"COVID-19 pandemic and firm performance in leisure, arts, and hospitality industries: international evidence"

AUTHORS	Felisitas Defung (iD) [R] Michael Hadjaat (iD) Rizky Yudaruddin (iD)

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BUSINESS PERSPECTIVES

Felisitas Defung, Associate Professor, Faculty of Economics and Business, Department of Management, Mulawarman University, Indonesia.

Michael Hadjaat, Associate Professor, Faculty of Economics and Business, Department of Management, Mulawarman University, Indonesia.

Rizky Yudaruddin, Assistant Professor, Faculty of Economics and Business, Department of Management, Mulawarman University, Indonesia. (Corresponding author)

Felisitas Defung (Indonesia), **Michael Hadjaat** (Indonesia), **Rizky Yudaruddin** (Indonesia)

COVID-19 PANDEMIC AND FIRM PERFORMANCE IN LEISURE, ARTS, AND HOSPITALITY INDUSTRIES: INTERNATIONAL EVIDENCE

Abstract

This study analyzes the impact of the COVID-19 pandemic on the performance of 944 Leisure, Arts, and Hospitality companies from 59 countries listed on global stock exchanges between 2018 and 2022. Using Ordinary Least Squares with robust standard errors, the study reveals a consistent and statistically significant negative impact of COVID-19 on the performance of firms. The results highlight the difficulties faced by companies in this industry during the pandemic. In addition, the study investigates the relationship between firm characteristics and company performance during the COVID-19 pandemic, revealing that company size, liquidity, and leverage play crucial roles in influencing firm performance across industries. Larger corporations exhibit greater resiliency, while greater liquidity facilitates better navigation of pandemic-induced obstacles. In contrast, companies with greater leverage experience more pronounced negative effects on their performance, highlighting the significance of debt management during a crisis. Based on these findings, policymakers are strongly urged to provide targeted assistance to Leisure, Arts, and Hospitality industries to address the challenges the pandemic poses effectively. Regulators should encourage the resiliency of larger firms and stress the importance of maintaining higher liquidity levels for financial stability. It is recommended that managers should prudently manage debt to limit pandemic repercussions and boost performance in the face of extraordinary challenges.

Keywords	health crisis, investment, achievement, trading, financial markets, services, portfolio
JEL Classification	E51, L25, G11, G15

INTRODUCTION

The Leisure, Arts, and Hospitality industries play a pivotal role in the global economy, contributing significantly to economic growth and job creation. According to World Travel and Tourism Council (WTTC) data, the Travel and Tourism industry accounted for 10.4% of the world's GDP and generated 330 million jobs in 2019. This diverse sector encompasses various businesses, such as hotels, restaurants, entertainment venues, and cultural events, fostering social interactions, creativity, and relaxation. Not only does it fuel economic prosperity, but it also enriches societies by promoting cultural exchange and providing leisure experiences. However, the outbreak of the COVID-19 pandemic in 2020 brought unprecedented challenges, causing severe disruptions in the industry and highlighting the need for research to understand the pandemic's full impact.

The COVID-19 pandemic profoundly affected the global economy, particularly in sectors heavily reliant on travel and tourism. The International Monetary Fund (IMF) reported that the global econo-

my contracted 3.5% in 2020 due to the pandemic. For the Leisure, Arts, and Hospitality industry, tourist arrivals plummeted by over 65% in the first half of the year, a much more significant decline compared to previous crises like the global financial crisis and the SARS epidemic. During COVID-19, the travel and tourism sector's Gross Domestic Product (GDP) decreased by 49.1 percent. Travel & Tourism's total GDP loss in 2020 was roughly 18 times greater than during the Global Financial Crisis if the absolute GDP loss is compared or 12 times greater if the percentage change is compared. The widespread closures of hotels, restaurants, and theme parks and disruptions in the travel ecosystem led to massive revenue losses and supply chain disruptions. The impact was particularly devastating for countries with a high dependency on tourism. As the industry faces challenges, understanding the pandemic's implications on firm performance is crucial for devising effective strategies to ensure a resilient and sustainable recovery.

Various studies have examined the consequences of the COVID-19 pandemic on the performance of companies in the Leisure, Arts, and Hospitality industries. Researchers have highlighted the significant financial losses and supply chain disruptions faced by businesses in the sector. The pandemic's unprecedented challenges have spotlighted the industry's vulnerability and resilience. Understanding the full impact of COVID-19 on this sector is crucial to facilitating informed decision-making and planning for the future. By comprehending the magnitude of the impact, stakeholders can develop tailored measures to support businesses in the Leisure, Arts, and Hospitality sectors and help them navigate these challenging times.

During the COVID-19 period, the characteristics of individual companies have played a crucial role in influencing their performance in the Leisure, Arts, and Hospitality industries. Companies with strong crisis management capabilities and effective leadership have shown greater resilience in facing the challenges posed by the pandemic. Firms that adapted their business models to changing circumstances, such as embracing digital innovations or exploring new delivery concepts, have been better positioned to mitigate risks and identify new opportunities during the crisis. On the other hand, businesses heavily reliant on traditional models and lacking agility faced more significant struggles. The pandemic has emphasized the importance of adaptability and innovation for companies in this industry to thrive in times of crisis.

