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The Impact of COVID-19 Pandemic on Firm Performance: Empirical Evidence from Vietnam

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Abstract

The outbreak of Coronavirus disease 2019 (COVID-19) has caused serious impacts not only on human health but also on the economies around the world. Enterprises play an important role in the development of every country but it is also one of the most affected sectors during the pandemic. Drawing on panel data of 131 enterprises listed on the Vietnamese stock exchange from 2016Q1 to 2021Q3, this study aims to investigate the impact of the COVID-19 pandemic on firm performance. Enterprises are classified into seven industries including Agriculture, Material, Industry, Real estate and Construction, Energy, Consumer, and Service. The paper also analyzes the variation of the effects among companies, focusing on differences in revenue and capital structure. The results show that the COVID-19 pandemic negatively affects business performance. In addition, the empirical findings indicate that revenue and debt decreasing can cause deterioration of firm performance during the pandemic period. The decrease in revenue has a direct impact on firm profitability. The reduction of debt levels affects the corporate leverage leading to adverse effects on firm performance. The negative effect is more pronounced for companies in some specific sectors including industry, real estate, construction, consumption, and services.

Keywords: COVID-19 Pandemic, Firm Performance, Firm Revenue, Firm Financing, Vulnerable Industries

JEL Classification Code: C33, D22, G31, G32, L25

1. Introduction

The outbreak of the COVID-19 pandemic has changed the global landscape. Apart from the human toll it has taken,

the epidemic has pushed the global economy into recession. According to Gopinath (2020), the average global GDP was estimated to have fallen by 3.9% between 2019 and 2020. In addition, global trade has fallen by 8.5% in actual prices (OECD, 2021). This has been described as the worst economic downturn since the Great Depression of the 1930s (Gopinath, 2020; Oum et al., 2022). Although the global economy showed signs of recovery in 2021, growing 5.6%, the recovery remains uneven, and risks of new outbreaks and related shutdowns persist (OECD, 2021). At the micro-level, many businesses globally have also been severely impacted by the COVID-19 pandemic. The survival of many businesses is threatened by prolonged business shutdowns, reduced demand, and value chain disruptions (Al-Mansour & Al-Ajmi, 2020). This has created significant financial and operational pressures on businesses, especially SMEs (Hayward et al., 2021).

With the spread of the Coronavirus, Vietnam's economy has also been severely affected. According to the General Statistics Office of Vietnam (2020), GDP for the whole year 2020 was only 2.91%, which was once thought to be

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the lowest growth rate in the period from 2011 to 2020. Additionally, GDP in 2021 has continued to fall at only 2.58%, becoming the lowest growth rate in the last 30 years (General Statistics Office of Vietnam, 2021).

In a developing country like Vietnam, the business sector is the most significant contributor to the development scale of the economy. It accounts for over 60% of the GDP and around 15 million laborers (Vietnam Ministry of Planning and Investment, 2020). However, the fact is that domestic businesses are the most affected by the COVID-19 pandemic. In 2020, there were 101.700 enterprises, including those suspending business for a definite time, shutting down, waiting for dissolution procedures, or completing dissolution, an increase of 13.9% over the previous year (General Statistics Office of Vietnam, 2020). In the first 11 months of 2021, the number of enterprises suspending business for a definite time was 52,100, up 17.3% over the same period last year. Nearly 39,500 enterprises stopped operating and waited for dissolution procedures, up 17.4%; 14,900 enterprises completed dissolution procedures, down 3.7%. On average, nearly 9,700 thousand businesses withdraw from the market a month (Nguyen, 2021).

Although the government has introduced several measures, programs, and policies to support businesses during the COVID-19 epidemic, the ability to improve firms' performance during and after the COVID-19 pandemic has not yet been demonstrated. In that context, this study aims to assess the impacts of the COVID-19 pandemic on the performance of businesses in Vietnam, thereby proposing appropriate solutions to overcome the problems caused by the pandemic.

The rest of the paper consists of four sections. The second section is a summary of the literature review related to the topic. The third section mentions the methodology and data description and then provides the empirical result and robustness test. The final section concludes the results obtained and makes recommendations for the government and enterprises to improve firm performance during the post-pandemic.

