





“Impact of Covid-19 on companies’ performance and financial resilience: Evidence from Moroccan listed companies”

AUTHORS	Issam Er-Rami  Mariam Cherqaoui  Amine El Badlaoui 
ARTICLE INFO	Issam Er-Rami, Mariam Cherqaoui and Amine El Badlaoui (2024). Impact of Covid-19 on companies’ performance and financial resilience: Evidence from Moroccan listed companies. <i>Investment Management and Financial Innovations</i> , 21(3), 237-247. doi: 10.21511/imfi.21(3).2024.20
DOI	http://dx.doi.org/10.21511/imfi.21(3).2024.20
RELEASED ON	Tuesday, 13 August 2024
RECEIVED ON	Wednesday, 01 May 2024
ACCEPTED ON	Tuesday, 30 July 2024
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

31



NUMBER OF FIGURES

0



NUMBER OF TABLES

5

© The author(s) 2024. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 1st of May 2024

Accepted on: 30th of July, 2024

Published on: 13th of August, 2024

© Issam Er-Rami, Mariam Cherqaoui,
Amine El Badlaoui, 2024

Issam Er-Rami, Ph.D. Student, National
School of Business and Management of
Kenitra, Ibn Tofail University, Morocco.
(Corresponding author)

Mariam Cherqaoui, Lecturer, National
School of Business and Management of
Kenitra, Ibn Tofail University, Morocco.

Amine El Badlaoui, Dr., National
School of Business and Management of
Kenitra, Ibn Tofail University, Morocco.

Issam Er-Rami (Morocco), Mariam Cherqaoui (Morocco), Amine El Badlaoui (Morocco)

IMPACT OF COVID-19 ON COMPANIES' PERFORMANCE AND FINANCIAL RESILIENCE: EVIDENCE FROM MOROCCAN LISTED COMPANIES

Abstract

The study aims to evaluate the impact of Covid-19 on company performance and explore the moderating effect of companies' financial resilience. Data were retrieved from 312 firm-year observations corresponding to 76 companies listed on the Moroccan Stock Exchange Market throughout 2018–2021. Five regression models are used to examine the overall impact of the Covid-19 pandemic on corporate performance, as well as the specific effect on corporate performance of each of the financial indicators of corporate resilience, namely sales, leverage, liquidity, and financial autonomy. The results show that although there is a decrease in the mean of both ratios of financial and operational performance of Moroccan listed companies, statistical tests confirm only a significant negative effect of Covid-19 on operational performance. The results also show that companies with high sales, low debt, high liquidity, and financial autonomy are more resilient to the negative impact of the Covid-19 pandemic. Furthermore, given the significant size and the sectorial concentration of Moroccan listed companies, there is no statistical evidence that the negative impact of Covid-19 pandemic varies according to business sector or size. Based on the results, a number of recommendations are made for both governments and companies. Governments should maintain, despite the crisis, both public and private investment in order to sustain the growth of companies' business sales. It is also important to implement solutions for rescheduling social and tax debts to safeguard the liquidity of companies and limit their recourse to costly debt.

Keywords

Covid-19, resilience, Casablanca Stock Exchange, Morocco

JEL Classification

G11, G33, H12, M41

INTRODUCTION

Covid-19 is considered to be one of the crises with the greatest negative impact on global financial markets, economies, and humanity as a whole. It has resulted in an unprecedented economic and financial downturn, surpassing the impact of the global financial crisis (Bernanke & Yellen, 2020; Reinhart & Chen, 2020). However, this impact was not regularly distributed across the globe, as some countries suffered massive losses while others fared much better, benefiting from certain factors of resilience (Kapalu & Kodongo, 2022).

To cope with the adverse consequences of the Covid-19 pandemic, the Moroccan authorities applied containment measures two weeks after the first case of contamination was detected, on March 2, 2020, for around 14 weeks. These measures severely affected the Moroccan economy, causing its first recession since 1995 (Haddad et al., 2020). While the impact of Covid-19 on the economy and businesses has triggered a series of studies on an international scale, only a few studies have examined this subject in Morocco (Almustafa et al., 2023).



This is an Open Access article, distributed under the terms of the [Creative Commons Attribution 4.0 International license](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.



Conflict of interest statement:

Author(s) reported no conflict of interest

The relevance of this study lies, besides demonstrating the effect of the Covid-19 pandemic on performance in Morocco, in its ability to underline resilience factors so that companies can immunize themselves against the harmful effects of potential economic crises.

1. LITERATURE REVIEW

Financial reports are becoming increasingly essential for decision-making, rather than simply control documents (El Badlaoui et al., 2021, 2023). Shen et al. (2020) examined financial reports to detect Covid-19's impact on corporate performance and, less frequently, to identify the financial determinants of companies' resilience in period of crises.