As the COVID-19 pandemic continues to evolve, continuous research on firm performance in the Leisure, Arts, and Hospitality industry remains essential. This study can provide valuable insights into the long-term effects of the pandemic on businesses, helping stakeholders to identify patterns and trends that can inform their decision-making strategies. Additionally, understanding the factors that contribute to the resilience of certain companies and the challenges faced by others can guide policymakers and industry leaders in formulating effective support measures. By leveraging this research, stakeholders can work together to facilitate the recovery and resurgence of the Leisure, Arts, and Hospitality sectors in the post-pandemic era.

1. LITERATURE REVIEW

The COVID-19 pandemic has had profound implications for the performance of businesses, as evidenced by various research studies. Numerous researchers have delved into different aspects of firm performance during the pandemic, shedding light on its multifaceted impacts. Wellalage et al. (2022) conducted a study on the relationship between environmental performance and firm financing during COVID-19 outbreaks, focusing on small and medium-sized enterprises (SMEs). Similarly, Hsu and Liao (2022) investigated the connection between corporate governance and stock performance amidst the COVID-19 crisis. Additionally, Kumar and Zbib (2022) delved into the role of managerial ability in firm performance during the crisis. Hu and Zhang (2021) extended the research to a cross-country analysis and revealed evidence of the pandemic's impact on firm per-

formance. Liu et al. (2021) examined the impact of operating flexibility on firm performance, with a specific focus on heavily affected Chinese provinces. Furthermore, Yudaruddin (2022) presented evidence of the negative impact on bank lending.

Researchers have extensively analyzed the impact of the COVID-19 pandemic on the performance of listed firms in various countries, uncovering the significant challenges and effects it has had on corporate performance, including the role of cash and environmental factors. Makni (2023) analyzed the performance of listed firms in the Saudi market during the pandemic, providing insights into the extent of the impact. Zhang and Zheng (2022) examined the effect of COVID-19 on the performance of Chinese listed companies, shedding light on the magnitude of the impact. Ren et al. (2021) contributed new evidence on the pandemic's impact on firm performance and highlighted the challenges faced by companies. Zheng (2022) investigated the role of cash in mitigating the pandemic's impact on corporate performance. Moreover, researchers explored the connection between firm performance and other factors during the pandemic, such as the environmental performance of firms during the COVID-19 crisis, as studied by Guérin and Suntheim (2021), revealing negative effects.

Further research has provided insights into the impact of the pandemic on specific sectors. Zoğal et al. (2020) demonstrated the dramatic effects of the pandemic on the tourism sector, leading to shifts in financial performance and changes in client behavior. Toumi et al. (2022) focused on the MENA healthcare sector, highlighting the unique challenges faced by this industry. Golubeva (2021) presented international evidence from 13 countries, showcasing the performance of firms during the COVID-19 outbreak. Atayah et al. (2022) studied the financial performance of logistics firms in G-20 countries, shedding light on the specific challenges faced by the industry. Ahmad et al. (2021) analyzed the firm-level dynamics in various countries, including the USA, UK, Europe, and Japan. Eckey and Memmel (2022) focused on the impact of the pandemic on family business performance in Germany, while Hsu and Liao (2022) examined the impact of corporate governance on financial reporting quality during the pandem-

ic. Furthermore, Song et al. (2021) found that the COVID-19 pandemic significantly harmed liquidity and increased operational risks in the restaurant sector in the USA.

In addition to firm-level impacts, the COVID-19 pandemic had significant implications for small and medium enterprises (SMEs) and the banking sector. Riadi et al. (2022b) revealed that the adoption of e-commerce before the pandemic significantly benefited small enterprises in Indonesia, providing better market access, increasing sales, and reducing dependence on conventional distribution channels. Achmad et al. (2023) examined the impact of the pandemic on eco-innovation and SME performance, emphasizing the moderating role of environmental collaboration. Lestari et al. (2021) investigated the effect of the pandemic on the performance of small enterprises, comparing those that adopted e-commerce and those that did not, and found that the pandemic influenced the performance of both groups differently.

Numerous studies have examined the overall impact of the COVID-19 pandemic on firms, focusing on various aspects. Ke (2021) found that the cost of equity capital increased for U.S. firms due to the COVID-19 crisis. Huang et al. (2021a) focused on the relationship between firm performance and brand value during the pandemic, highlighting the resilience of leading brands in mitigating stock market collapse. Yang et al. (2021) examined the volatility of Chinese equities during the pandemic, which showed a positive correlation with economic policy uncertainty. Neukirchen et al. (2021) found that the stock market disruptions affected both efficient and inefficient firms, with highly efficient enterprises experiencing greater stock returns. Huynh et al. (2021b) emphasized the significant interconnectedness among major European companies during the early phase of COVID-19. Chebbi et al. (2021) demonstrated the adverse effects of COVID-19 on the liquidity of U.S. stocks. Additionally, Hu and Zhang (2021) explored the impact of COVID-19 on firm performance using data from multiple countries and observed a decline in financial performance.