2. Literature Review

The impact of the COVID-19 pandemic on the business performance of enterprises has been studied in previous articles, and two main results are given. On the one hand, it is shown that the COVID-19 pandemic has a negative impact on listed companies (Shen et al., 2020; Song et al., 2021; Jiang et al., 2021) On the other hand, researchers show that the COVID-19 pandemic has no obvious impact on the performance of companies (Gerald et al., 2020; Khatib & Nour, 2021; Alsamhi et al., 2022).

Regarding the former view, there have been a large number of studies showing that the COVID-19 pandemic has

a significant negative impact on business performance. The coronavirus pandemic continues to be the source of problems and challenges that severely affect many businesses around the world, including listed companies. According to Shen et al. (2020), the performance of listed companies in China is negatively affected by the COVID-19 pandemic, especially those sectors and industries that are seriously affected, such as tourism, food drinking, and transport. Research has shown that the investment size and total revenue of listed Chinese firms had a significant decline due to the COVID-19 pandemic outbreak. Negative profitability, especially in the first quarter of 2020, is a measure that reflects the negative impacts of the pandemic on sales, operations, and production of industries hit hard by the COVID-19 pandemic. In addition, Song et al. (2021) showed that the COVID-19 pandemic affects the decrease in stock in restaurants in the United States. The result indicates that restaurants with a larger size, less return on assets (ROA), more cash flow, more leverage, and more internationalization than other companies are more resilient to a decrease in supply. In addition, the study also shows that the relationship between the COVID-19 pandemic and stock returns is not significantly affected by dividends, franchises, institutional ownership, and management ownership (Song et al., 2021). Research by Jiang et al. (2021) uses data from worldwide firms and shows that the ROA is affected by the COVID-19 pandemic. These authors also found that higher health care costs are effective against the negative shock of the COVID-19 pandemic. Simultaneously, this study shows that companies in countries with developed financial backgrounds are less likely to suffer.

On the contrary, there are some other studies that showed a negligible impact of the COVID-19 pandemic on business performance. For small and medium-sized businesses with strategic agility in Anambra State, it is indicated that the COVID-19 pandemic does not cause a considerable impact (Gerald et al., 2020). These businesses have the foresight to observe what is happening in other countries and to come up with terms and changes in their operations. Khatib and Nour (2021) examined the impact of the COVID-19 pandemic on businesses in Malaysia and indicated that there is no significant impact of the COVID-19 pandemic on firm performance and other company characteristics, including governance structure, dividend, liquidity, and leverage level. Another study by Alsamhi et al. (2022) in India demonstrates that in the construction and food sectors, there was no significant difference between net profit, earnings per share, and diluted earnings per share.

In Vietnam, there are few studies that analyze different aspects of firm performance during the COVID-19 pandemic. The majority of businesses indicate that the COVID-19 epidemic had affected customer access, followed by cash flow, affected staffing issues, and the supply chains of many businesses have been disrupted (The World Bank &

VCCI, 2020). The research results of Nguyen et al. (2020) show that businesses in the North of Vietnam are facing major difficulties in output, supply disruption, financial difficulties, and unstable human resources. Another study by Vo and Tran (2021) showed that the company’s performance and cash flow declined significantly during the COVID-19 pandemic. In addition, companies also show they hold more cash, and to combat the pandemic, their leverage ratio is also reduced. Nguyen (2022) holds that the COVID-19 pandemic has affected Vietnam’s production capacity and supply chain. During the COVID-19 period, logistics enterprises experienced a significant increase in leverage while profitability and operational efficiency decreased.

