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-RESEARCH ARTICLE-

IMPACT OF COVID-19 ON THE PROFITABILITY PERFORMANCE OF REAL ESTATE BUSINESSES IN VIETNAM

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—Abstract—

This study tries to analyze how the Covid-19 epidemic has affected the profitability of Vietnam's real estate enterprises. The researchers collected data from sixty real estate enterprises in Vietnam from the final quarter of 2018 to the third quarter of 2021. This period encompasses the milestones that occurred before and during the Covid-19 pandemic. This study differentiates from previously published research by employing the statistical comparison approach and analyzing the profitability determinants of real estate enterprises across two time periods, before and during the Covid-19 pandemic, through regression. According to the Covid-19 era, the favorable impact of asset turnover and credit growth rate on the profitability of real estate firms has been neutralized during the results. During the Covid-19 period, the beneficial benefits of asset turnover and asset growth on profitability during the pre-Covid period have become negative. Our investigation has uncovered the dilemma in the real estate industry in which many companies are forced to sell at a loss to meet their financial obligations. The report suggests methods to assist these firms in overcoming obstacles and adapting to future life along Covid-19. In addition, the report suggests that the government simplify legal procedures and implement some online procedures to facilitate real estate transactions.

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1. INTRODUCTION

Before the outbreak of the covid-19 epidemic, real estate was the most lucrative industry. It makes money in multiple ways, and this industry has the lowest risk of failure. Suppose the businesses are engaged in buying and selling real estate assets. In this situation, they create profits on the difference between the sale and purchase price of land or a building due to the appreciation of property values over time. Profits on land and buildings can be made by renting them out for residential or commercial reasons. In addition, royalties can be collected on land rented to firms for mineral exploration or land development. Real estate investing has been the most lucrative business for a long time due to appreciation, royalties, rental incomes, and earnings through real estate brokerage Li, Feng, Zhao, and Carter (2021). Over the past many years, real estate investments have provided a constant cash flow and return significantly larger than traditional sources of income, such as corporate debt, with only a modest increase in risk. Since the covid-19 outbreak, the situation has altered, and the entire value chain of the real estate business has been adversely affected. The service providers strive to keep their employees and customers healthy in the real estate market. Numerous developers cannot obtain permits, resulting in construction delays, halts, and potentially decreased return rates. In the meantime, many asset owners and operators are seeing a large decline in operating income, and virtually everyone is concerned about the number of tenants who may be unable to meet their lease obligations. The terms "concession" and "abatement" are current buzzwords, and participants are scrambling to choose whom they should work (Teresienė, Keliuotytė-Staniulėnienė, & Kanapickienė, 2021).

During the crisis, not all real estate holdings function equally well. The market appears to have shifted its focus away from lease duration and toward the intrinsic level of physical proximity among an asset class's consumers. Healthcare facilities, regional malls, accommodation, and student housing have taken the losses brunt. Self-storage facilities, industrial comforts, and data centers, on the other hand, have had less dramatic losses. According to one assessment, the real estate assets' unlevered enterprise value had declined by 25% or more in most industries as of April 3 and 37% in the hotel sector. It's no wonder owning and operating those properties becomes less lucrative when customers avoid crowds, education institutions send students home, and businesses, hotels, and restaurants lock their doors. As a result, the liquidity of assets and balance-sheet stability have become critical (De Toro, Nocca, & Buglione, 2021).

This study compares the profitability performance of real estate businesses in Vietnam before and during covid-19, as measured by debt ratio, short debt ratio, basic earnings, asset turnover, current ratio, assets growth, and credit growth. Real estate is a significant asset for every nation. According to the Vietnam National Real Estate Association (VNREA), the real estate sector would account for 7.6% of Vietnam's GDP in 2019 and 20.8% of the country's total assets in 2020. Countries, including Vietnam, have been paying thoughtful attention to the real estate market development. The Covid-19 pandemic spread quickly too many countries worldwide and reached Vietnam at the beginning of 2020. Prime Minister Nguyen Xuan Phuc's campaign "Fighting the epidemic as fighting against the enemy" has achieved considerable success in 2020. Real estate analysts anticipated that after the Covid-19 epidemic in Vietnam was under control in the middle of the year 2020, real estate would be an attractive asset for risk-averse investors. Real estate companies utilize this opportunity to accelerate their sales in 2021. In 2021, however, the Covid-19 pandemic will strike Vietnam and many other nations again, leading real estate enterprises to suffer a greater debt burden and a greater degree of difficulty.