Jin et al. (2021) examined the impact of COVID-19 on Chinese company innovation, demonstrating the advantages of state-owned corporations over

private ones. Morikawa (2021) analyzed the production of Japanese companies during the onset of the epidemic. Groenewegen et al. (2021) analyzed state aid in the Netherlands at the beginning of 2020, whereas Yong and Laing (2021) evaluated how COVID-19 affected the foreign exposure of U.S. companies. Riadi et al. (2022a) examined the relationship between bank concentration and stability during the pandemic, shedding light on the implications of industry structure. Krammer (2021) provided a theoretical perspective on the adaptation strategies of businesses during the pandemic, echoing similar findings by Jin et al. (2021) on the impact of COVID-19 uncertainty on investment decisions in Chinese companies. Kanno (2021) assessed the risk of COVID-19 contagion in Japanese businesses using a susceptible-infected-recovered-dead model. Maria et al. (2022) focused on the impact of COVID-19 on bank stability and explored the role of bank size and ownership in determining resilience during the crisis. Didier et al. (2021) highlighted the challenges faced by firms in terms of financing and the need to adapt in times of uncertainty. Liu et al. (2021) studied the relationship between operating flexibility and firm performance, particularly in heavily affected Chinese provinces. Guérin and Suntheim (2021) investigated the environmental impact of COVID-19 on businesses, revealing a negative effect on environmental performance. Ren et al. (2021) examined the performance of Chinese enterprises during the COVID-19 outbreak in the first quarter of 2020.

Additionally, Liu et al. (2023) found that tourism and hospitality market stock returns are significantly and robustly impacted by the interconnectedness structure. Aigbedo (2020) discovered that unemployment rates were higher than those of 2008–2009 and certain comparable industries, such as hospitals and manufacturing. Hadi et al. (2022) discovered that the first, second, and COVID-19 vaccination approvals influence the entire connectivity index for hospitality equities. Hospitality equities in France and the United Kingdom were the largest net transmitters of spillover disruptions to other sample stocks. Shapoval et al. (2021) showed that the large-scale negative effects of the COVID-19 pandemic have shaken political systems and responses in numerous nations. Nyagadza et al. (2022) observed that the epidemic

hurt tourism and the hotel business. Tourism and hospitality are primarily impacted by COVID-19 due to globalization issues, technological disruption, and logistical inefficiencies.

Overall, this study aims to examine the impact of the COVID-19 pandemic on the performance of companies in the Hotels and restaurants, Recreational Services, and Tourism sectors listed on stock exchanges around the world. Furthermore, this study specifically examines the impact of COVID-19 on company performance and how the role of company characteristics reduces the negative impact of COVID-19 such as company size, leverage, and liquidity.

2. METHOD

This study draws its data from the Wall Street Journal database. To ensure data validity, this paper began by selecting observations with available data for each variable and subsequently eliminated companies and countries with insufficient data. The data employed in this study is unbalanced panel data. After removing observations with missing control variables, the final sample consisted of 944 companies from 59 countries, spanning the period between 2018 and 2022. The sample is organized by country and company, and the distribution of sample firms by country is presented in Table 1.

Table 1 displays the number of companies and their respective percentages for each sampled nation, providing insights into the representation of companies from different countries in the sample. Notably, the United States, with 130 companies (13.77%), Hong Kong, with 95 companies (9.75%), and Japan, with 144 companies (15.2%), exhibit a significant presence in the sample. These countries' higher representation may reflect their prominence in global business and financial markets. On the other hand, certain countries, such as Austria, Belgium, Botswana, and others, are represented by only one company each in their respective samples, indicating a smaller presence in the dataset.

Table 1 showcases a diverse selection of 59 countries, each contributing varying numbers of companies to the final sample and gives an overview of

Table 1. Distribution of the sample firms by country

Country	Number of companies	%	Country	Number of companies	%	Country	Number of companies	%
Australia	16	1.69	Israel	7	0.74	Poland	9	0.95
Austria	1	0.11	Italy	7	0.74	Portugal	5	0.53
Bangladesh	4	0.42	Jamaica	1	0.11	Saudi Arabia	11	1.17
Belgium	1	0.11	Japan	144	15.25	Singapore	23	2.44
Botswana	1	0.11	Jordan	8	0.85	South Africa	3	0.32
Bulgaria	6	0.64	Kuwait	4	0.42	South Korea	17	1.80
Canada	17	1.80	Lithuania	1	0.11	Spain	4	0.42
Chile	4	0.42	Macedonia	2	0.21	Sri Lanka	30	3.18
China	51	5.40	Malaysia	16	1.69	Sweden	8	0.85
Croatia	14	1.48	Mauritius	3	0.32	Switzerland	3	0.32
Cyprus	8	0.85	Mexico	9	0.95	Taiwan	39	4.13
Denmark	6	0.64	Morocco	1	0.11	Thailand	21	2.22
Egypt	11	1.17	Netherlands	3	0.32	Trinidad and Tobago	1	0.11
Finland	3	0.32	New Zealand	5	0.53	Turkey	13	1.38
France	9	0.95	Nigeria	2	0.21	UAE	2	0.21
Germany	4	0.42	Norway	2	0.21	United Kingdom	50	5.30
Greece	3	0.32	Oman	1	0.11	United States	130	13.77
Hong Kong	92	9.75	Pakistan	1	0.11	Vietnam	7	0.74
India	59	6.25	Palestine	1	0.11	Zimbabwe	1	0.11
Indonesia	33	3.50	Philippines	6	0.64	Total	944	**100**

the sample's geographical distribution and composition. It reveals the multinational nature of the dataset, enabling researchers to explore the impact of the COVID-19 pandemic on firm performance across different regions and economic contexts. The wide range of countries represented in the sample ensures a comprehensive analysis of the pandemic's effects on firms from various parts of the world. Such an expansive dataset offers valuable insights into the challenges and opportunities faced by companies globally during these unprecedented times and underscores the significance of understanding the pandemic's ramifications on a global scale.