Rababah et al. (2020) found that listed Chinese companies were affected by the Covid-19 pandemic. This impact was more pronounced for small and medium-sized companies, while larger firms showed a degree of resilience in period of crisis. In addition, the severity of this impact varied from one industry to another, with the travel and tourism and transport industries receiving the hardest hits.

Hu and Zhang (2021) analyzed financial data from 16,148 companies in 107 countries. They showed that company performance decreased during the Covid-19 pandemic due to a negative relationship between ROA and cumulative Covid-19 cases. However, this deterioration varied across countries.

Studying the US restaurant firms' resilience to the negative consequences of Covid-19 pandemic, Song et al. (2021) demonstrate that companies that showed strong resilience in period of Covid-19 were those with greater size, liquidity, and leverage. Furthermore, among the suggested recovery strategies, the results indicated that dividends, internationalization, and ownership structure do not appear to be one of the reduction factors of Covid-19.

Khatib and Nour (2021) described the effect of Covid-19 on all characteristics of 188 non-financial companies in the Malaysian market, including performance, governance structure, dividend, liquidity, and debt.

Mather (2020) confirms that the introduction of quarantine measures by government bodies during Covid-19 has led to a decrease in productivity and sales, and inevitably to a decline in per-

formance. Companies that continue to be flexible, adapt, and modify their production and sales are more likely to thrive in the next normal reality.

Leverage, a key financial condition indicating a company's liquidity, is also a factor influencing a company's operating performance. In addition, financial crises have a negative impact on a company's liquidity. For this reason, it is a good indicator of corporate resilience in times of Covid-19. Ramelli and Wagner (2020) argue that US companies with low leverage and high liquidity were able to protect themselves against the pandemic.

In period of crisis, companies with a high level of financial autonomy are better equipped to cope with economic shocks. They have greater leeway to absorb losses and maintain their solvency. Studying Romanian listed companies, Achim et al. (2022) confirm that variations in financial autonomy have a positive effect on financial performance, as measured by variations in return on assets. Furthermore, Pacheco et al. (2022), García-Pérez-de-Lema et al. (2022), and Gomes et al. (2023) assert that financial autonomy positively affects corporate solvency in a period of crisis.

In Morocco, few studies have studied the impact of Covid-19 on companies' performance; studies dealing with the economic impact of Covid-19 have focused more on the impact on stock prices in times of crisis (Bouzid & Makala, 2021; Hssain et al., 2022). Almustafa et al. (2023) studied the impact of the Covid-19 crisis on company performance in the MENA region. The results show that the Covid-19 pandemic severely affected companies that had been underperforming prior to the pandemic, and this impact led to an increase in their risk ratio. In examining measures to mitigate the consequences of Covid-19, the article highlights the importance of the quality of national governance.

As part of a collaboration between the Haut-Commissariat au Plan (HCP), the United Nations in Morocco (UD) and the World Bank

(WB), a strategic note on the social and economic impact of the Covid-19 crisis in Morocco was drawn up in 2020 (HCP et al., 2020). This strategic note presents the pandemic situation in Morocco and sets out an analysis of the evolution of the economic and social situation in Morocco since the start of the crisis while presenting the main recommendations.

The note's main conclusion is that the Covid-19 pandemic has had a major impact on the Moroccan economy. Indeed, in the first quarter of the year, economic growth did not exceed 0.1%. By industry, the strategic note showed that some industries were severely impacted by the effects of Covid-19, such as building and construction materials, leisure and hotels, and transportation industries. On the other hand, companies operating in the mining, agri-food, chemical, and non-market service industries were more resilient to the effects of the pandemic. It is precisely this sectoral classification used in this empirical work.

The literature review shows that various authors have studied the Covid-19 impact on companies' performance and financial resilience characteristics. This is why it is critical to examine this point in greater depth.

Indeed, the purpose of this paper is to verify whether the Covid-19 pandemic has really affected the operational and financial performance of Moroccan companies and explore the financial resilience factors of companies in times of Covid-19. The financial resilience factors include sales, leverage, liquidity, and financial autonomy. Thus, the following hypotheses are formulated:

H1: Covid-19 has a negative impact on both the operational and financial performance of Moroccan companies.

H2: Increased sales is an indicator of companies' resilience to Covid-19.

H3: Low leverage and high liquidity are indicators of a company's resilience to Covid-19.

H4: Financial autonomy is an indicator of companies' resilience to Covid-19.

2. METHODS

To examine the impact of Covid-19 on the corporate performance of Moroccan companies listed on the Casablanca Stock Exchange (CSE), a univariate analysis before and after the pandemic and multivariate analyses are applied throughout the period, in line with the approach of the existing literature (Teng et al., 2021; Achim et al., 2022).