Even while real estate companies listed on Vietnam's stock exchange are generating substantial profits, their debt burden and negative cash flow pose the greatest risk. As the covid-19 pandemic has negatively impacted the real estate market in Vietnam, it is anticipated that people would be forced to live with the virus whether it strikes softly or violently. Real estate companies must understand how covid-19 can pose a threat to their continued profitability. Therefore, the authors focus on this topic. The study aims to examine the effects of covid-19 using variables such as debt ratio, short debt ratio, basic earnings, asset turnover, and current ratio, as well as assets growth and credit growth prior to and during covid-19.

The study contributes greatly to the previous literature. In previous literature, authors have only checked the impacts of covid-19 on real estate performance for liquidity and marketing. Little attention has been given to the profitability of real estate owners and operators. This study examines covid-19 impacts on real estate profitability performance. The studies have examined the effects of the debt ratio, short debt ratio, basic earning, asset turnover, current ratio, and assets growth and credit growth on real estate profitability performance either before covid-19 or covid-19. The present study compares debt ratio, short debt ratio, basic earning, asset turnover, current ratio, and assets growth and credit growth on real estate profitability before covid-19 and during covid-19. Many studies have been conducted to analyze covid-19 impacts on real estate profitability in different nations, but little research has been done about the covid-19 impacts on real estate profitability in Vietnam. So, the present study is an excellent contribution to the literature.

Due to the limitations of data collecting in the pre-Covid-19 era, little research has been conducted on real estate enterprises' operations in the past. Countries worldwide, including Vietnam, have realized that they will have to coexist with the virus. When investors, families, and society are forced to live in high-risk environments, they tend to hoard their assets rather than invest. In the new normal, this presents not only obstacles for real estate enterprises but also opportunities. Changes in consumption, accumulation and investment during the new normal have necessitated a reevaluation of the impact of the pandemic on real estate companies' commercial activities to identify possible strategic responses. This study will assist Vietnamese real estate enterprises in evaluating the impact of the Covid-19 pandemic on their operations and propose remedies for the new norm. The rest of the paper is comprised of several parts: The next portion of the study reviews the previously conducted literature about the impacts of the debt ratio, short debt ratio, basic earning, asset turnover, and current ratio, along with assets growth and credit growth on real estate profitability before covid-19 and during covid-19. The third part describes the data collection and analysis methodology and presents the research findings. Then, with the help of appropriate discussions, the study findings are approved by previous articles. Study conclusions and implications follow the discussions. The paper ends with limitations and future directions.

2. LITERATURE REVIEW

Research regarding the impact of Covid-19 on the real estate industry is currently examined from different angles, including studies on the effects of Covid-19 on the commercial real estate market or the impact of Covid-19 on the housing market. For the commercial real estate market, liquidity is affected by both the supply and demand due to the restriction and lockdowns. Impacted by the pandemic, businesses moving to remote working have decreased demand for new premises, or companies reducing operation have extended the rental payment term. For the housing market, sales have been seriously affected by investors' sentiment as these have two considerable factors: capital intensive investment and less liquidity. Working remotely will continue to rise, causing a higher demand for fully furnished departments. Therefore, real estate businesses operating in the traditional housing segment will witness lower sales and profitability.