Table 2 presents the variables used in this study, categorized as Dependent and Independent variables, along with their respective abbreviations, definitions, and expected signs. The Dependent variables include Return on Asset (ROA), representing net profit as a percentage of total assets, and Return on Equity (ROE), indicating net profit as a percentage of total equity. The Independent variable, COVID-19 (COVID), is a dummy variable with a value of 1 for the first years of the COVID-19 pandemic (2020 and 2021), and 0 otherwise. This variable serves to capture the impact of the pandemic on the study's outcomes. Firm characteristics variables consist of firm size (SIZE), measured as the natural logarithm of total assets, expected to have a potential positive or negative impact. Liquidity (LIQ) is measured as a current asset to total asset (%) and is expected to have a positive influence. Leverage (LEV) measured as

Table 2. Dependent and independent variables

Variables	Abbreviation	Definition and measure	Expected Sign
Dependent			
Return on Asset	ROA	Net profit/ total asset (%)	
Return on Equity	ROE	Net profit/ total equity (%)	
Independent			
COVID-19	COVID	This dummy variable, which has a value of 1 if the first year of the COVID-19 pandemic (2020 & 2021), or 0 otherwise	−
Firms Size	SIZE	Ln total_assets	+/−
Liquidity	LIQ	Current asset to total asset (%)	+
Leverage	LEV	Total debt to total equity (%)	+/−
Cash	CASH	Cash & cash equivalent to total asset (%)	+

total debt to total equity (%), may have both positive and negative effects. Finally, the Cash variable (CASH) represents cash and cash equivalent to total assets (%) and is also expected to have a positive impact on the study's outcomes. These variables will be examined to gain insights into the relationships between the COVID-19 pandemic, firm-specific, and firm performance during the study period.

The association between firm performance, firm characteristics, and COVID-19 was evaluated using a regression analysis. The regression equation is as follows:

$$ROA_{i,t} = \beta_{0,i,t} + \beta_1 COVID_t + \beta_2 SIZE_{i,t} + \\ + \beta_3 LIQ_{i,t} + \beta_4 LEV_{i,t} + \beta_5 CASH_{i,t} + \varepsilon_{i,t}, \tag{1}$$

$$ROE_{i,t} = \beta_{0,i,t} + \beta_1 COVID_t + \beta_2 SIZE_{i,t} + \\ + \beta_3 LIQ_{i,t} + \beta_4 LEV_{i,t} + \beta_5 CASH_{i,t} + \varepsilon_{i,t}, \tag{2}$$

$$ROA_{i,t} = \beta_{0\,i,t} + \beta_1 COVID_t + \beta_2 SIZE_{i,t} + \\ + \beta_6 COVID_t \cdot SIZE_{i,t} + \beta_3 LIQ_{i,t} + \\ + \beta_6 COVID_t \cdot LIQ_{i,t} + \beta_4 LEV_{i,t} + \\ + \beta_6 COVID_t \cdot LEV_{i,t} + \beta_5 CASH_{i,t} + \\ + \beta_6 COVID_t \cdot CASH_{i,t} + \varepsilon_{i,t}, \tag{3}$$

$$ROE_{i,t} = \beta_{0\,i,t} + \beta_1 COVID_t + \beta_2 SIZE_{i,t} + \\ + \beta_6 COVID_t \cdot SIZE_{i,t} + \beta_3 LIQ_{i,t} + \\ + \beta_6 COVID_t \cdot LIQ_{i,t} + \beta_4 LEV_{i,t} + \\ + \beta_6 COVID_t \cdot LEV_{i,t} + \beta_5 CASH_{i,t} + \\ + \beta_6 COVID_t \cdot CASH_{i,t} + \varepsilon_{i,t}, \tag{4}$$

SIZE, LIQ, LEV, and CASH are the company characteristics variables used in this study. The correlation between firm size and performance indicates that larger companies tend to exhibit superior performance. Larger firms typically have greater access to resources, economies of scale, and market power, which can have a positive effect on their financial performance and profitability (Yudaruddin, 2023; Yudaruddin, 2017; Dietrich & Wanzenried, 2010; Lee et al., 2016). Performance and liquidity, defined as a company's ability to satisfy short-term obligations, are closely related.

In general, higher liquidity levels indicate greater financial stability and flexibility, enabling businesses to effectively manage operations and meet financial obligations. Enhanced liquidity is frequently correlated with improved performance and can positively impact profitability and risk management (Ulfah et al., 2021; Notta & Vlachvei, 2014; Samo & Murad, 2019; Abuzayed, 2012). The relationship between capital structure and firm performance investigates how the mix of debt and equity financing influences the performance of a business. A firm's performance can be improved by achieving an optimal capital structure in which debt and equity are balanced. Higher leverage (debt) can magnify returns but also increase financial risk, whereas a greater proportion of equity can provide stability but limit growth opportunities (Amalia et al., 2022; Yudaruddin, 2020; Salim & Yadav, 2012; Margaritis & Psillaki, 2010; Le & Phan, 2017). Cash holding, or the amount of cash and cash equivalents held by a company, can influence its performance (Hadjaat et al., 2021; Musviyanti et al., 2022; Lestari et al., 2022). Cash reserves provide a buffer against unforeseen events, enhance a company's financial flexibility, and allow it to exploit strategic opportunities. However, excessive financial reserves may indicate an inefficient allocation of capital, resulting in lower returns. The correlation between currency on hand and a company's performance depends on its industry, growth prospects, and overall financial strategy. Understanding these firm characteristics variables and their impact on firm performance is crucial for obtaining valuable insights into the financial dynamics of businesses and their strategies for navigating different economic conditions.