The study period covers eight half-years, four half-years before the half-year in which the confinement measures are announced (first half-year of 2020) and four half-years afterwards.

2.1. Sample selection

The sample covers all companies listed on the Moroccan Stock Exchange, namely Casablanca Stock Exchange (CSE) (i.e., 76 companies at the end of 2021), between the first half-year of 2018 and the second half-year of 2021.

From a potential of 608 company-year observations relating to 76 companies (over eight half-years), observations relating to financial companies (banking and insurance), observations with incomplete or non-existent data, and observations relating to companies presenting their financial statements in foreign currencies are removed, thus reducing the sample to 312 company-year observations relative to 39 companies. All financial data are from the 2018 and 2021 half-years provided by the Casablanca Stock Exchange. Table 1 shows the number of company-year observations included in the sample.

Table 1. Selection of study sample by industries

Sample	Total
Initial number of observations	76
Exclusions	37
Financial companies (bank and insurance)	16
Observations with incomplete or non-existent data	20
Companies presenting their financial statements in foreign currencies	01
Final sample	39
Electronics/Electricity	07
Building and civil engineering	06
Trade and distribution	05
Food producers and processors	05
Real estate development	03
Transport and logistics	02

Table 1 (cont.). Selection of study sample by industries

Sample	Total
Industry/Industrial equipment	02
Oil and Gas	02
Healthcare/Pharmacy	02
Mining	02
Telecommunications	01
Tourism/Hotels	01
Holdings	01
Multiplied by eight half-years	312

2.2. Research design

This paper examines the effect of the companies' characteristics listed on the Casablanca Stock Exchange during the Covid-19 pandemic on corporate performance, using return on assets (ROA) and return on equity (ROE). In addition to the Covid-19 variable of interest, the independent variables include sales (SALES), leverage (LEV), liquidity (LIQ), and financial autonomy (FA); control variables include industry type (IND) and company size (SIZE). Table 2 shows the variables chosen for this model.

Table 2. Variables definition and measurement

Variable	Label	Measurement
Dependent variables		
Operational performance	ROA	Ratio of total net income to total assets for company <i>i</i> .
Financial performance	ROE	Ratio of total net income to shareholder equity for company <i>i</i> .
Independent variables – Explanatory		
Covid-19	COVID-19	Dummy variable that equals one in the presence of Covid-19 pandemic (First half-year of 2020 to the second half-year of 2021) and zero otherwise.
Sales	SALES	Natural logarithm of sales of company <i>i</i> at the end of the year.
Leverage	LEV	Ratio of total debt to total assets.
Liquidity	LIQ	Ratio of cash flow to total debt.
Financial autonomy	FA	Ratio of equity to total liabilities.
Independent variables – Control		
Industry type	IND	Dummy variable that equals one if company <i>i</i> belongs to an industry affected by Covid-19 and zero otherwise. The classification of sectors is based on the study by HCP et al. (2020).
Company size	SIZE	Natural logarithm of total assets of company <i>i</i> at the end of the year.

To capture the impact of the Covid-19 pandemic on the operational and financial performance of listed CSE companies and to identify the financial resilience factors of listed companies, the paper follows model (1):

$$Y_{it} = \alpha + COVID-19_{it} + IND_{it} + SIZE_{it} + \varepsilon_{it}, \quad (1)$$

where Y_{it} – performance of company *i* in year *t*, measured by ROA and ROE, *i* and *t* – company and half-year indicators, respectively.

In addition, the study examines the influence of sales, leverage, liquidity, and financial autonomy mechanisms on corporate performance during the Covid-19 pandemic. Consequently, four more models are used, namely model (2) focuses on the sales variable (SALES), model (3) explains the effect of debt (LEV), model (4) deals with liquidity (LIQ), and model (5) seeks to explain the effect of financial autonomy (FA) on companies' resilience during Covid-19.

$$Y_{it} = \alpha + SALES_{it} \cdot COVID-19_{it} + SALES_{it} + COVID-19_{it} + IND_{it} + SIZE_{it} + \varepsilon_{it}, \quad (2)$$

$$Y_{it} = \alpha + LEV_{it} \cdot COVID-19_{it} + LEV_{it} + COVID-19_{it} + IND_{it} + SIZE_{it} + \varepsilon_{it}, \quad (3)$$

$$Y_{it} = \alpha + LIQ_{it} \cdot COVID-19_{it} + LIQ_{it} + COVID-19_{it} + IND_{it} + SIZE_{it} + \varepsilon_{it}, \quad (4)$$

$$Y_{it} = \alpha + FA_{it} \cdot COVID-19_{it} + FA_{it} + COVID-19_{it} + IND_{it} + SIZE_{it} + \varepsilon_{it}, \quad (5)$$

3. RESULTS

3.1. Descriptive results

Table 3, presenting the descriptive results, shows the evolution in economic and financial performance ratios due to Covid-19 as well as the other financial resilience indicators.