Studies on real estate business earnings published in foreign journals in Vietnam are limited. M.-L. T. Nguyen, Bui, and Nguyen (2019) show how capital structure affects the profitability of Vietnamese real estate businesses. Both studies confirm that capital structure harms the profitability of real estate businesses. If there is high financial leverage, it limits the profitability of real estate businesses. However, the capital structure has a favorable effect on the profitability of real estate enterprises if there is a limited reliance on borrowing since it does not restrict the profitability of real estate firms. Devi, Warasniasih, Masdiantini, and Musmini (2020) examine the effects of covid-19 on financial profitability in 49 sub-sectors and zero sectors. The sample consists of 214 companies listed on the Indonesia Stock Exchange, and the effects of the leverage ratio and liquidity (current ratio) on financial performance are estimated. It demonstrates that, even during covid-19, leverage ratio has a positive relationship with financial performance, with the exception that, under normal conditions, an

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increase in debts or short-term obligations helps firms expand their business scope, whereas under covid-19, an increase in debt interest, a decrease in the supply of debts, and a decrease in loan utilization all contribute to a decline in financial profitability. In addition, they demonstrate that during covid-19, the liquidity develops a negative relationship with financial performance, as an increase in liquidity to facilitate operations compels firms to sell assets at a loss, which diminishes profitability.

Q. Vuong (2017) study points out factors affecting real estate businesses' profitability. Q. D. Vuong (2017) results on 58 real estate businesses in the (2013-2015) period show that the capital structure is extremely active to profitability. Still, the high-term loan rate of loaning is negative for them. Besides, the inventory scale is negative to a business's profitability ability. According to research conducted by Phung and Le (2013), the threshold of financial leverage has distinct effects on the profitability of real estate businesses. When real estate companies' financial leverage falls below 0.383%, the effect of leverage on their capacity to survive is not evident. When leverage exceeds this threshold, it is detrimental to profitability. During the period (2010-2017), the majority of Vietnamese real estate enterprises had larger leverage than the criteria. Moreover, the size of the real estate company positively affects its profitability. Martins, Serra, and Stevenson (2019) investigate the factors influencing the profitability of real estate companies in Sri Lanka and Japan. Before the Covid-19 epidemic, the study examines factors affecting the profitability of real estate enterprises using data collected between 2010 and 2019. The report reveals that the Sri Lankan real estate business prioritizes equity in its capital structure, whereas the Japanese real estate industry prioritizes debt. In addition to capital structure and operational efficiency, asset growth favorably influences the profitability of real estate enterprises in both nations, according to the findings of this study. Tanrıvermiş (2020) collected data from the Turkish economy to analyze the impact of the covid-19 pandemic on real estate performance. According to the survey, the market condition in covid-19 is dire due to social estrangement, lockdown, and declining living standards. If owners and operators of real estate continue to grow their assets in such a scenario, they must endure the loss, as it diminishes cash on hand. If they require liquidity in the future, they must sell the property for less than the acquisition price.

Between 2010 and 2014, Diaz and Hindro (2017) analyzed the factors influencing the profitability of real estate enterprises in Indonesia. The results differentiate between large-scale and small-scale businesses. In large and small businesses, profitability is affected differently by liquidity ratios or short-term asset management, such as inventory management or accounts receivable management. Size and total asset turnover are the only factors that have the same beneficial effect on the profitability of both large and small businesses. The study by Gerwe (2021) sheds light on the ramifications of covid-19 for real estate enterprises that provide housing services. According to the research, the rise in the number of buildings or other assets typically

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boosts the income of real estate owners. The covid-19 flips the board, and the increasing acquisition of assets may bring financial distress, particularly in regions with insufficient investment. L. T. M. Nguyen and Dinh (2021) investigate the effectiveness of risk management and financial stability during the covivirus-19 pandemic. The information on the relevant criteria was obtained from 279 listed Vietnamese enterprises. During covid-19, the results indicated that asset turnover affects the financial stability of real estate owners and operators. When there is no market demand for assets during a crisis, corporations must face a loss if they attempt to sell their assets aggressively. This decreases the total worth of the firms' assets and creates financial instability.