Ordinary Least Squares (OLS) with robust standard errors is utilized in this study. OLS with robust standard errors is a statistical method used in regression analysis to estimate the relationships between variables in a linear model. The OLS method aims to find the best-fitting line through the data points, minimizing the sum of squared differences between the observed and predicted values. Standard errors assume that the errors have constant variance, which might not hold in real-world datasets. Heteroscedasticity occurs when the variability of the errors changes across the range of independent variables, leading to biased standard errors and unreliable hypothesis

tests (Wooldridge, 2009). To address this issue, robust standard errors are used, which allow for heteroscedasticity in the data and provide more accurate estimates of the coefficients' precision. The robust standard errors are calculated based on the residuals, adjusting for potential variations in the error terms. This adjustment provides more accurate confidence intervals, hypothesis tests, and p-values, making the estimates more robust to violations of homoscedasticity assumptions. To capture observable effects, this study also includes a country dummy as a control variable.

3. RESULTS

Table 3 presents descriptive statistics for all variables across four sectors: All Sectors, Hotels and restaurants, Recreational Services, and Tourism. The data are measured in terms of mean and standard deviation for each variable. In all Sectors, the average Return on Asset (ROA) is −0.132, with a standard deviation of 7.309. The Hotels and Restaurants sector shows an average ROA of −0.113, with a standard deviation of 7.756, while the Recreational Services sector has a lower average ROA of −0.272 with a standard deviation of 8.275, and the Tourism sector exhibits the lowest average ROA of −0.030 with a standard deviation of 0.193. Similarly, the Return on Equity (ROE) variable displays significant variation among the sectors. For instance, the Hotels and restaurants sector has an average ROE of 0.646 with a standard deviation of 37.37, while the Tourism sector shows a lower average ROE of −0.208 with a standard deviation of 1.430. Overall, companies in the hospitality industry demonstrate poor performance.

Furthermore, the COVID variable (a dummy variable indicating the presence of the COVID-19 pandemic) demonstrates nearly similar proportions across all sectors, with an average of around 0.42 and a standard deviation of around 0.49. The SIZE variable (Firm size) also exhibits notable differences among the sectors. The Tourism sector has the highest average SIZE of 10.09 with a standard deviation of 2.258, whereas the Recreational Services sector shows a lower average SIZE of 8.717 with a standard deviation of 3.913. The LIQ variable (Liquidity) also displays significant variation. All Sectors have an average LIQ of 7.285 with a standard deviation of 53.15, while the Tourism sector shows a lower average LIQ of 2.482 with a standard deviation of 3.987. The LEV variable (Leverage) shows a relatively small variation among the sectors. All Sectors have an average LEV of 0.620 with a standard deviation of 0.638, whereas the Tourism sector exhibits the lowest average LEV of 0.492 with a standard deviation of 0.274. Lastly, the CASH variable (Cash Holding) also displays notable variation. The Hotels and restaurants sector has the highest average CASH of 0.349 with a standard deviation of 0.917, while the Tourism sector exhibits a lower average CASH of 0.242 with a standard deviation of 0.182. The descriptive statistical analysis in this table provides an initial overview of the variable characteristics across the four sectors and allows for further understanding of the differences among them.

Based on Table 4, which displays the correlation matrix of the variables (COVID, SIZE, LIQ, LEV, and CASH), there are no significant issues of multicollinearity among the independent variables. Multicollinearity refers to the presence of a high correlation between two or more independent variables in a regression model, which can lead to instability in the estimates of the regression coefficients and affect the interpretation of the model. However, in this case, the correlation coefficients

Table 3. Descriptive statistics for all variables

Variables	All Sectors (Obs = 4285)		Hotels & Restaurants (Obs = 2874)		Recreational Services (Obs = 819)		Tourism (Obs = 592)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
ROA	−0.132	7.309	−0.113	7.756	−0.272	8.275	−0.030	0.193
ROE	0.350	30.93	0.646	37.37	−0.287	10.11	−0.208	1.430
COVID	0.418	0.493	0.413	0.492	0.432	0.496	0.422	0.494
SIZE	8.799	3.621	8.556	3.707	8.717	3.913	10.09	2.258
LIQ	7.285	53.15	8.753	60.35	5.605	44.30	2.482	3.987
LEV	0.620	0.638	0.645	0.679	0.623	0.669	0.492	0.274
CASH	0.326	0.816	0.349	0.917	0.306	0.708	0.242	0.182

Table 4. Correlation matrix (n = 4285)

Variables	COVID	SIZE	LIQ	LEV	CASH	VIF
COVID	1.0000					1.00
SIZE	0.0092	1.0000				1.23
LIQ	0.0077	−0.1869	1.0000			1.05
LEV	0.0138	−0.2199	0.0001	1.0000		1.06
CASH	−0.0011	−0.3780	0.1754	0.1577	1.0000	1.19

between the independent variables are generally low and well below the threshold of concern (typically above 0.7 or 0.8). For instance, the highest correlation coefficient is 0.1754 between LIQ and CASH, which is not considered problematic. As such, the data shows that there is no severe multicollinearity among the independent variables, indicating that they can be included in the regression analysis without causing substantial issues in the model estimation.