Table 3 shows that Covid-19 had a negative impact on both the average operational (ROA) and financial (ROE) performance of companies, leading to a negative evolution of respectively 25% and over 28%.

Table 3. Descriptive results of variables before and after Covid-19

Variables	Before Covid-19				After Covid-19				Ratios Variation
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean
ROA	0.04	0.05	-0.1	0.18	0.03	0.05	-0.14	0.22	-25%
ROE	0.07	0.30	-3.41	0.35	0.05	0.46	-5.1	1.82	-28.57%
SALES	8.98	0.71	7	10.56	8.93	0.73	6.64	10.57	-0.56%
LEV	0.59	0.18	0.23	1.13	0.58	0.21	0.05	1.17	-1.69%
LIQ	0.09	0.13	-0.29	0.62	0.05	0.15	-0.51	0.58	-44.44%
FA	0.41	0.19	-0.13	0.92	0.41	0.21	-0.17	0.95	0%
SIZE	9.34	0.65	8.13	10.81	9.35	0.67	7.09	10.82	0.11%

The mean of logarithm of companies' sales (*SALES*) before and after the pandemic were 8.98 and 8.93, respectively. Mean sales therefore fell slightly by 0.56% after the onset of the pandemic. Companies' leverage (*LEV*) decreased slightly after Covid-19 by 1.69%. Liquidity (*LIQ*) is the ratio that was most impacted by the Covid-19 with a decrease of 44%.

However, financial autonomy (*FA*) did not change between the two periods. Company size (*SIZE*) has approximately the same mean of 9.34 before and during the pandemic.

Therefore, these results conclude that the Covid-19 pandemic has had the effect of reducing companies' sales (*SALES*), decreasing their debt (*LEV*), and slowing their liquidity (*LIQ*), as shown by Helmi et al. (2021) and Song et al. (2021) and null evolution on financial autonomy (*FA*) contrary to the results of Achim et al. (2022) and Gomes et al. (2023).

Before carrying out the regression analyses, the non-existence of the multicollinearity problem between all the variables involved in the model is verified by using Pearson's and Spearman's tests and also the Variance Inflation Factor (*VIF*) test.

The correlation analysis presented in Table 4 shows that the two dependent variables (*ROA* and *ROE*)

are negatively correlated with *COVID-19*. They were also negatively correlated with the industry type and positively correlated with companies' size for both Spearman and Pearson correlations. In addition, all *VIF* values are below 2. In this respect, there is no risk of multicollinearity between the variables.

3.2. Regression analysis

Panel data were used in this study. To select the most appropriate model, Fisher (Fisher, 1992), Breusch and Pagan Lagrangian multiplier (Breusch & Pagan, 1980), and Hausman (Hausman, 1978) tests are used.

First, the Fisher test is applied to choose between the pooled least squares regression model and the fixed-effect regression model. The result of this test underlines the validity of the fixed effect model ($p < 0.05$). Next, Breusch and Pagan Lagrangian multiplier test indicates that the random effect model is more appropriate than the pooled least squares model. Finally, Hausman's specification test shows that the random effect regression model is more appropriate for obtaining efficient and reliable results in regression analysis. Therefore, the analyses focus on the findings of random effect model, which are shown in Appendix A.

Table 4. Correlation matrix

Variables	ROA	ROE	COVID-19	IND	SIZE
ROA	1	0.306**	-0.158**	-0.047	0.061
ROE	0.834**	1	-0.029	-0.002	0.088
COVID-19	-0.185**	-0.160**	1	0.000	0.003
IND	-0.055	-0.105	0.000	1	-0.042
SIZE	0.056	0.121*	0.010	-0.41	1
VIF	-	-	1	1.002	1.002

Note: Pearson (Spearman) correlations in the upper (lower) triangle; **Significant at the 0.01 level; *Significant at the 0.05 level.

Model (1) shows the impact of the Covid-19 pandemic on the operational performance (*ROA*) and financial performance (*ROE*) of listed companies in the Casablanca Stock Exchange through the variable *COVID-19*. The results from *ROA* show that the coefficient of *COVID-19* is -0.02 , which is significant at the 1% level. However, when the *ROE* is the dependent variable, the coefficient of *COVID-19* is insignificant. This means that only the operational performance of the Moroccan stock exchange is negatively affected during the Covid-19 pandemic, thus partially supporting H1.

