



The regulatory role of sustainable product design media and environmental performance in the impact of the Covid-19 epidemic on corporate sustainability: an application in Turkey

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Abstract

This research aims to investigate the effect of the COVID-19 epidemic, which entered the world agenda in 2019 and affected the whole world, on the corporate sustainability of businesses. The mediating effect of sustainable supply on this effect and the regulatory effect of environmental performance were investigated. The research was conducted among 235 businesses operating in Turkey. The data obtained using the survey method were analyzed in SPSS and AMOS analysis programs. As a result of the analyses obtained, it was determined that the COVID-19 epidemic significantly affected the corporate sustainability of the enterprises and that the environmental performance of the enterprises was a regulatory effect, together with the mediation of sustainable supply. It is understood day by day that COVID-19 negatively affects the economies of the countries. However, despite these negative effects; It is expected that the results of this research will contribute to the literature with a significant effect on the institutional sustainability of the COVID-19 epidemic.

Keywords COVID-19 outbreak · Corporate sustainable · Sustainable supply · Environmental performance

1 Introduction

Corporate sustainability is accepted as a fundamental paradigm and solution for establishing a prosperous future for businesses. However, the social sustainability issues and epidemic problems of Covid-19 affected businesses and interrupted sustainable development plans. To date, corporate sustainability frameworks have had a relatively narrow view of this paradigm. This study aims to identify the effects on corporate sustainability while providing a framework to enable more sustainable business practices as a result of the

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COVID-19 pandemic. To fill the gap in the literature, it is aimed to develop a framework by drawing attention to important sustainability indicators.

Institutional sustainability is the potential to meet the needs of the present without undermining the ability of future generations to meet their needs (Brundtland, 1987). Corporate sustainability has become an important alternative to business as usual, which seems to focus on short-term productivity with little or no long-term social and environmental impacts (Ikram et al., 2020). Despite the COVID-19 pandemic, the business environment is changing rapidly, guided by social, economic, and ecological developments (Initiative, 2018). For these and other related reasons, businesses have become increasingly interested in corporate sustainability. While managers realize that sustainability integration is an opportunity, they rarely take it into account in their tactical management decisions (Gonzalez-Perez & Leonard, 2015). Considering sustainability in corporate strategy and processes has become a promising way to cope with the changing business environment and increasing pressure for social sustainability performance. As sustainability-related decisions are made at a strategic level, there is increasing scientific interest in the field of strategic management in connection with incorporating sustainability into an enterprise's strategy, vision, change management, and culture (Engert et al., 2016).

Due to the COVID-19 pandemic, the modern world is experiencing a global economic crisis with more than 180 million cases, resulting in more than 4 million deaths affecting over 200 countries as of June 2021 (Worldometers, 2020). Many businesses closed and the unemployment rate rose. According to the World Health Organization, Covid-19 has turned into a unique global crisis and challenges organizations, which ultimately hurts corporate sustainability and sustainable supply (Hakovirta & Denuwara, 2020). Until now, businesses have not had to plan for the Covid-19 outbreak. Moreover, corporate sustainability has been marginalized due to organizations, governments, and society's struggle to survive in times of pandemics. They stated that the COVID-19 outbreak has created new challenges for corporate sustainability, as supply chains and manufacturers have faced negative effects of the pandemic, such as market recession, the bankruptcy of SMEs, the, employee resignations, loss of income. Therefore, we see the post-COVID-19 era as an opportunity for organizations to rethink the change in production, sustainable supply chains, and sustainability strategies. In partial response to the recent and growing call to understand the impacts of Covid-19 on businesses, we conducted this research by contributing to the growing literature on the subject by developing a multidimensional framework for corporate sustainability.

2 Conceptual framework

2.1 COVID-19 outbreak

COVID-19 appeared on the world agenda in December 2019, China's Wuhan, and affected the whole world (Hui et al., 2020). As the spread of the virus expanded in geographical regions, the number of deaths increased (Wu & Mcgoogan, 2020).

It can be spread from person to person through tiny droplets from the nose or mouth that are spread when a person with COVID-19 coughs, sneezes, or exhales. These droplets fall on objects and surfaces around the person. Other people then catch Covid-19 by touching these objects or surfaces and then touching their eyes, nose, or mouth. People can also catch COVID-19 if they breathe in droplets from someone with COVID-19 who

is coughing, sneezing, or exhaling. It is difficult to confirm exact details about the origins and initial spread of Covid-19, but the disease originated in a wholesale market in Wuhan, a city of about 11 million people in eastern China, and some market traders may have contracted the disease after contact with animals at the market.