3. Model Specifications

3.1. Model Description

To assess the impact of the COVID-19 pandemic on business operations in Vietnam, the research follows the model below.

$$Y_{it} = \beta + \beta_1 \text{Period}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{LA}_{it} + \beta_4 \text{AT}_{it} + \beta_5 \text{CR}_{it} + \beta_6 \text{OEA}_{it} + \beta_7 \text{GDP}_{it} + \beta_8 \text{YEAR}_{it} + \beta_9 \text{INDUSTRY}_{it} + \varepsilon_{it} \quad (1)$$

Where: Y_{it} reflects the performance of firm i in year t , measured by ROA and ROE; Period_{it} is the main explanatory variable of the model reflecting the impact of before and during pandemic on the company i at year t . The rest variables are control variables of the model. SIZE reflects the scale of the company i at year t ; LA reflects the liabilities to assets of the company i at year t ; AT reflects asset turnover of the

company i at year t ; CR reflects the liquidity of company i at year t , OEA reflects the operating expenses to assets of the company i at year t ; GDP reflects GDP growth of Vietnam over the year.

In addition, the research examines the influence of revenue mechanism and capital structure on the business performance during the COVID-19 pandemic. Therefore, there are added explanatory variables in the model (2) and model (3) that is $\text{REV} * \text{Period}$ and $\text{DE} * \text{Period}$, respectively.

$$Y_{it} = \beta + \beta_1 \text{REV}_{it} * \text{Period}_{it} + \beta_2 \text{REV}_{it} + \beta_3 \text{Period}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LA}_{it} + \beta_6 \text{AT}_{it} + \beta_7 \text{CR}_{it} + \beta_8 \text{OEA}_{it} + \beta_9 \text{GDP}_{it} + \beta_{10} \text{YEAR}_{it} + \beta_{11} \text{INDUSTRY}_{it} + \varepsilon_{it} \quad (2)$$

$$Y_{it} = \beta + \beta_1 \text{DE}_{it} * \text{Period}_{it} + \beta_2 \text{DE}_{it} + \beta_3 \text{Period}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LA}_{it} + \beta_6 \text{AT}_{it} + \beta_7 \text{CR}_{it} + \beta_8 \text{OEA}_{it} + \beta_9 \text{GDP}_{it} + \beta_{10} \text{YEAR}_{it} + \beta_{11} \text{INDUSTRY}_{it} + \varepsilon_{it} \quad (3)$$

Details of the variables used in this study are shown in **Table 1**.

3.2. Methods

The aim of this study is to assess the impact of the COVID-19 pandemic on the performance of Vietnamese enterprises. Therefore, panel data is utilized with samples, including cross-sectional and time-series data. By combining the time series and cross-panel observations, the data contains more useful information, more variability, less multicollinearity between variables, more degrees of freedom, and higher efficiency. There are three prominent techniques for processing panel data, including the Pooled

Table 1: Variables

Type of Variables	Variables	Description
Dependent variables	ROA	Net income divided by Average total assets.
	ROE	Net income divided by Shareholder equity.
Explanatory variables	Period	Get a value of 0 for the period 2016Q1 to 2019Q4, and 1 for the period 2020Q1 to 2021Q3
	REV	The logarithm of total revenue.
	DE	Total liabilities divided by Shareholder equity.
Control variables	SIZE	The logarithm of total assets.
	LA	Total liability divided by Total assets.
	AT	Net sales divided by Average total assets.
	CR	Current Assets divided by Current Liabilities.
	OEA	Operating expenses divided by Total assets
	GDP	Real GDP: percentage of output adjusted for inflation or deflation.

OLS model, Fixed effect model (FEM), and Random effect model (REM).

The Pooled OLS model is used to observe different panel data in the same period. However, the majority of previous studies found that cross-unit effects were relatively high because the panel data contained observations of the same cross-unit over time (Podestà, 2000). There is a possibility of non-independent trends from one period to another because observations and their traits are interdependent over time. Additionally, because the connection of explanatory dependent and independent variables are more inclined to be different across subsets of firms or periods, it may reflect the heterogeneity of temporal, spatial, or both (Hicks, 1994).

Therefore, FEM and REM regression models are used to overcome this limitation. Firstly, for the specific factors of each cross-unit (enterprise), FEM has considered and in which the change of intercept for each enterprise; however, it assumes that different slopes do not change. Therefore, it can be seen that the shift of the parameters in the regression function is considered the difference between enterprises. In addition to FEM, the REM deals with other different problems of enterprises over time.

To select the most appropriate model in this study, first, Breusch and pagan Lagrangian Multiplier test (LM test) are used to test the effectiveness of the Pooled OLS and REM models. Second, for the aim of testing the effectiveness of FEM and REM, the study used the Hausman test.