Model (2) presents the results by introducing the sales variable. Unlike the model using financial performance as the dependent variable, which shows that *COVID-19* has no significant effect on company performance when operational performance is used as the dependent variable, the coefficient of *COVID-19* is -0.12 , significant at a 1% level. Thereby, the Covid-19 pandemic has had a negative impact on the operational performance of companies. Moreover, the coefficient of *SALES*COVID-19* is 0.01 , significant at the 1% level. This means that sales are an indicator of the resilience of companies that can reduce the negative impact of the Covid-19 pandemic. Besides, the coefficient of *SALES* is 0.05 ($p < 0.01$), which shows that sales positively affect *ROA*. In fact, income is a resilience factor against the negative impact of the Covid-19 pandemic. The results support H2.

As can be seen in model (3), and contrary to *ROE* dependent variable, when considering *ROA* as the dependent variable, the regression coefficient of the variable *COVID-19* is significant ($p < 0.01$). Thus, the Covid-19 pandemic has a negative impact on companies' debt. However, the coefficient *LEV*COVID-19* is significantly positive, unlike the *COVID-19* coefficient. This means that the negative impact of Covid-19 can be reduced by increasing borrowings.

In model (4), relative to liquidity variable, the results using financial performance as the dependent variable show no evidence of an impact of Covid-19 on company performance. However, when using operational performance, the results bring the opposite evidence. Indeed, the regression coefficient of *LIQ*COVID-19* is -0.04 and it is significant at 5% level. This is the same of *COVID-19* coefficient. It means that a decrease in

liquidity will weaken the negative impact of the pandemic. The results support H3.

Model (5) is used to determine whether financial autonomy is a factor in company resilience during the period of Covid-19. The results of the model using operational and financial performance as dependent variables show no evidence of the impact of Covid-19 on company performance. With regard to financial autonomy, the use of financial performance as a dependent variable does not show that financial autonomy is a factor in companies' resilience during the period of Covid-19, contrary to the model using operational performance as a dependent variable. In fact, the coefficient of *FA*COVID-19* is -0.04 , which is significant at the 5% level. This coefficient is opposite to that of *COVID-19*. This means that financial autonomy is an indicator of corporate resilience that can mitigate the negative impact of the Covid-19 pandemic. Thus, the results support H4.

In addition, the impact of industry type on operational and financial performance is illustrated by the *IND* variable. Aggregating industries of building and construction materials, leisure and hotels, and transportation in this variable as the industries most affected by the Covid-19 pandemic, as noted by the Moroccan Commission for Planning (HCP), did not provide evidence as to the impact of the Covid-19 pandemic on specific industries rather than others (HCP et al., 2020).

Furthermore, the results show that the *SIZE* variable in models (1), (3), and (5) in both operational and financial performance has a positive coefficient but insignificant effect on *ROA* and *ROE* during the Covid-19 pandemic. This result can be explained by the fact that this sample is based on listed companies and that they are generally big. However, the results of model (2) show a negative and significant effect on *ROA* and *ROE*. This is similar to the study by Trung Huy et al. (2022) in Vietnam, according to which *SIZE* has a significant influence on performance.

On the other hand, Appendix A shows that all models have an R^2 ranging from %1 to %52 and a significant *F*-test in almost all models; this indicates that the models used are significant, implying a high degree of validity.

4. DISCUSSION

The importance of financial information in the decision-making of financial market players is now a commonly accepted assertion (Aswar et al., 2022; Hariyani et al., 2022; El Badlaoui & Cherqaoui, 2023). The desire to better perceive and assess how the Covid-19 pandemic has affected financial markets has given rise to a large body of research, especially in developed markets. This study contributes to the literature on the resilience factors of listed companies during the Covid-19 pandemic in the context of an emerging country such as Morocco.

This study examined the impact of the Covid-19 pandemic on the performance of 39 companies listed on the Casablanca Stock Exchange during the period from the first half-year of 2018 to the second half-year of 2021. The results show that the corporate operational performance of Moroccan listed companies has been significantly negatively impacted by the Covid-19 pandemic, while any statistical effect of the Covid-19 pandemic on financial performance is documented. This result supports the choice to include both measures of companies' performance in the research model.

The Covid-19's impact on operational performance was more pronounced for companies with low sales, high leverage, limited liquidity, and low financial autonomy.

Furthermore, there is no evidence that the negative impact of the Covid-19 pandemic is more marked for some industries rather than others or for large companies than smaller ones. This result is attributed to the fact that the study sample includes listed companies on the Casablanca Stock Exchange. Indeed, all these companies generally have similar sizes and belong to the category of

large companies, which makes it impossible to detect the effect of Covid-19 on small ones. In addition, the null effect of Covid-19 on industry types may be explained by limitations in the classification of industries affected or unaffected by Covid-19. In this paper, companies are classified into two large blocks, namely those most affected by Covid-19 and those least affected on the basis of the professional study carried out by the Moroccan Commission for Planning (HCP et al., 2020), which considered that the industries strongly affected by Covid-19 in Morocco include building and construction materials, leisure and hotels, and transportation. Indeed, given the size of the sample, a finer classification cannot be used, as this would result in a small number of observations for each industry, which would have limitations in terms of statistical tests.