The impact of the COVID-19 crisis on the global economy has been devastating, threatening national and global growth with the closure of many manufacturing plants and manufacturing facilities, massive disruption of supply chains, reductions in production output, and corporate profitability. Decreased trade in consumer goods from large multinational enterprises and less developed economies has been caused (de Carvalho & Senhoras, 2020). The COVID-19 crisis has had a very negative impact on sectoral economies. Increasing restrictions on the movement of people and curfews in every country of the world have deeply affected the service sector, especially industries that involve physical interactions, such as retail trade, entertainment, and hospitality, leisure, and transportation services.

In addition to the economic effects of the COVID-19 epidemic, we also see the environmental effects. The relationship between the COVID-19 crisis and corporate sustainability can be seen in various ways. Initially, several environmental improvements were identified, including significant reductions in pollution levels and greenhouse gas emissions, dramatic reductions in air travel volume, and restrictions on the movement of people in motor vehicles, following the closure of many power generation plants and factories. Business travel or shopping trips in towns and cities have decreased. However, such improvements will certainly not be sustained if/when the economy improves. For example, we must consider the environmental signals of Inger Anderson, Director of the United Nations Environment Programme, and what they mean for our future and well-being, because Covid-19 is by no means a silver lining for the environment. Visible positive effects are temporary, whether through air quality improvement (Net, 2020).

2.2 Corporate sustainability

Corporate sustainability is the use of the strategies and approaches that businesses take to eliminate the damage they cause to the environment in the production process, for business continuity in the long term (Yavuz, 2010). Institutional sustainability is not enough for businesses to be companies that only produce and create economic value, but they try their best to eliminate or minimize the negative environmental impacts they cause while continuing their normal activities (Hahn & Scheermesser, 2006).

Corporate sustainability has started to gain increasing importance in the business world. Many of the leading players in the retail industry have implemented sustainability programs designed to incorporate environmental, social and, governance issues into their business strategies (Jones et al., 2011). Covid-19 poses several challenges in production sectors. On the one hand, these challenges consist of the need to respond to investors' demands to promote long-term reductions in incorporation emissions and pollution levels, increased use of renewable energy sources, a clearer commitment to waste recycling, and the development of circular economy principles. On the other hand, the COVID-19 outbreak will reduce the availability and access of capital in businesses. The COVID-19 pandemic is forcing retailers across all industries to cut costs and change priorities. This pressure may cause corporate sustainability initiatives to be put on the back burner. It seems unlikely that businesses

will continue to try to reduce their environmental impact in the face of the COVID-19 outbreak (Rachel, 2020).

That Covid-19 is an opportunity to reduce the prevalence of a lifestyle that relies on large outputs of energy and mater, is in the long run, policymakers should work on this, and the COVID-19 pandemic can contribute to a sustainable consumption transition. Such a transition will require major changes in the current business model of the vast majority of businesses in the manufacturing sectors. Currently, neither the majority of businesses in the industries nor their customers seem very enthusiastic about such an opportunity policy-maker sakers advocating such a future (Cohen, 2020).

2.3 Sustainable supply

Widely accepted as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs, sustainability is a dynamic long-term process and poses several challenges for supply chain managers. World Commission on Environment and Development (1987). To ensure sustainability, they must address the interconnected social, environmental, and financial objectives in the supply chain (Mitchell & Walinga, 2017; Raut et al., 2017). Sustainable procurement aims to reduce the negative effects of supply chain operations and improve the social, economic, and environmental performance of organizations (Vargas et al., 2018). Business organizations have also begun to integrate sustainable sourcing as a way to improve their brand image and reputation. In addition, sustainable procurement reduces risks and vulnerabilities such as environmental damage and labor shortages, which can increase business stability and reduce delays and costs in production and distribution processes. However, many businesses in emerging economies today lack the expertise needed to successfully implement and adopt sustainability practices. The main reason for this is that the field of sustainability research is still not well defined, developed, or implemented (Luthra et al., 2017).