3.3. Data Description

This study uses quarterly data of 131 listed Vietnamese companies from 2016Q1 to 2021Q3 to investigate the impact of the COVID-19 pandemic on company performance. Companies will be divided into industries including Agriculture, Material, Industry, Real estate and Construction,

Energy, Consumer, and Service. These are the most likely to be impacted by the COVID-19 pandemic. Industry groups are divided according to the Ministry of Planning and Investment regulations. We only selected companies with sufficient data available during the research period, and therefore, the data of the study is balanced panel data. Macro data will be collected from the World Bank. In addition, Firm data will be obtained from S&P Global Market Intelligence and the financial report of each company. Descriptive statistics of variables are reported in Table 2.

4. Empirical Results and Discussion

This study focuses on examining the impact of the COVID-19 pandemic on firm performance by measuring the profitability of firms in different industries. LM test and Hausman test are used to select the most appropriate model. The results suggest that FEM should be employed. Therefore, in this section, the analyses focus on the findings of FEM, which are shown in Table 3.

Model (2) is a report on the revenue results of companies during the COVID-19 pandemic. The coefficient of the Period is -0.0659 , which is significant at a 1% level (Table 3). This means that the COVID-19 pandemic negatively affects operational efficiency as well as reduces the profits of businesses from time to time. Meanwhile, the coefficient of $REV \cdot Period$ is 0.0021 , which is a positive coefficient, as opposed to the period coefficient (Table 3). This means that the REV of businesses is improved, reducing the impact of the COVID-19 pandemic on the ROA of the business. Besides, the coefficient of REV is 0.0145 and is significant at the 1% level, which shows that profitability positively affects ROA (Table 3). This means that an increase in corporate income will reduce the negative impact of the pandemic on performance.

Table 2: Descriptive Statistics

Variables	Expected Sign	Number of obs.	Mean	Standard Deviation	Min	Max
ROA		3,013	0.0569	0.07417	-0.601372	1.296
Period	-	3,013	0.3043	0.4602	0	1
REV	+	3,013	13.0819	1.6245	3.232121	17.75199
DE	+	3,013	0.6880	1.1584	0.000079	25.40048
SIZE	-	3,013	15.0887	1.2748	12.05487	19.88763
LA	-	3,013	0.4773	0.1906	0.0199072	1.294471
AT	+	3,013	0.9095	0.9561	0.000044	14.2
CR	-	3,013	2.2653	2.1849	0.22089	31.87571
OEA	-	3,013	0.0198	0.0230	-0.1138137	0.2079557
GDP	-	3,013	0.0555	0.0186	0.026	0.071

Table 3: Regression Result of Fixed-Effect Model

	Model 1	Model 2	Model 3
Period	-0.0408*** (0.0112)	-0.0659*** (0.1649)	-0.0350*** (0.0105)
REV * Period		0.0021** (0.0009)	
REV		0.0145*** (0.0016)	
DE * Period			0.0055* (0.0030)
DE			0.0022* (0.0011)
SIZE	0.0000 (0.0036)	-0.150*** (0.0038)	0.0043 (0.0034)
LA	-0.0663*** (0.1296)	-0.0645*** (0.0127)	-0.0860*** (0.0132)
AT	0.0861*** (0.0021)	0.0755*** (0.0024)	0.0762*** (0.0027)
CR	-0.0019*** (0.0006)	-0.0016*** (0.0802)	-0.0004 (0.0007)
OEA	-0.7546*** (0.0817)	-0.7483*** (0.0802)	-0.9317*** (0.0782)
GDP	-0.8260*** (0.2699)	-0.7991*** (0.2656)	-0.5962** (0.0241)
Constant	0.0873* (0.0502)	0.1306*** (0.0503)	0.0241 (0.0474)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
N	3,013	3,013	3,013
R-square	0.1851	0.2074	0.1914
Prob > F	0.0000	0.0000	0.0000

Note: Statistical significance at 1%, 5%, and 10% levels is shown by the symbols ***, **, *, respectively. The numbers in brackets represent the standard error of the regression coefficient.