Therefore, four key points are deduced for minimizing the negative impact of the Covid-19 pandemic in Morocco and strengthening companies' financial resilience in the face of crises, namely sales growth, limited indebtedness, high liquidity, and financial autonomy.

The results of this paper are entirely consistent with the results of research on the financial difficulties of companies due to crises and, especially, the Covid-19 pandemic (Trung Huy et al., 2022; Shen et al., 2020). The deterioration in financial indicators during this pandemic period was also highlighted and explained by the OECD (2020), citing the difficulty of access to customers and a disrupted supply chain. In addition, the results concur with those of existing literature, resulting in a negative impact of the Covid-19 pandemic on business performance in China (Shen et al., 2020), Indonesia (Devi et al., 2020), Vietnam (Trung Huy et al., 2022), and many other countries.

CONCLUSION

The purpose of this paper was to evaluate the impact of Covid-19 on company performance and to explore its effect on financial resilience in Morocco. Overall, the results showed evidence of a negative impact of Covid-19 on Moroccan companies' operational performance. This impact was more pronounced for companies with low sales, high leverage, limited liquidity, and reduced financial autonomy. On the other hand, no difference in impact was recorded for companies of different sizes and industries due to the nature of this sample, which means a small sample of big companies does not reflect all the industries affected by the Covid-19 pandemic.

Based on the results, a number of recommendations are made for both governments and companies. Governments should maintain, despite the crisis, both public and private investment in order to sustain the growth of companies' business sales. It is also important to implement solutions for rescheduling social and tax debts to safeguard the liquidity of companies and limit their recourse to costly debt. In addition, the Moroccan banking system should not only study policies and regulations for rescheduling existing loans to preserve companies' liquidity and avoid business failures but also make it easier to access new loans and facilities with affordable interest rates.

In addition, even if the sectoral impact at the level of companies listed on the stock exchange has not been highlighted, it is crucial to identify, on a more global scale of the economy, the business groups most affected by the impact of the pandemic and to support them with public and private simulation policies.

Companies, for their part, need to capitalize on this unexpected event to prepare for crises that may arise in the years to come by monitoring more closely the evolution of their performance indices and putting in place the necessary tools to protect themselves against the negative consequences of a possible global crisis. A conservative dividend payout strategy should be applied to provide a safety cushion in times of crisis.

This analysis was carried out on the Moroccan stock market, which means that its conclusions cannot be generalized to all emerging markets. In addition, both operational and financial performance are used through ROA and ROE, while the use of other financial ratios may provide new evidence, such as the earnings per share, for example.

AUTHOR CONTRIBUTIONS

Conceptualization: Issam Er-Rami, Mariam Cherqaoui, Amine El Badlaoui.

Data curation: Issam Er-Rami, Mariam Cherqaoui, Amine El Badlaoui.

Formal analysis: Issam Er-Rami, Mariam Cherqaoui, Amine El Badlaoui.

Investigation: Issam Er-Rami, Mariam Cherqaoui, Amine El Badlaoui.

Methodology: Issam Er-Rami, Mariam Cherqaoui, Amine El Badlaoui.

Project administration: Mariam Cherqaoui, Amine El Badlaoui.

Supervision: Mariam Cherqaoui, Amine El Badlaoui.

Validation: Mariam Cherqaoui.

Visualization: Mariam Cherqaoui, Amine El Badlaoui.

Writing – original draft: Issam Er-Rami, Amine El Badlaoui.

Writing – review & editing: Mariam Cherqaoui.

REFERENCES

1. Achim, M. V., Safta, I. L., Văidean, V. L., Mureșan, G. M., & Borlea, N. S. (2022). The impact of Covid-19 on financial management: Evidence from Romania. *Economic Research-Ekonomska Istraživanja*, 35(1), 1807-1832. <https://doi.org/10.1080/1331677X.2021.1922090>
2. Almustafa, H., Nguyen, Q. K., Liu, J., & Dang, V. C. (2023). The impact of COVID-19 on firm risk and performance in MENA countries: Does national governance quality matter? *PLoS One*, 18(2), Article e0281148. <https://doi.org/10.1371/journal.pone.0281148>
3. Bernanke, B. S., & Yellen, J. L. (2020). *Former Fed Chairs Bernanke and Yellen testified on COVID-19 and response to economic crisis*. United States of America: Brookings Institution. Retrieved from <https://policycommons.net/artifacts/4139012/former-fed-chairs-bernanke-and-yellen-testified-on-covid-19-and-response-to-economic-crisis/4947754/>
4. Bouzid, K. N., & Makala, U. E. (2021). Casablanca Stock Exchange response to the COVID-19 pandemic. *African Review of Economics and Finance*, 13(2), 142-167. Retrieved from <https://>