Sustainable procurement tools have also been badly affected in a new, far-reaching devastating pandemic known as COVID-19 (Ivanov & Das, 2020; Kilpatrick & Barter, 2020). This epidemic is the most devastating disruption in the last few decades (Remko, 2020). The COVID-19 pandemic is no longer just a global health crisis, but also a crisis in terms of the labor market, sustainable supply, and economy.

Inappropriate monitoring of these challenges leads to serious disturbances in sustainable supply networks and thus societies. These disturbances can cause permanent economic damage. The COVID-19 pandemic has led to a major disruption in many value chains around the world, particularly in sustainable procurement (Govindan et al., 2020).

Looking at the literature; explored operational excellence to improve sustainability (Bag et al., 2020). de Sousa Jabbour et al. (2020) addressed trends and challenges in sustainable supply chains. Gupta et al. (2020) studied sustainability innovation to support policy makers in decision making.

2.4 Environmental performance

Emphasizes that environmental responses to the economic slowdown triggered by the COVID-19 pandemic hurt the environment for people and organizations. (Hallema et al., 2020). Analysis of environmental awareness of water consumption represents an important tool for water efficiency and decision-making procedures, in line with the challenges arising from the scarcity of water resources (Gomez-Lianos et al., 2020).

Zambrano-Monserrate et al. (2020), another important factor is air pollution. The COVID-19 outbreak is between emergency measures and improving air quality, cleaning beaches, es and reducing environmental noise. There is an important relationship (Tahir & Batool, 2020). After the 2009 collapse, global carbon dioxide emissions decreased by 0.3% to limit local transport and industry, bringing improving air quality for the next generation with the Covid-19 Pandemic (Rugani & Caro, 2020). However, there are also negative secondary aspects such as reducing recycling and increasing waste, compromising the pollution of physical spaces, where the greatest reduction of waste and recycling is the negative side effects of Covid-19 (Zambrano-Monserrate et al., 2020).

It reports that population density and climatic conditions may affect COVID-19 cases. (Pirouz et al., 2020). However, he emphasizes that the Coronavirus epidemic has positive environmental consequences, namely significant reductions in air pollution due to the large-scale slowdown in economic activity (Sarkis et al., 2020).

By affecting the ecological balance, the COVID-19 outbreak may reveal an untapped potential for people’s conscious, environmentally conscious and market trends (Sofu & Sofu, 2020). As a result of the Covid-19 outbreak; by offering a small-scale approach to the sustainable use of natural resources, it can lead to self-sufficiency, self-regulation, sustainability and environmental protection.

The positive environmental impacts of the COVID-19 pandemic are likely to be temporary but can serve as an example of changes in society’s lifestyle. (El Zowalaty et al., 2020). It offers a new existing link, where a window of opportunity is opened to accelerate environmental awareness towards broader sustainability transitions after the COVID-19 pandemic (Cohen, 2020; Sarkis et al., 2020).

3 Methods of the research

3.1 Researchmodel and hypotheses

In this section, information about the research model and research model and the hypotheses of the research will be given (Fig. 1).

H1: The perception of COVID-19 has a significant impact on corporate sustainability.

H2: Sustainable supply has a mediating effect on the impact of COVID-19 perception on corporate sustainability.

H3: The perception of COVID-19 has a significant impact on sustainable supply.

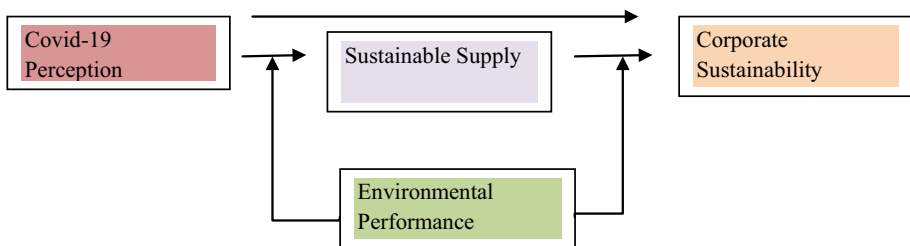


Fig. 1 Model of the research

H4: Sustainable procurement has a significant impact on corporate sustainability.

H5: Environmental performance has a regulatory role in the impact of COVID-19 perception on corporate sustainability.