Model (3) is a report on the capital structure results of companies during the COVID-19 pandemic. The regression coefficient of the variable period is -0.035 , which is significant at a 1% level (Table 3). This shows that the COVID-19 pandemic has a negative impact on the debt efficiency of businesses. Meanwhile, the coefficient of $DE \cdot Period$ is 0.0056 , which is significant at the 10% level (Table 3). This is the opposite of the Period coefficient that shows that increasing borrowing will reduce the negative impact of the COVID-19 pandemic. Although contrasted with Pecking Order Theory, this is consistent with the Trade-off theory developed by Myers and Majluf (1984). Obviously,

the increase in debt increases to pay for the increase in output and production, leading to a significant increase in revenue. Therefore, increased debt can increase ROA.

Research has shown a negative and significant impact of the COVID-19 pandemic on businesses' profitability and investment results. Particularly, the effect of Period on ROA is negative, but it is the opposite for $REV \cdot Period$ and $DE \cdot Period$. This is completely consistent with the research results on the financial difficulties of enterprises in the North in Vietnam due to the impact of the COVID-19 pandemic (Nguyen et al., 2020). Besides, the decline in profit was also pointed out and explained for several reasons such as difficult customer access and supply chain disruption in the study "Impact of the COVID-19 epidemic on Vietnamese enterprises" by The World Bank & VCCI (2020). Additionally, some foreign studies also give similar results. In detail, this result is also supported by a similar study by Shen et al. (2020) on the impact of the COVID-19 pandemic on corporate revenue regulation in China. Furthermore, Devi et al. (2020) also showed a similar effect on the profitability of firms on the Indonesia Stock Exchange. However, there are still studies that do not give the expected results. Specifically, Veselinova and Samonikov (2021) showed that companies from the MBI10 in the Macedonian Stock Exchange have responded relatively well and have not suffered any strong negative impact on profits from the COVID-19 pandemic. This difference is explained by the lack of industry diversity in their study, as the focus is mainly on the banking industry. Meanwhile, our research provides a perspective from the multi-industry impact, namely companies from seven industries on Vietnamese stock exchanges.

Furthermore, the results show that the variable SIZE in models (1) and (3) has a positive effect on ROA during the COVID-19 pandemic. However, the results of model 2 show a negative effect on ROA (Table 3). This is similar to the study of Charles et al. (2018) in Nigeria that SIZE and macroeconomic factors have a significant influence on profitability. It can be seen that CR negatively affects ROA through the results of all three models. In addition, the GDP of the three models also has a negative impact on ROA (Table 3). These results are consistent with the correlation results of Chimkono (2017), who reported an inverse relationship between GDP and the financial performance of commercial banks in Malawi. Ongore and Kusa (2013) analyzed the factors affecting ROA as a dependent variable and "liquidity ratio, asset quality, capital adequacy, management efficiency, GDP and inflation" as independent variables. Research has shown that GDP has a significant impact on the ROA variable. The GDP growth rate reflects how much the gross domestic product will grow next year compared to the previous year. A high-growth economy also makes businesses more efficient. Therefore, the rate of

economic growth has an impact on ROA (Pham, 2017). The variable LA also causes a negative impact on ROA through the results of all three models. All three models show that the AT variable has a positive effect on the ROA variable (Table 3). The OEA coefficients of all three models also show negative results, meaning that operating costs are high while the assets of the business decrease, causing OEA to increase and negatively affect the company's operating results. This result is consistent with the study conducted by Singla et al. (2021). The study found an association between OEA and ROA among firms in India. Most variables are similar to the expected sign in Table 2 except for SIZE in Model (2).

To further study the impact of the COVID-19 pandemic on the performance of businesses, this research examines the impact of the pandemic on 94 enterprises in the group of severely affected fields including industry, real estate, construction, consumption, and services. The study continues to use model (1) (baseline), model (2) (revenue mechanism), and model (3) (capital structure) for a smaller sample with 94 firms, and we have three new models (4), (5), and (6) in Table 4.