Internationally published research about the Vietnamese real estate market is sparse. According to Wang, Nguyen, and Dang (2021), based on data collected between 2010 and 20215, real estate enterprises include loans into their capital structure. Khoa and Thai (2021) studied the application of the trade-off theory to the capital structure of 35 Vietnamese real estate firms between 2010 and 2017. The paper presents empirical evidence that listed Vietnamese real estate firms may alter their current capital structure to conform to the desired capital structure, determined by long-term considerations. A debt-to-asset ratio of 14 percent will have a beneficial effect on the profitability of real estate enterprises. According to Ullah, Sepasgozar, Sikarwar (2021), real estate enterprises have a high return on assets (ROA), a high ratio of fixed assets to total assets, or are mature corporations that restrict the use of capital structures with significant debt. Large companies with robust growth prefer to employ debt in their capital structures. The research of (M.-L. T. Nguyen et al., 2019; Sikarwar, 2021) examine the correlation between the Vietnamese real estate market and the expansion of assets. This nation is in the first stages of real estate development. The study reveals that the real estate sector has a favorable effect on expanding Vietnam's assets. This facility allows real estate owners and operators to meet their financial obligations during rapid credit expansion within the nation. This increases their profitability by increasing their assets and enhancing their performance. During covid-19, when individuals and businesses rely on credit to pay for necessities such as food, medication, and clothing, real estate firms are unable to gain from credit and must instead endure a decline in profitability due to rising interest rates (Nanda, Xu, & Zhang, 2021).

Bond and Xue (2017) check real estate firms' investment and financial performance. The research sample consists of 356 equity real estate investment trusts traded on Amex, Nasdaq NSYE from 1994 to 2013. The study shows a positive relation between basic earnings per share and the financial profitability of real estate. When there is an increase in the actual earnings on claims, the investors feel satisfied and attracted to the companies. This results in an equity level, and there are more funds with the firms to carry their businesses profitably.

The COVID-19 outbreak has weakened the economy of Australia and its capital market since the beginning. The stock market as a whole has declined. Alam, Wei, and Wahid (2021) check the primary per share effects on financial profitability for the listed firms. The study analyzed data for eight businesses like transportation, healthcare, pharmaceuticals, food, energy, real estate, technology, and telecommunications. The study is based on the data from the Australian Securities Exchange from February 27, 2020, the date of announcement of the covid-19 outbreak in Australia to onward. The research reveals that the basic earnings per share are reduced when there is low marketing because of public gatherings restrictions. The lower basic earnings discourage the investors and lower the financial profitability. Mazur, Dang, and Vega (2021) find that food, healthcare, and natural gas stocks earn high positive returns, while the earnings on equity in petroleum, hospitality, real estate, and entertainment sectors decline dramatically.

2.1 Research Gaps

This study removes many literary gaps. Previous studies that check the impact of the Covid-19 pandemic on real estate businesses mainly focus on management, liquidity, and marketing. This study initiates to check the effects of covid-19 on the profitability performance of real estate firms. The previous studies about the influences of covid-19 on real estate firms were based on the descriptive statistic method. The present study collects quantitative data about covid-19 impacts on real estate firms, removing the literary gap.

In addition, authors have studied the effects of covid-19 on the profitability performance of real estate. However, no research has compared the effects of covid-19 on the profitability performance of the real estate industry. The current study employs comparative analysis to examine the effects of debt ratio, short debt ratio, basic earnings, asset turnover, current ratio, and assets growth and credit growth on real estate profitability before and during covid-19. In addition, past research has examined the effects of the debt ratio, short debt ratio, basic earnings, asset turnover, current ratio, assets growth, and credit growth on the profitability performance of real estate during covid-19 in several states. In the context of Vietnam, the present with an examination of the effects of the debt ratio, short debt ratio, basic earnings, asset turnover, current ratio, assets growth, and credit growth on real estate profitability performance before and during covid-19.