3.2 Population and sample of the research

350 enterprises are operating in Turkey. Turkey's sized industrial zones. The sample size was calculated as 229 enterprises, taking into account the 1% margin of error within the 99% confidence limit from the population (Sekaran, 1992). In this context, a total of 235 business surveys were conducted randomly by cluster sampling method. Questionnaire application Due to the COVID-19 outbreak, several companies were asked to respond by sending questionnaires on the internet. Some of the businesses were interviewed face to face and asked to answer the questionnaire. 240 forms were returned from the questionnaire forms obtained from the senior managers of the enterprises. 2 of the questionnaire forms were not included in the research due to sloppy filling and 3 due to incomplete filling.

Only 240 top managers of 340 enterprises that constitute the universe of the research accepted to participate in the research and answered the survey questions. Majority of the senior managers who participated in the survey are 88% male ($n=207$), associate degree and undergraduate degree graduates 70% ($n=164$) in terms of education level, 87% of them are over 25 years old ($n=205$) in terms of age., 79% ($n=215$) of the study shows a partial distribution according to years.

Business managers participating in the research in terms of demographics; 12% of them are female ($n=28.2$) and 88% ($n=206.8$) are male, consisting of business managers. In addition, the education level of business managers is 14% ($n=33$) primary education, 16% ($n=37.6$) high school, 45% ($n=105$) associate degree, 25% ($n=58.75$) undergraduate education.. In terms of age range, 13% ($n=30$) are 18–25, 32% ($n=73.6$) are 26–30 years old, 39% ($n=91$) are 31–35 years old, 16% are ($n=37.6$) It consists of the age range of 36 years and above. According to the working years; 9% ($n=21$) less than 1 year, 25% ($n=58.75$) 1–5 years, 22% ($n=51.7$) 6–10 years, 26% ($n=61$) between 11–15 years and 18% ($n=42.3$) of 16 and above.

3.3 Scales of research

In the research, the effect of the COVID-19 perception on corporate sustainability and the mediating effect of sustainable supply in this effect and, the regulatory role of environmental performance were investigated. Goodness-of-fit values for the scales used in the study are given in Table 1. The results regarding the reliability and validity of the scales used in the research are given in each section. KMO and Barlett tests were found to be in accepted standards in all scales. Answers in the scale were used on a 5-point Likert scale (1 = I disagree 5 = I were formed).

COVID-19 perception scale: The scale created to measure the COVID-19 perception of the top managers of the businesses was developed and validated by Arpacı et al. (2020), and the COVID-19 perception scale, which consists of two dimensions (Economic factors and social factors), was used. Questions on this scale worry me about the possibility of under-supply of food due to the causes of the COVID-19 pandemic. The possibility of shortages in cleaning supplies due to the *COVID-19 outbreak worries me. I stock up on food for fear of the Covid-19 outbreak.After the COVID-19outbreakoutbrea't feel comfortable with my materials at home unless I constantly check them. After the COVID-19*

Table 1 Effects of the Covid-19 outbreak on sustainability

	Positive effects	Adverse effects
Effects of Covid-19 on the environment	Sharp reductions in travel-related energy consumption and carbon emissions	Disruption of the clean energy business,
	Instant reduction in electricity consumption,	Disruption of clean energy supply chains,
	The collapse of fossil fuel markets (especially coal, oil and, gas),	The real and significant risk of recovery in consumption accelerated by incentive and improvement packages,
	Immediate reduction in global air pollution	Disruption of off-grid energy markets and eroded progress in energy access programs

pandemic, I feel very anxious when I see people coughing. After the COVID-19 outbreak, I actively avoid people I see sneezing from. After the COVID-19 outbreak, I realized that I was spending a long time cleaning my hands. Fear of falling ill with COVID-19 seriously hinders my social relationships. I cannot prevent my anxiety about catching COVID-19 disease from others. It is two-dimensional in total and consists of 9 expressions. As a result of the reliability analysis conducted by Arpacı et al. (2020), the Cronbach alpha reliability coefficient was determined as 0.80 for economic factors and 0.92 for social factors. The translation of the scale into Turkish was done by experts. The translated scale was translated back into English and its accuracy was tested.

In this study, confirmatory factor analysis was performed to test the structural validity of the scale. As factor loads, it was found to be two-dimensional by the scale of the research. It was determined that the factor loads were between 0.56–89 for economic factors and between 0.57–90 for social factors.