The results from Table 5 reveal significant findings regarding the impact of COVID-19 on firm performance for all sectors. To account for potential differences across countries, country dummies are included in all models. In columns 1 and 3, it is evident that COVID-19 has a substantial negative effect on both Return on Assets (ROA) and Return on Equity (ROE), respectively. Moving to the analysis of firm characteristics in column 1, variables such as company size (SIZE), liquidity (LIQ), leverage (LEV), and cash holding (CASH) do not demonstrate a significant influence on firm performance (ROA). However, in column 3, it is observed that company size (SIZE) has a signifi-

cant negative impact on firm performance (ROE). Continuing to columns 2 and 4, which present the interaction effects between COVID-19 and other variables, this study finds noteworthy insights. The interaction terms, COVID*SIZE and COVID*LIQ, show a significant impact on firm performance, indicating that the relationship between COVID-19 and firm performance is influenced by company size and liquidity. On the other hand, COVID*LEV negatively and significantly affects firm performance, suggesting that the pandemic's impact on firm performance is influenced by the level of leverage. Additionally, COVID*CASH exhibits a significant negative impact only on ROA in column 3.

Table 6 provides a detailed analysis of the impact of COVID-19 on firm performance within the Hotels & Restaurants sector. The results in columns 1 and 3 indicate that COVID-19 has a significant and negative effect on both Return on Assets (ROA) and Return on Equity (ROE). Turning to the influence of firm characteristics, in column 1, variables such as company size (SIZE), liquidity (LIQ), leverage (LEV), and cash holding (CASH)

Table 5. COVID-19 and firm performance (All Sectors)

Explanatory Variables	Dependent variables			
	ROA		ROE	
	(1)	(2)	(3)	(4)
COVID	−1.3584***	−3.6305**	−2.9634***	−1.7704
SIZE	0.0736	−0.1731**	−0.1904*	−0.2988**
COVID*SIZE		0.5907***		0.2534**
LIQ	0.0014	−0.0032**	−0.0008	−0.0056*
COVID*LIQ		0.0143***		0.0123***
LEV	0.2594	1.4565***	0.5334	2.1929***
COVID*LEV		−4.1918***		−5.4789***
CASH	−0.0068	0.4706	−0.7518	-0.6890
COVID*CASH		−1.2904*		−0.2902
CONS.	−0.3817	1.1439	2.6928**	2.8632*
Country dummy	Yes	Yes	Yes	Yes
R-squared	0.0132	0.0870	0.0055	0.0089
Number of observations	4285	4285	4285	4285

Note: * sig. at 10%, ** sig. at 5%, and *** sig. at 1%.

Table 6. COVID-19 and firm performance (Hotels & Restaurants)

Explanatory Variables	Dependent variables			
	ROA		ROE	
	(1)	(2)	(3)	(4)
COVID	−1.4705***	−4.8514***	−3.8238***	−4.6551*
SIZE	0.1125	-0.1677	−0.2033*	−0.3656*
COVID*SIZE		0.6503***		0.3486**
LIQ	0.0012	−0.0026	−0.0027	−0.0072*
COVID*LIQ		0.0122***		0.0098**
LEV	0.9513	1.7932***	1.4910*	2.6112***
COVID*LEV		−3.2830***		−3.9824***
CASH	0.1993	0.2882	−0.4843	−0.9980
COVID*CASH		0.4591		1.0262*
CONS.	−1.6975	1.0202	2.3347	3.9130*
Country dummy	Yes	Yes	Yes	Yes
R-squared	0.0221	0.0753	0.0070	0.0086
Number of observations	2874	2874	2874	2874

Note: * sig. at 10%, ** sig. at 5%, and *** sig. at 1%.

do not exhibit a significant impact on firm performance (ROA). However, in column 3, it is found that company size (SIZE) has a significant negative influence on firm performance (ROE). Meanwhile, leverage (LEV) has a significant positive impact on company performance (column 3). Moving on to columns 2 and 4, which present the interaction effects between COVID-19 and other variables, noteworthy insights emerge. The interaction terms COVID*SIZE and COVID*LIQ, show a significant impact on firm performance, indicating that the relationship between COVID-19 and firm performance is influenced by company size and liquidity. Conversely, COVID*LEV negatively and significantly affects firm performance, suggesting that the pandemic's impact on firm performance is influenced by the level of leverage. Additionally, COVID*CASH demonstrates a significant positive impact only on ROE in column 4.

Table 6 provides a detailed analysis of the impact of COVID-19 on firm performance within the Hotels & Restaurants sector. The results in columns 1 and 3 indicate that COVID-19 has a significant and negative effect on both Return on Assets (ROA) and Return on Equity (ROE). Turning to the influence of firm characteristics, in column 1, variables such as company size (SIZE), liquidity (LIQ), leverage (LEV), and cash holding (CASH) do not exhibit a significant impact on firm performance (ROA). However, in column 3, it is found that company size (SIZE) has a significant negative influence on firm performance (ROE). Moving on

to columns 2 and 4, which present the interaction effects between COVID-19 and other variables, noteworthy insights emerge. The interaction terms COVID*SIZE and COVID*LIQ, show a significant impact on firm performance, indicating that the relationship between COVID-19 and firm performance is influenced by company size and liquidity. Conversely, COVID*LEV negatively and significantly affects firm performance, suggesting that the pandemic's impact on firm performance is influenced by the level of leverage. Additionally, COVID*CASH demonstrates a significant negative impact only on ROA in column 3.