- hdl.handle.net/10520/ejc-aref_v13_n2_a8
5. Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, 47(1), 239-253. <https://doi.org/10.2307/2297111>
 6. Devi, S., Warasniasih, N. M. S., Masdiantini, P. R., & Musmini, L. S. (2020). The impact of COVID-19 pandemic on the financial performance of firms on the Indonesia stock exchange. *Journal of Economics, Business, & Accountancy Ventura*, 23(2), 226-242. <https://doi.org/10.14414/jebav.v23i2.2313>
 7. El Badlaoui, A., & Cherqaoui, M. (2023). Value relevance of audit opinions in an emerging market: Evidence from Morocco. *Journal of Financial Reporting and Accounting*. <https://doi.org/10.1108/JFRA-03-2023-0144>
 8. El Badlaoui, A., Cherqaoui, M., & Er-Rami, I. (2023). Market reaction to modified audit opinions: A systematic literature review in both developed and developing countries. *Asian Academy of Management Journal of Accounting & Finance*, 19(1). <https://doi.org/10.21315/aamjaf2023.19.1.10>
 9. El Badlaoui, A., Cherqaoui, M., & Taouab, O. (2021). Output indicators of audit quality: A framework based on literature review. *Universal Journal of Accounting and Finance*, 9(6), 1405-1421. <http://dx.doi.org/10.13189/ujaf.2021.090619>
 10. Fisher, R. A. (1992). Statistical methods for research workers. In S. Kotz & N. L. Johnson (Eds.), *Breakthroughs in Statistics. Springer Series in Statistics* (pp. 66-70). New York: Springer. https://doi.org/10.1007/978-1-4612-4380-9_6
 11. García-Pérez-de-Lema, D., Madrid-Guijarro, A., & Duréndez, A. (2022). Operating, financial and investment impacts of Covid-19 in SMEs: Public policy demands to sustainable recovery considering the economic sector moderating effect. *International Journal of Disaster Risk Reduction*, 75, Article 102951. <https://doi.org/10.1016/j.ijdr.2022.102951>
 12. Gomes, C., Campos, F., Malheiros, C., & Lima Santos, L. (2023). Restaurants' solvency in Portugal during COVID-19. *International Journal of Financial Studies*, 11(2), Article 63. <https://doi.org/10.3390/ijfs11020063>
 13. Haddad, E. A., El Aynaoui, K., Ali, A. A., Arbouch, M., & Araújo, I. F. (2020). *The impact of Covid-19 in Morocco: Macroeconomic, sectoral and regional effects* (Research Paper RP 20-17). Policy Center for the New South. Retrieved from https://www.policycenter.ma/sites/default/files/RP_20-17_impacts_COVID_19_MOROCCO.pdf
 14. Hariyani, E., Aswar, K., Wiguna, M., Ermawati, E., & Anisma, Y. (2022). Factors influencing financial statement disclosure: Empirical evidence from Indonesia. *Investment Management and Financial Innovations*, 19(2), 230-237. [http://dx.doi.org/10.21511/imfi.19\(2\).2022.20](http://dx.doi.org/10.21511/imfi.19(2).2022.20)
 15. Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica*, 46(6), 1251-1271. <https://doi.org/10.2307/1913827>
 16. HautCommissariat au Plan (HCP), United Nations in Morocco (UD), & World Bank (WB). (2020). *Impact social & économique de la crise du Covid-19 au Maroc. Note stratégique [The social and economic impact of the Covid-19 crisis in Morocco. Strategic note]*. Retrieved from <https://www.undp.org/fr/morocco/publications/note-strategique-impact-social-et-economique-de-la-crise-du-covid-19-au-maroc>
 17. Helmi, A., Abdullatif, M., & Basaif, M. S. (2021). The impact of firm characteristics on firm performance during the Covid-19 pandemic: Evidence from Saudi Arabia. *Asian Economic and Financial Review*, 11(9), 693-709. <https://doi.org/10.18488/journal.aefr.2021.119.693.709>
 18. Hssain, B., Agouram, J., & Lakhnati, G. (2022). Impact of COVID-19 pandemic on Moroccan sectoral stocks indices. *Scientific African*, 17, Article e01321. <https://doi.org/10.1016/j.sciaf.2022.e01321>
 19. Hu, S., & Zhang, Y. (2021). COVID-19 pandemic and firm performance: Cross-country evidence. *International Review of Economics & Finance*, 74, 365-372. <https://doi.org/10.1016/j.iref.2021.03.016>
 20. Kapalu, N., & Kodongo, O. (2022). Financial markets' responses to COVID-19: A comparative analysis. *Heliyon*, 8(9), Article e10469. <https://doi.org/10.1016/j.heliyon.2022.e10469>
 21. Khatib, S. F., & Nour, A. (2021). The impact of corporate governance on firm performance during the COVID-19 pandemic: Evidence from Malaysia. *Journal of Asian Finance, Economics and Business*, 8(2), 943-952. <https://doi.org/10.13106/jafeb.2021.vol8.no2.0943>
 22. Mather, P. (2020). Leadership and governance in a crisis: Some reflections on COVID-19. *Journal of Accounting & Organizational Change*, 16(4), 579-585. <https://doi.org/10.1108/JAOC-08-2020-0123>
 23. Organization for Economic Cooperation and Development (OECD). (2021). *Covid-19 crisis in Morocco*. Retrieved from <https://www.oecd.org/en/about/programmes/mena-oecd-competitiveness-programme.html/The-Covid-19-Crisis-in-Morocco.pdf>
 24. Pacheco, L., Madaleno, M., Correia, P., & Maldonado, I. (2022). Probability of corporate bankruptcy: Application to Portuguese manufacturing industry SMEs. *International Journal of Business and Society*, 23(2), 1169-1189. <https://doi.org/10.33736/ijbs.4863.2022>
 25. Rababah, A., Al-Haddad, L., Sial, M. S., Chunmei, Z., & Cherian, J. (2020). Analyzing the effects of COVID-19 pandemic on the financial performance of Chinese listed companies. *Journal of Public Affairs*, 20(4), e2440. <https://doi.org/10.1002/pa.2440>
 26. Ramelli, S., & Wagner, A. F. (2020). Feverish stock price reactions to COVID-19. *The Review of Corporate Finance Studies*, 9(3),