Corporate Sustainability scale: To measure corporate sustainability of enterprises, the scale developed and used by Shashi (2018) in his study titled 'Corporate sustainability orientation, supply chain integration and a causal analysis of SMEs' performance' will be used in the research. The scale consists of four items that aim to measure the orientation of business owners and managers to sustainable procurement. The scale was first translated from English to Turkish by experts. It was translated back into English and compared with the original version of the scale, and it was found to be appropriate. As a result of the reliability analyzes analysis done y Shashi (2018), the Cronbach alpha reliability coefficient was determined as 0.85 for corporate sustainability.

In this study, confirmatory factor analysis was performed to test the structural validity of the scale. It has been determined that factor loads take values between 0.54-0.91 for corporate sustainability.

In addition, factor loadings were controlled by exploratory factor analysis and confirmatory factor analysis. The scale is one-dimensional and consists of 6 expressions. As a result of the factor analysis, the one-dimensional structure of the data was confirmed and it was determined that the factor loads took values between 0.57-0.90. Goodness-of-fit values of the scale are given in Table 1 together with the scales.

*Sustainable Procurement Scale:*The scale, which was made by Shashi (2018) reliability and validity, Shashi (2018) to measure the sustainable supply levels of business executives,

consists of 5 statements. Expressions *Our Company shares its production planning and forecasts with its suppliers during the COVID-19 process. Our business attaches importance to communication with its suppliers during the COVID-19 process. Our business has an integrated order system with suppliers during the COVID-19 process. We share inventory information with its suppliers during the COVID-19 process of our business. Our business is planning its activities with our suppliers during the COVID-19 process.*

English-Turkish and Turkish-English translations of the scale into Turkish were made by experts in the field of Turkish, and exploratory and confirmatory factor analysis was performed by applying it on the pilot and main sample.

In the research, exploratory factor analysis was performed primarily to measure the construct validity of the scale. As a result of the analysis, it was seen that the factor loads, which were compatible with the one-dimensional structure of the scale, took values between 0.52–89. The factor loads of the scale, in which the confirmatory analysis was performed in the Amos package program, took values between 0.54 and 0.91, and the goodness of fit values are given in Table 1.

Environmental Performance Scale: The scale, which was created to measure the environmental performance of the senior managers of the enterprises and whose reliability and validity was made by Shashi (2018), will be used by Shashi (2018). Questions of the scale *Our business is more effective than its competitors in reducing air emissions during the COVID-19 process. Our business makes more efforts than competitors to reduce wastewater during the COVID-19 process. Our business does more than its competitors to reduce its solid waste during the COVID-19 process. Our business makes more efforts than its competitors to reduce the consumption of dangerous/harmful/toxic substances during the COVID-19 process. Our business spends more effort than competitors to reduce environmental accidents during the COVID-19 process. Our business works harder than its competitors for its environmental sensitivity during the COVID-19 process,* it consists of statements. The scale is one-dimensional and consists of 6 statements, and in the reliability analysis conducted by Shashi (2018), the Cronbach alpha coefficient was determined as 91 for environmental performance.

The translation of the scale into Turkish was done by experts. Exploratory and confirmatory factor analysis was carried out by applying the scale expressions on the pilot and main sample by making English-Turkish and Turkish-English translations.

In the research, exploratory factor analysis was first applied to measure the construct validity of the scale. As a result of the analysis, it was seen that the factor loads that were compatible with the one-dimensional structure of the scale took values between 0.49 and 0.90. The factor loads of the scale, in which the confirmatory analysis was performed in the Amos analysis program, took values between 0.50 and 0.89, and the goodness of fit values are given in Table 1.

Amos analysis program was used to determine the results of confirmatory factor analysis. As seen in Table 2 of the confirmatory factor analysis results, RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), GFI (Goodness of Fit Index), AGFI (Adjusted of Goodness Fit Index) values were found to be within acceptable limits.