Table 7 presents the findings of the analysis focusing on the impact of COVID-19 on firm performance within the Recreational Services sector. In columns 1 and 3, the results reveal that COVID-19 has a significant negative effect on Return on Assets (ROA) and Return on Equity (ROE). In column 1, the firm characteristics variables, such as company size (SIZE), liquidity (LIQ), leverage (LEV), and cash holding (CASH), do not show significant impacts on firm performance (ROA). Similarly, in column 3, firm size (SIZE) and liquidity (LIQ) do not exhibit significant associations with firm performance (ROE). However, the interaction effects between COVID-19 and firm size (COVID*SIZE), as well as COVIDLIQ, are significant in both columns 2 and 4, indicating the influence of company size and liquidity on the effects of the pandemic on firm performance in the Recreational Services sector. On the other hand,

Table 7. COVID-19 and firm performance (Recreational Services)

Explanatory Variables	Dependent variables			
	ROA		ROE	
	(1)	(2)	(3)	(4)
COVID	−1.8614***	−0.9100	−1.5973**	6.7030
SIZE	0.0106	−0.1887	-0.0760	0.0091
COVID*SIZE		0.5392**		−0.0991
LIQ	0.0084	−0.0004	0.0128	0.0962
COVID*LIQ		0.0172***		0.0110**
LEV	−2.1275	0.3177	−3.0667	0.2952
COVID*LEV		−6.6857**		−8.9284*
CASH	−1.2562	1.3703	−3.1436	0.0099
COVID*CASH		−5.0950		−6.2123
CONS.	1.8044	1.3881	3.2877	−0.2688
Country dummy	Yes	Yes	Yes	Yes
R-squared	0.0681	0.2361	0.1188	0.2516
Number of observations	819	819	819	819

Note: * sig. at 10%, ** sig. at 5%, and *** sig. at 1%.

the interaction term COVID*LEV is significant in column 2, suggesting that the level of leverage influences the negative impact of COVID-19 on firm performance (ROA) in the sector. In column 4, COVID*LEV is negative and significant for firm performance (ROE and ROE), implying that the pandemic's impact on the sector's profitability is influenced by the level of leverage. However, the interaction term COVID*CASH does not show a significant impact on firm performance in both columns 2 and 4.

Table 8 presents the results of the analysis focused on the impact of COVID-19 on firm performance within the Tourism sector. In col-

umn 1, the findings indicate that COVID-19 has a significant negative effect on Return on Assets (ROA). However, in column 2, the interaction effects between COVID-19 and firm size (COVIDSIZE), liquidity (COVIDLIQ), leverage (COVIDLEV), and cash holding (COVIDCASH) do not show significant impacts on firm performance (ROA). This suggests that the size, liquidity, leverage, and cash holding of tourism companies do not moderate the pandemic's effects on their ROA. Moving to column 3, the results reveal that both COVID-19 and leverage (LEV) have significant negative impacts on Return on Equity (ROE) in the Tourism sector. However, in column 4, the interaction effects COVIDLIQ

Table 8. COVID-19 and firm performance (Tourism)

Explanatory Variables	Dependent variables			
	ROA		ROE	
	(1)	(2)	(3)	(4)
COVID	−1.2722***	−0.3339**	−0.6467***	0.7454
SIZE	0.0140*	0.0080	−0.0320	−0.0365
COVID*SIZE		0.0102		0.0290
LIQ	0.0067	0.0022	−0.0083	0.0132
COVID*LIQ		0.0071		−0.0402**
LEV	0.0609	−0.0897	−1.1891***	0.3066
COVID*LEV		0.2641		−2.8045***
CASH	−0.1768	−0.0793	−0.3027	0.1381
COVID*CASH		−0.1813		−0.8562
CONS.	−0.1446	0.0240	0.8846	0.0815
Country dummy	Yes	Yes	Yes	Yes
R-squared	0.2307	0.2736	0.1179	0.1763
Number of observations	592	592	592	592

Note: * sig. at 10%, ** sig. at 5%, and *** sig. at 1%.

and COVIDLEV show significant negative impacts on firm performance (ROE). This implies that the pandemic's effects on ROE in the Tourism sector are influenced by the combination of liquidity and leverage. Notably, firm size (SIZE) and cash holding (CASH) do not exhibit significant impacts on firm performance (ROE) in this context.

4. DISCUSSION

This study highlights the impact of the COVID-19 pandemic on the performance of companies in the hospitality industry (Hotels and restaurants, Recreational Services, and Tourism) which are listed on stock exchanges around the world. This study also highlights how firm characteristics such as company size, liquidity, leverage, and cash holding interact with company performance during the COVID-19 pandemic. Using data from 944 companies from 59 countries during the period 2018–2022, the data is analyzed using Ordinary Least Squares (OLS) with robust standard errors.