Model (4) shows the impact of the COVID-19 pandemic on business performance through the variable Period. The coefficient of the Period is -0.0391 , significant at the 1% level (Table 4). This means that the operational efficiency and ROA of businesses are negatively affected during the COVID-19 epidemic.

As can be seen in the model (5), the variable Period has a regression coefficient of -0.0812 , which is significant at 1% (Table 4). This shows that the COVID-19 pandemic adversely affects the performance of businesses over time. Meanwhile, the coefficient of REV*Period is 0.00344 , significant at the 1% level (Table 4). This shows that revenue has a positive influence on the ROA of the business during the COVID-19 pandemic. In addition, REV also shows a positive influence on the ROA of the business with its coefficient is 0.0103 , significant at the 1% level (Table 4). This also means that the increase in revenue will reduce the negative impact of the COVID-19 pandemic on the performance of businesses.

In model (6), the coefficient of the Period is -0.0303 , significant at the 5% level (Table 4). This shows that the COVID-19 pandemic has a negative impact on the efficiency of industries. However, the coefficients of DE and DE*Period show opposite results of 0.0024 at the significant 5% level and 0.0025 at the significance 10% level, respectively (Table 4). This result shows that increasing borrowing during the COVID-19 pandemic will reduce the negative impact on the performance of industries.

In this section, the authors examine how the core regression coefficient estimates behave when the regression specification is modified. First, the endogeneity problem is control. For three main models (1), (2), and (3), there is a high probability of encountering endogeneity since the

Table 4: Regression Result of Fixed Effect Model is Significantly Affected Firms

	Model 4	Model 5	Model 6
Period	-0.0391^{***} (0.013)	-0.0812^{***} (0.0043)	-0.0303^{**} (0.0119)
REV * Period		0.0034^{***} (0.0011)	
REV		0.0103^{***} (0.0019)	
DE * Period			0.0025^* (0.0032)
DE			0.0024^{**} (0.0011)
SIZE	0.0026 (0.0040)	0.0098^{**} (0.0043)	0.0051 (0.0038)
LA	-0.0327^{**} (0.0141)	-0.0304^{**} (0.0139)	-0.0490^{***} (0.0142)
AT	-0.0983^{***} (0.0032)	0.0839^{***} (0.0040)	0.0826^{***} (0.0030)
CR	-0.0016^{**} (0.0007)	-0.0015^{**} (0.0007)	-0.000 (0.0007)
OEA	-0.9592^{***} (0.0859)	-0.9568^{***} (0.0848)	-1.031^{***} (0.0801)
GDP	-0.7843^{**} (0.3110)	-0.7626^{**} (0.3080)	-0.5238^{**} (0.2822)
Constant	0.0290 (0.0549)	0.0913 (0.5562)	-0.0132 (0.0517)
Industry	Yes	Yes	Yes
Year	Yes	Yes	Yes
N	3,013	3,013	3,013
R-square	0.2131	0.2347	0.2234
Prob > F	0.0000	0.0000	0.0000

Note: Statistical significance at 1%, 5%, and 10% levels is shown by the symbols *** , ** , * , respectively. The numbers in brackets represent the standard error of the regression coefficient.

dependent variable (firm performance) may interact with some independent variables. Therefore, the authors add lag variables of the dependent variables ROA and some control variables, including SIZE, LA, AT, OEA, and CR, into equations (1), (2), and (3). The majority of lag variables in the model, except for the variable CR (-1) are significant at 1% and have the same impact on firm performance compared to variables in three main models (1), (2), and (3). Second, besides the Fixed-effect model, the study used Pooled OLS and Random effect models to test the relationship between variables. In general, both models show relatively similar results to the Fixed-effect model. Third, the study uses the

alternative dependent variable ROE to test the robustness of the model (1). The results show the same effect as the model (1) which ROA is used as a dependent variable. Fourth, to examine the correlation of variables, the study runs the model only including ROA and two dependent variables Period and REV*Period. The results are similar to the results of the main models.