Table 2 Goodness of fit values of the scales as a result of confirmatory factor analysis

Values	χ^2	<i>df</i>	$CMIN/DF \leq 5$	$GFI \geq .85$	$AGFI \geq .80$	$CFI \geq .90$	$NFI \geq .90$	$TLI \geq .90$	$RMSEA \leq .08$
Covid-19 outbreak	8.6	3	2.93	.93	.89	.92	.94	.92	.06
Corporate Sustainability	8.1	5	.98	.96	.96	.94	.96	.96	.03
Sustainable supply	2.5	2	.95	.92	.93	.91	.93	.91	.07
Environmental performance	2.6	2	1.94	.99	.98	.96	.94	.94	.03

Goodness-of-fit values appear to be compatible with “acceptable” standards

Table 3 Mean, standard deviation, and correlation values of the variables

Variables	Cover	ss	1	2	3	4
Covid-19 perception	3.9	.72	(.87)			
Corporate sustainability	3.8	.82	.05*	(.90)		
Sustainable supply	3.7	.69	.06*	.03**	(.81)	
environmental performance	4.1	.76	.03**	.02**	.04**	(.90)

It is seen that * $p < .05$ and ** $p < .01$

4 Results

The data obtained as a result of the research were made in SPSS 26 program and Amos analysis program.

In the light of the results obtained, at the first stage, the averages, standard deviations, and correlation values of the data obtained regarding the COVID-19 perception, corporate sustainability, sustainable supply, and environmental performance of the senior managers of the enterprise were examined. In the second stage of the analysis, the mediation effect was investigated and data related to its regulatory role were included. The means, standard deviation, on, s, and correlation values obtained as a result of the analysis are given in Table 2.

When the results of the analysis were examined, it was determined that the COVID-19 perception and corporate sustainability were significantly affected and that it had a significant effect on sustainable supply. In addition, it has been determined that sustainability has a significant effect on corporate sustainability.

As a result of the analysis, when the variables are examined separately, there are indications that sustainable supply may have a mediating effect on the effect of the COVID-19 perception on corporate sustainability. An indirect effect of 0.06 was determined in the effect of COVID-19 perception on institutional sustainability.

Within the scope of the analysis, an indirect effect of 0.06 was determined on the effect of the COVID-19 perception on the institutional sustainability and unity for the mediation effect, and based on these findings (Baron & Kenny, 1986; Quoted by Şimşek, 2007) hierarchical regression analysis was used to determine the mediation effect.

A three-stage regression analysis proposed by Baron and Kenny (1986) was conducted to explain the mediating effect of sustainable procurement between the perception of Covid-19 and corporate sustainability. To be able to talk about mediation, three conditions must be met.

1. The independent variable must affect the mediating variable.
2. The independent variable must affect the dependent variable.
3. When the mediator variable is included in the second regression analysis, the regression coefficient of the independent variable on the dependent variable should decrease, while the mediator variable should have a significant effect on the institutional sustainability of the dependent variable.

To determine the intermediation of sustainable supply within the scope of intermediation, hierarchical regression analysis was used. Data related to the mediation test are given in Table 3 in detail.

Table 4 The intermediary role of sustainable procurement in the impact of Covid-19 perception on corporate sustainability

Corporate sustainability				
Test 1-corporate sustainability			Test 2 sustainable supply	
	β	T	β	T
Covid-19 perception	.407**	11.67	.387**	11.38
	$R = .407, R^2 = .164, \text{Straight. } R^2 = .162, F = 136.2, P(F) = 0.00$		$R = .387, R^2 = .136, \text{Straight. } R^2 = .156, F = 131, P(F) = 0.000, \text{Sur edrk Setup } \text{sur}\beta = .448^*, R^2 = 200, \text{Straight. } R^2 = 200, F = 176, P(F) = 0.000$	

The Process Macro extension developed by Hayes was used to test the regulatory role of environmental performance in the impact of Covid-19 perception on corporate sustainability. Detailed data of the analysis are given in Table 4.

The following conclusions have been reached regarding the regulatory role of environmental performance in the impact of COVID-19 perception on corporate sustainability (Table 5).

Environmental performance has a moderating effect on the perception of COVID-19 in those with low regulatory role (-1SD) ($B = 1.02$; $SE = 0.039$; $t = 25$; $p < 0.05$).

The regulatory role of environmental performance has moderate effects on the perception of COVID-19 ($B = 0.99$; $SE = 0.037$; $t = 26$; $p < 0.05$).

Environmental performance has a moderating effect on the perception of covid-19 in those with a high regulatory role (+1SD) ($B = 0.80$; $SE = 0.51$; $t = 15$; $p < 0.05$).