- 622-655. <https://doi.org/10.1093/rcfs/cfaa012>
27. Reinhart, E., & Chen, D. L. (2020). Incarceration and its disseminations: COVID-19 pandemic lessons from Chicago's cook county jail. *Health Affairs*, 39(8), 1412-1418. <https://doi.org/10.1377/hlthaff.2020.00652>
28. Shen, H., Fu, M., Pan, H., Yu, Z., & Chen, Y. (2020). The impact of the COVID-19 pandemic on firm performance. *Emerging Markets Finance and Trade*, 56(10), 2213-2230. <https://doi.org/10.1080/1540496X.2020.1785863>
29. Song, H. J., Yeon, J., & Lee, S. (2021). Impact of the COVID-19 pandemic: Evidence from the US restaurant industry. *International Journal of Hospitality Management*, 92, Article 102702. <https://doi.org/10.1016/j.ijhm.2020.102702>
30. Teng, X., Chang, B. G., & Wu, K. S. (2021). The role of financial flexibility on enterprise sustainable development during the Covid-19 crisis – A consideration of tangible assets. *Sustainability*, 13(3), Article 1245. <https://doi.org/10.3390/su13031245>
31. Trung Huy, B. U. I., Nguyen, H. T., Pham, Y. N., Nguyen, T. T. T., Linh Thao, L. E., & Le, G. T. T. (2022). The impact of COVID-19 pandemic on firm performance: Empirical evidence from Vietnam. *Journal of Asian Finance, Economics and Business*, 9(7), 101-108. <https://doi.org/10.13106/jafeb.2022.vol9.no7.0101>

APPENDIX A

Table A1. Regression results for both operational and financial performance

Independent variables	Operational performance (ROA)					Financial performance (ROE)				
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Constant	0.03	0.06	0.07	-0.03	-0.09	-0.40	-0.36	-0.37	-0.69	-0.79
COVID-19	-0.02***	-0.12***	-0.05***	-0.00	0.00	-0.02	-0.26	-0.07	0.01	0.07
IND	-0.01	-0.01	-0.01	0.00	-0.01	0.00	-0.01	-0.01	0.02	-0.01
SIZE	0.00	-0.05***	0.01	0.01	0.01	0.05	-0.10***	0.06	0.08	0.07**
SALES		0.05***					0.15**			
SALES*COVID-19		0.01***					0.03			
LEV			-0.13***					-0.17		
LEV*COVID-19			0.05***					0.07		
LIQ				0.24***					0.66	
LIQ*COVID-19				-0.04**					-0.23	
FA					0.15***					0.45**
FA*COVID-19					-0.04**					-0.22
R ²	6.25%	28.57%	41.48%	51.38%	15.47%	0.07%	1.84%	0.01%	1.12%	0.03%
F	18.38*	115.52***	13.28*	319.93***	57.68***	2.16	10.50*	3.24	14.92*	10.89*

Note: ***Significant at the 0.01 level; **Significant at the 0.05 level; *Significant at the 0.1 level.