5. Conclusion

This study examined the impact of the COVID-19 pandemic on 131 companies listed on the Vietnamese stock exchange in the period from 2016Q1 to 2021Q3. The study used Pooled OLS, FEM, and REM regression models to measure the impact of the pandemic on the performance of businesses. During the pandemic, businesses suffered a lot of losses in financial and human resources as well as interrupted supply chains. Research shows that enterprises were significantly affected during the pandemic through reduced revenue and altered capital structure. Specifically, decreasing revenue will reduce the performance of the business because lower revenue will indicate lower profitability. Simultaneously, the research results also show that reducing debt also reduces the efficiency of the business because a declining debt indicates a low level of financial leverage. In addition, the study also assesses the impact of the COVID-19 pandemic on the seriously impacted fields, including industry, real estate, construction, consumption, and services. In short, the COVID-19 pandemic has had a tremendous impact on Vietnamese companies.

There are two key points to minimize the negative impact of the COVID-19 pandemic on businesses in Vietnam, including revenue growth and increased debt. As a result, there are several recommendations for the government and businesses as follows.

For the government, it is necessary to urgently implement solutions to support businesses to access information channels on import and export and find new markets for importing raw materials and input materials. Moreover, the support of localities to promote the consumption of agricultural products in the domestic market and expand exports to markets with great potential also needs to be done. Additionally, the government should accelerate the disbursement of public investment. Furthermore, Vietnam's state banks should study, amend and supplement policies and regulations on debt rescheduling, expanding the target group and the scope of the group of businesses supported to suit the current situation.

For the businesses, first, it is necessary to focus on measures that improve revenue. By re-evaluating costs, businesses need to cut unnecessary costs. However, the costs should be carefully considered by businesses before cutting so as not to seriously affect performance. Second, businesses

should restructure the proportion of loans to ensure the company's performance in the post-COVID-19 period. Third, businesses need to speed up the digitization process, creating conditions for customers to communicate with them through digital communication channels.

References

- Al-Mansour, J. F., & Al-Ajmi, S. A. (2020). Coronavirus 'COVID-19'-Supply chain disruption and implications for strategy, economy, and management. *Journal of Asian Finance, Economics, and Business*, 7(9), 659–672. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO9.659>
- Alsamhi, M. H., Al-Ofairi, F. A., Farhan, N. H. S., Al-ahdal, W. M., & Siddiqui, A. (2022). Impact of Covid-2019 on firms' performance: Empirical evidence from India. *Cogent Business and Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2044593>
- Charles, D., Ahmed, M. N., & Joshua, O. (2018). Effect of firm characteristics on the profitability of listed consumer goods companies in Nigeria Dioha Charles. *Journal of Accounting, Finance, and Auditing Studies*, 17, 14–31.
- Chimkono, E. E. (2017). *Effect of micro and macro-economic factors in the financial performance of commercial banks in Malawi*. <http://ir.jkuat.ac.ke/handle/123456789/2460>
- Devi, S., Warasniasih, N. M. S., & Masdiantini, P. R. (2020). The impact of the 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>
- General Statistics Office of Vietnam. (2020). *The socio-economic situation in the fourth quarter and 2020*. <https://www.gso.gov.vn/en/data-and-statistics/2021/01/socio-economic-situation-in-the-fourth-quarter-and-the-whole-year-2020/>
- General Statistics Office of Vietnam. (2021). *Impact of the covid-19 epidemic on the growth of economic sectors third quarter of 2021*. <https://www.gso.gov.vn/en/data-and-statistics/2021/12/impact-of-the-covid-19-epidemic-on-the-growth-of-economic-sectors-third-quarter-of-2021/>
- Gerald, E., Obianuju, A., & Chukwunonso, N. (2020). Strategic agility and performance of small and medium enterprises in the phase of Covid-19 pandemic. *International Journal of Financial, Accounting, and Management*, 2(1), 41–50. <https://doi.org/10.35912/ijfam.v2i1.163>
- Gopinath, G. (2020). *The great lockdown: Worst economic downturn since the great depression*. <https://blogs.imf.org/2020/04/14/the-great-lockdown-worst-economic-downturn-since-the-great-depression/>
- Hayward, M., Caldwell, A., Steen, J., Gow, D., & Liesch, P. (2021). An in-depth analysis of one year of SME and entrepreneurship policy responses to COVID-19: Lessons learned for the path to recovery. *OECD SME and Entrepreneurship Papers*, 25, 1–253.