The independent variables used within the scope of the research were obtained in the PROCESS Macro Model output file, which was run by centering (Hayes, 2018). As seen in Fig. 2, the corporate sustainability line ($y = 4.02E-3 + 0.77^*x$) and $\beta = 1.02, 0.99$ and 0.80 values show that the trend is decreasing, as well as the Kovid19 perception line. ($y = 2.72 + 0.25^*x$) and $\beta = 1.02, 0.99$ and 0.80 , it is seen that it tends to decrease. Environmental performance has a regulatory role in the impact of Covid19 perception on corporate sustainability and the H5 hypothesis was supported. As a result; as the Covid-19 perceptions of the enterprises increase, the corporate sustainability of the enterprises increases, as well as the environmental performance of the enterprises (Table 6).

H5: The hypothesis of “environmental performance has a regulatory role in the impact of the COVID-19 perception on corporate sustainability” was accepted.

5 Discussion and conclusion

The impact of the perception of COVID 19 on sustainability seems to be a temporary situation. With the complete disappearance of the COVID 19 perception, businesses will resume their activities and practices will be abandoned at the point of sustainability. For the continuation of positive practices related to sustainability, which is formed with the perception of COVID 19; Sustainability obtained during the COVID 19 epidemic can be ensured permanently by state administrators’ enacting laws supporting sustainable behavior, media and social media managers keeping sustainability on the agenda, consumers

Table 5 The mediation effect of sustainable procurement on the impact of Covid-19 perception on corporate sustainability

Test 3-Corporate sustainability		
	β	<i>T</i>
Covid-19	.266**	8.67
Wall supply	.326	9.189

$R = .506, R^2 = .256$ Straight. $R^2 = .255,$
 $F = 116, P(F) = 0.000$

Sobel Test = 4.61***; $p < 0.001$ Dependent Variable (Covid-19 perception, Independent Variable (institutional sustainability), * $p < 0.05,$ ** $p < 0.01, p < 0.001$ N = 710

Table 6 The regulatory role of environmental performance in the impact of the COVID-19 outbreak on corporate sustainability analysis results

The dependent variable	β	SE	<i>t</i>	<i>p</i>	LLCI	ALSO
Still environmental performance	.0601	.0380	1.581	.1151	-.0148	.1350
Covid-19 perception	1.0473	.0418	25.040	.000	.9649	1.1297
Çev_Per*COVID-19perception	.1885	.534	3.5315	.003	.2937	.0833
	.1209	.0275	4.4054	.000		.0669
Effect	SE	<i>t</i>	<i>p</i>	LLCI	ALSO	
Environmental performance regulation In the corporate sustainable impact of COVID-19 perception of enterprises (M ± SD)						
-1SD	1.0272	.0398	25.8085	.0000	.9487	1.1056
M	.9925	.0374	26.5495	.0000	.9188	1.0662
+1SD	.8000	.0511	15.6482	.0000	.6993	.9008

LL lower limit CI upper limit 5000 sample bootstrap method free of bias error was used. Pre-analysis averages of environmental performance and COVID-19 perception variables were standardized

turning to the products of businesses that produce sustainable products, and avoiding the use of non-sustainable products.

This research was conducted among senior managers of businesses operating in Turkey. Research It has been investigated how the COVID-19 epidemic affects the corporate sustainability of businesses. In addition, it has been investigated whether the environmental performance of enterprises has a regulatory effect with the mediation of sustainable supply in the impact of the COVID-19 epidemic on corporate sustainability.

According to the results obtained in the research; As a result of the literature review, it has been understood that the effect of the COVID-19 epidemic on corporate sustainability is positively significant. In the correlation analysis, it was understood that there was a strong relationship between all three variables. In the first stage of the hierarchical regression analysis, it was determined that the COVID-19 epidemic had a positive and significant effect on Corporate Sustainability. The result obtained is consistent with the results of the literature review. In the second phase of the analysis, it was investigated how the COVID-19 epidemic affected sustainable supply. The result obtained is consistent with the results of the literature review and it has been found to have a positive and significant effect. In the third stage of the research; it has been investigated whether sustainable supply has a

