent variables on the financial performance, the relationship between CSR, GRI and UNGC emphasises the idea that the preparation and publication of a CSR report, in accordance with GRI standards, determines the financial performance of companies in the Automotive industry. These arguments are justified by the first model results given the fact that the report is published in accordance with the GRI framework, and it is prepared by a CSR committee or team, also being externally audited.

This research is relevant because it provides opportunities for progress in the Automotive industry, which faces a challenging era. A business recommendation for the companies in this industry may be to start creating sustainability reports. The scarcity of the data represented a limitation of this paper. Further studies might include an analysis of other industries affected by the semiconductor crisis and an investigation of sustainable practices or strategies.

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References

- [1] Adams, C. A., Alhamood, A. M., He, X., Tian, J., Wang, L., Wang, Y. (2022). *The development and implementation of GRI standards: practice and policy issues*, Retrieved from <https://drCarolAdams.net/the-development-and-implementation-of-gri-standards-practice-and-policy-issues/>.
- [2] Albu, C. N., Balsari, C., Krasodomska, J. (2016). Introduction to the Special issue on Corporate Social Reporting in Central and Eastern Europe, *Accounting and Management Information Systems*, 15(2), 193-205.
- [3] Anita, M., Shveta, S., Surendra, S. Y., Arvind, M. (2023). When do ESG controversies reduce firm value in India?, *Global Finance Journal*, 55, 100809, 1-18.
- [4] Baker, H.K., Kumar, S., Goyal, K., Gupta P. (2023). International journal of finance and economics: A bibliometric overview, *International Journal of Finance & Economics*, 28(1), 9-46.
- [5] Bețianu, L. (2010). Indicators of the Global Reporting Initiative Regarding Sustainable Development, *Annales Universitatis Apulensis Series Oeconomica*, 12(1), 15-24.
- [6] Caby, J., Ziane, Y., Lamarque, E. (2022). The impact of climate change management on banks profitability, *Journal of Business Research*, 142(C), 412-422.
- [7] Christensen, H.B., Hail, L., Leuz, C. (2021). Mandatory CSR and sustainability reporting economic analysis and literature review, *Review of Accounting Studies*, 26, 1176-1248.
- [8] Dash, C.S.K., Behera, A.K., Dehuri, S., Ghosh, A. (2023). An outliers detection and elimination framework in classification task of data mining, *Decision Analytics Journal*, 6, 1-8.
- [9] Fuente, J.A., García-Sánchez, I.M., Lozano, M.B. (2017). The role of the board of directors in the adoption of GRI guidelines for the disclosure of CSR information, *Journal of Cleaner Production*, 141, 737-750.
- [10] Giannarakis, G., Andronikidis, A., Zopounidis, C., Sariannidis, N., Tsagarakis, K.P. (2022). Determinants of Global Reporting Initiative report: A comparative study between USA and European companies, *Sustainable Production and Consumption*, 35, 376-387.
- [11] Halkos, G., Nomikos, S. (2021). Corporate social responsibility: Trends in global reporting initiative standards, *Economic Analysis and Policy*, 69(1), 106-117.
- [12] Kenchington, D., Wan, C., Yüksel, H.Z. (2019). Gross profitability and mutual fund performance, *Journal of Banking and Finance*, 104(C), 31-49.
- [13] Koseoglu, M.A., Uyar, A., Kilic, M., Kuzey, C., Karaman, A.S. (2021). Exploring the connections among CSR performance, reporting, and external assurance: Evidence from the hospitality and tourism industry, *International Journal of Hospitality Management*, 94(4), 1-19.

- [14] Marinova, G.I., Bitri, A.K. (2021). *Challenges and opportunities for semiconductor and electronic design automation industry in post Covid-19 years*, Retrieved from <https://iopscience.iop.org/article/10.1088/1757899X/1208/1/012036/pdf>.
- [15] Mihai, F., Aleca, O.E. (2023). Sustainability Reporting Based on GRI Standards within Organizations in Romania, *Electronics*, 12(3), 690, 1-21.
- [16] Mohammad, W., Elomri, A., Kerbache, L. (2022). The Global Semiconductor Chip Shortage: Causes, Implications, and Potential Remedies, *IFAC PapersOnLine*, 55(10), 476-483.
- [17] Nicolo, G., Zampone, G., Sannino, G., Tiron-Tudor, A. (2023). Worldwide evidence of corporate governance influence on ESG disclosure in the utilities sector, *Utilities Policy*, 82, 1-14.
- [18] Novy-Marx, R. (2013). The other side of value: The gross profitability premium, *Journal of Financial Economics*, 108(1), 1-28.
- [19] Ortas, E., Álvarez, I., Garayar, A. (2015). The Environmental, Social, Governance, and Financial Performance Effects on Companies that Adopt the United Nations Global Compact, *Sustainability*, 7(2), 1932-1956.
- [20] Orzes, G., Moretto, A.M., Moro, M., Rossi, M., Sartor, M., Caniato, F., Nassimbeni, G. (2020). The impact of the United Nations global compact on firm performance: A longitudinal analysis, *International Journal of Production Economics*, 227, 1-13.
- [21] Perello-Marin, M.R., Rodriguez, R., Alfaro-Saiz, J.J. (2022). Analysing GRI reports for the disclosure of SDG contribution in European car manufacturers, *Technological Forecasting & Social Change*, 181(4), 1-10.
- [22] Ramani, V., Ghosh, D., Sodhi, M.S. (2022). Understanding systemic disruption from the COVID-19-induced semiconductor shortage for the auto industry, *Omega*, 113.
- [23] Rasche, A. (2009). "A Necessary Supplement" What the United Nations Global Compact Is and Is Not, *Business & Society*, 48(4), 511-537.
- [24] Ruan, L., Liu, H. (2021). Environmental, Social, Governance Activities and Firm Performance: Evidence from China, *Sustainability*, 13, 767.
- [25] Subramaniam, N., Akbar, S., Situ H., Ji, S., Parikh, N. (2023). Sustainable development goal reporting: Contrasting effects of institutional and organizational factors, *Journal of Cleaner Production*, 411, 1-14.
- [26] Sun, Y., Xu, C., Li, H., Cao, Y. (2022). What drives the innovation in corporate social responsibility (CSR) disclosures? An integrated reporting perspective from China, *Journal of Innovation & Knowledge*, 7(4), 1-27.
- [27] UNGC (2010). *GRI and UN Global Compact Forge New Alliance*, Retrieved from <https://unglobalcompact.org/news/50-06-24-2010>.
- [28] White, A. (2021). *Report shows U.S. automakers bearing brunt of chip shortage in North America*, Retrieved from <https://www.caranddriver.com/news/a36519857/chip-shortage-aut-production-cuts/worlds-neon-output-chips-clouding-outlook-2022-03-11/>.