- Hicks, A. (1994). Introduction to pooling. In: Janoski, T. & Hicks, A. (Eds.). *The comparative political economy of the welfare state*, (pp. 44–91). Cambridge, MA: Cambridge University Press.
- Jiang, B., Zhu, H., Zhang, J. H., Yan, C., & Shen, R. (2021). Investor sentiment and stock returns during the COVID-19 pandemic. *Frontier Psychology*, 12, 70. <https://doi.org/10.3389/fpsyg.2021.708537>
- Khatib, S. F. A., & Nour, A. N. I. (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>
- Vietnam Ministry of Planning and Investment. (2020). *2020 Vietnamese Enterprises White Book*. Hanoi, Vietnam: Statistics Publishing.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221. [https://doi.org/10.1016/0304-405X\(84\)90023-0](https://doi.org/10.1016/0304-405X(84)90023-0)
- Nguyen, H. X. (2022). The effect of COVID-19 pandemic on the financial performance of firms: empirical evidence from Vietnamese logistics enterprises. *Journal of Asian Finance*, 9(2), 183. <https://doi.org/10.13106/jafeb.2022.vol9.no2.0177>
- Nguyen, T. H., Truong, T. An., Do, T. D., & Ha, S. T. (2020). The impact of the Covid-19 pandemic on Enterprises' Business: A case study in North Vietnam. *The Journal of Economic and Development*, 63, 616. http://ktpt.neu.edu.vn/Uploads/Bai_bao/2020/So_274/379215.pdf
- Nguyen, V. (2021). *More than 106,000 enterprises dissolved or ceased operation*. <https://cafeland.vn/tin-tuc/hon-106000-doanh-nghiez-giai-the-ngung-hoat-dong-104672.html>
- OECD. (2021). *Economic and social impacts and policy implications of the war in Ukraine*. <https://www.oecd.org/economic-outlook/march-2022/economic-outlook/>
- Ongore, V. O., & Kusa, G. B. (2013). International journal of economics and financial issues. *International Journal of Economics and Financial Issues*, 3(1), 237–252. <http://www.econjournals.com/index.php/ijefi/article/view/334>
- Oum, S., Kates, J., & Wexler, A. (2022). *The economic impact of COVID-19 on PEPFAR countries*. KFF. https://www.kff.org/report-section/economic-impact-of-covid-19-on-pepfar-countries-issue-brief/#endnote_link_546230-1
- Podestà, F. (2000). Recent developments in quantitative comparative methodology: the case of pooled time-series cross-section analysis, *DSS Papers*, 3(2), 5–44. <https://doi.org/10.1.1.464.841>
- Pham, A. T. (2017). Analysis of factors affecting the performance of joint-stock commercial banks in Vietnam, *Journal of Science*, 56, 72–93.
- 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>
- Singla, N., Ahmed, M., & Singh, K. (2021). Financial performance of micro-finance institutions in India. *Indian Journal of Economics and Development*, 17(4), 767–776. <https://doi.org/10.35716/IJED/21188>
- Song, H. J., Yeon, J., & Lee, S. (2021). Impact of the COVID-19 pandemic: Evidence from the U.S. restaurant industry. *International Journal of Hospitality Management*, 92, 702. <https://doi.org/10.1016/j.ijhm.2020.102702>
- The World Bank & VCCI. (2020). *Impact of the Covid-19 epidemic on Vietnamese enterprises: Some key findings from the 2020 Enterprise Survey*. https://pcivietnam.vn/uploads/VN-Nghien-cuu-khac/3.-WB-VCCI_BAO-CAO-COVID-19_Web_version.pdf
- Veselinova, E., & Samonikov, M. G. (2021). The impact of COVID-19 pandemic on firms performance: analysis of the companies from the MBI10 index. *Journal of Economics*, 6, 174–184. <https://doi.org/10.46763/joe2160174v>
- Vo, T. T. A., & Tran, N. T. A. (2021). The Effect of COVID-19 Pandemic on Firms: Evidence from Vietnam. *SSRN Journal*, 2, 34. <https://doi.org/10.2139/ssrn.3934934>