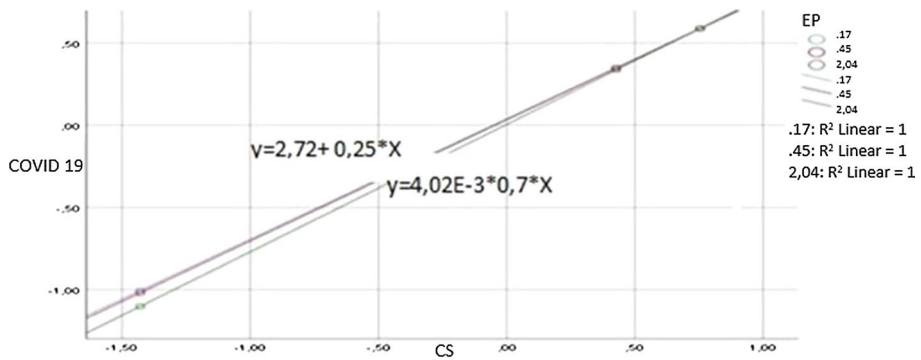


Fig. 2 Regulatory impact of environmental performance on the impact of COVID-19 perception on corporate sustainability

mediating effect on the impact of the COVID-19 epidemic on corporate sustainability. It has been determined that sustainable supply has a mediating effect on the effect of the obtained COVID-19 epidemic on Corporate sustainability. This result; similar to other studies in the literature.

As a result of the data analysis obtained in the research, it was determined that the COVID-19 epidemic had a positive and significant effect on the corporate sustainability of the enterprises. These results are consistent with the results of the study by Sarkis et al. (2020), A Brave new world: Lessons from the COVID-19 outbreak for sustainable supply and transition to manufacturing. In addition, Zhang et al. (2017) are similar to the study he conducted among businesses in China after the 2008 financial crisis. After the 2008 financial crash in China; Regulatory, technological, and cultural changes have occurred to address the shortcomings highlighted by the disaster. For example, China has invested heavily in an a stimulus package that includes a significant focus on renewable energy, resulting in accelerated growth in related industries and reductions in production costs that benefit companies and communities around the world.

In addition, it has been determined in the research that sustainable supply has a mediating effect on the effect of COVID-19 on corporate sustainability. In the literature, studies investigating the intermediary effect of sustainable supply on the institutional sustainable effect of the COVID-19 epidemic could not be reached. However, we see it in the literature in studies investigating the mediation effect of sustainable supply. In the literature, Sharma et al. (2008), Hosseinpour et al. (2015), Shashi (2018) and Fidanoğlu and Aytekin (2021), similar studies were conducted and similar results were obtained.

In addition, according to the results obtained in the research; It has been determined that the impact of the COVID-19 epidemic on corporate sustainability has a positive and meaningful effect on the environmental performance of enterprises. The COVID-19 outbreak has caused economic and social damage in most parts of the world, and although all sectors of the economy have been badly affected, it has had positive effects on the corporate sustainability of businesses. Although the improvement of air quality and pollution during the COVID-19 epidemic is temporary, it is important in terms of the perception of the environmental damage caused by the enterprises after the COVID-19 epidemic. As a result of this research; it has been determined that the COVID-19 epidemic has achieved gains in terms of corporate sustainability as well as financial losses of businesses.

This research contains some limitations. The research does not include businesses operating only in Turkey and other provinces. The same research can be done in different provinces and between different sector groups. The research is expected to provide information to the senior managers of the enterprises in terms of corporate sustainability.

In recent years, the concept of corporate sustainability has provided scholars and practitioners with a framework to explore crises, but such studies have traditionally focused on national economies and local environments. Therefore, it has not only posed a complex set of major global challenges for the COVID-19 pandemic, but also some new perspectives on the relationships between these sectors and sustainability. Looking ahead, we will see what the future holds and how these relationships will play out. On the one hand, there is hope for a return to normalcy, but at the time of this writing, the timescale and extent of such a reversal are very uncertain. However, in such a scenario, businesses could effectively try to pick up where they left off as part of a much broader post-COVID-19 recovery. As capital resources focus on economic recovery, the importance of government and corporate sustainability programs is better understood here during the COVID-19 outbreak. On the other hand, the COVID-19 outbreak has opened a window to some of the relationships between businesses and sustainability, some environmental issues that may be central to the transition to a more sustainable future. signaled changes and proposed some radical changes. This research on the COVID-19 pandemic is expected to offer solutions to corporate sustainability challenges.

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