The analysis of all four tables provides comprehensive insights into the impact of COVID-19 on firm performance across various sectors. In Tables 5 to 8, the results consistently reveal that COVID-19 has a significant negative effect on both Return on Assets (ROA) and Return on Equity (ROE). This result is in line with the expectation that COVID-19 will have a negative impact on the company's performance. These results are also in line with previous studies (Zhang & Zheng, 2022; Ren et al., 2021; Guérin & Suntheim, 2021; Toumi et al., 2022; Eckey & Memmel, 2022; Song et al., 2021; Ke, 2021; Maria et al., 2022). These results also support previous studies that focused on the Hospitality industry, such as Liu et al. (2023), Aigbedo (2021), Hadi et al. (2022) Shapoval et al. (2021), Nyagadza et al. (2022), and Zoğal et al. (2020).

Moreover, firm characteristics such as company size (SIZE), liquidity (LIQ), leverage (LEV), and cash holding (CASH) show varying degrees of influence on firm performance across different sectors. Regarding the interaction of COVID and SIZE, the interaction term COVID*SIZE shows a significant positive impact on firm performance (ROA and ROE) in Tables 6 (Hotels & Restaurants) and 7 (Recreational Services), indicating that the relationship between COVID-19 and firm performance is influenced by company size in these sectors. The larger size of companies tends to result in better firm performance during the COVID-19 pandemic (COVID*SIZE). These findings highlight that larger companies are better equipped to mitigate the negative effects of the COVID-19 pandemic, indicating that company size plays a crucial role in managing the impact of the crisis.

Similarly, the interaction term COVID*LIQ is significant in Tables 6 and 7, indicating that the relationship between COVID-19 and firm performance is influenced by liquidity in these sectors. These findings suggest that companies with higher liquidity levels are better positioned to navigate the challenges posed by the pandemic. Having sufficient liquidity allows firms to meet short-term obligations and maintain financial stability, which can be particularly beneficial during times of economic uncertainty and disruption caused by the health crisis. Thus, the liquidity variable emerges as a critical factor that influences firm performance and resilience in the face of the COVID-19 pandemic.

Furthermore, Leverage (LEV) plays a significant role in influencing firm performance during the COVID-19 pandemic. The results show that the interaction of the variables COVID and LEV has a negative and significant impact on company performance, indicating that the level of leverage amplifies the negative effects of the pandemic on firm performance in this sector. This suggests that companies with higher levels of debt might be more vulnerable to the adverse impacts of the crisis, leading to reduced profitability. Notably, it underscores the importance of managing leverage levels during times of crisis. Companies with high debt burdens may face challenges in servicing their debt obligations and maintaining financial stability, impacting their overall performance during the pandemic. It highlights the need for businesses to carefully assess and manage their debt levels to withstand the economic uncertainties posed by health crises like COVID-19 and maintain financial resilience.

CONCLUSION AND RECOMMENDATIONS

This study provides valuable insights into the impact of the COVID-19 pandemic on the performance of companies in the Leisure, Arts, and Hospitality industries listed on stock exchanges worldwide. The analysis of 944 companies from 59 countries spanning the period 2018 to 2022 using OLS with robust standard errors reveals a consistent and significant negative effect of COVID-19 on both ROA and ROE. This finding aligns with previous research and highlights the challenges faced by businesses in the sector during the pandemic. Additionally, the study examines how firm characteristics interact with company performance during the COVID-19 pandemic. The results indicate that company size, liquidity, and leverage play significant roles in influencing firm performance across different sectors. Larger companies perform better during the pandemic, emphasizing their ability to withstand the crisis's negative effects. Moreover, higher liquidity levels are beneficial for firms in navigating the challenges posed by the pandemic, ensuring short-term obligations are met and maintaining financial stability. On the other hand, companies with higher leverage levels experienced a more pronounced negative impact on their performance during the pandemic, underscoring the importance of managing debt levels during times of crisis.

Based on the findings aligning with previous research, policymakers should focus on providing targeted support to businesses in the Leisure, Arts, and Hospitality industries to address the challenges they face during the pandemic. Recognizing the significant roles of company size, liquidity, and leverage in influencing firm performance, regulators should encourage larger companies' resilience while emphasizing the importance of maintaining higher liquidity levels to navigate challenges and maintain financial stability. For managers, it is crucial to manage debt levels effectively to mitigate the negative impact on performance during times of crisis. By implementing these policy implications, the industry can better manage the pandemic's impact and enhance overall performance in the face of unprecedented challenges.

AUTHOR CONTRIBUTIONS

Conceptualization: Felisitas Defung, Rizky Yudaruddin.
Data curation: Rizky Yudaruddin, Michael Hadjaat.
Formal analysis: Felisitas Defung, Rizky Yudaruddin.
Funding acquisition: Felisitas Defung, Michael Hadjaat.
Investigation: Felisitas Defung, Rizky Yudaruddin.
Methodology: Felisitas Defung, Rizky Yudaruddin.
Project administration: Felisitas Defung, Michael Hadjaat.
Resources: Felisitas Defung, Rizky Yudaruddin, Michael Hadjaat.
Software: Felisitas Defung, Rizky Yudaruddin.
Supervision: Felisitas Defung.
Validation: Rizky Yudaruddin.
Visualization: Felisitas Defung, Michael Hadjaat.
Writing – original draft: Rizky Yudaruddin, Michael Hadjaat.
Writing – review & editing: Felisitas Defung.

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