3. DATA AND METHODOLOGY

Profitability is the evaluation of the business performance of an enterprise based on all of its managing and utilizing assets. Businesses are regarded as more efficient when they generate greater profits, given that their assets are comparable. Return on equity ("ROE") reveals how well enterprises generate profits for their shareholders, not their creditors. And because each shareholder has a unique risk tolerance, their return

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expectations vary. Therefore, ROA is the ideal performance metric for analyzing organizations. ROA - Return on Assets was used as a proxy in this analysis, as it was in the investigations of (Kaklauskas et al., 2021a, 2021b). Using the current ratio, liquidity is studied. Asset administration employs fundamental profitability ratios and total asset turnover. The debt ratio and the short-term debt ratio symbolize the management of debt.

Additionally, the study includes macroeconomic issues that influence the profitability of businesses. Customers' decisions to purchase and invest in this brand are significantly influenced by the expansion of assets and credit in the real estate industry. For numerical similarity in units of percent or times, the model includes assets growth and credit growth measures. Table 1 displays the procedure for determining the indicators and data sources. The research design is depicted in Figure 1.

Table 1: Information about Variables In The Research Model

Variables	**Measure**	**Sign**	**Sources**
Return on Assets	Earning after Tax/Assets	ROA	(M.-L. T. Nguyen et al., 2019)
Debt ratio	Debt/Assets	DR	(Jufrizen, Putri, Sari, Radiman, & Muslih, 2019)
Short debt ratio	Short-debt/Debt	SDR	(Jufrizen et al., 2019)
Basic earning	EBIT/Assets	BE	(Nurlaela, Mursito, Kustiyah, Istiqomah, & Hartono, 2019)
Asset turnover	Sale/Assets	AT	(Nurlaela et al., 2019)
Current ratio	Current Assets/ Assets	CR	(Husna & Satria, 2019)
Assets growth	(Assets$_t$– Assets$_{t-1}$)/ Assets$_t$	AG	(Mauris & Nora, 2019)
Credit growth	Credit$_t$– Credit$_{t-1}$)/ Credit$_t$	CG	(Husna & Satria, 2019)

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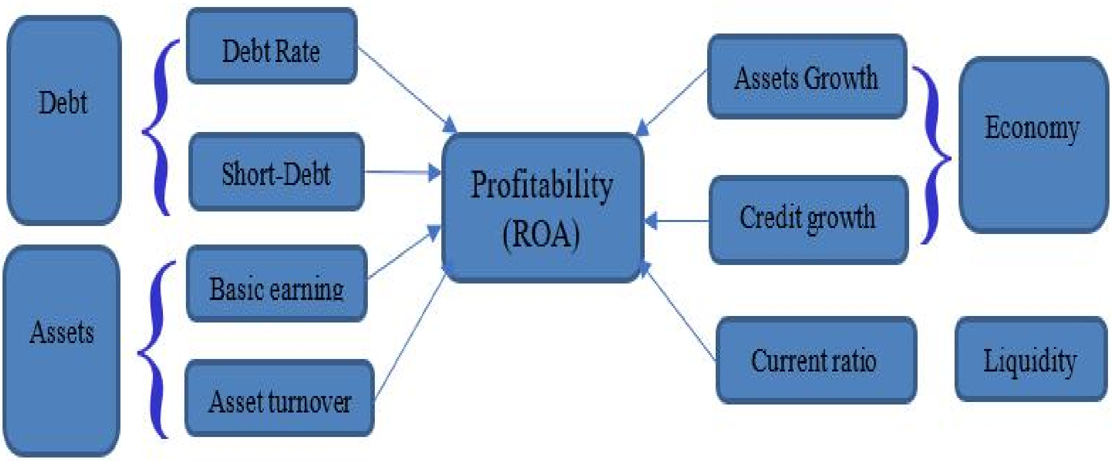

Figure 1: Model framework

The research model is rewritten:

$$ROA_{i,t} = \beta_0 + \beta_1 DR_{i,t} + \beta_2 SDR_{i,t} + \beta_3 BE_{i,t} + \beta_4 AT_{i,t} + \beta_5 CR_{i,t} + \beta_6 AG_{i,t} + \beta_7 CG_{i,t} + \varepsilon_{i,t} \quad \textbf{(1)}$$

The observed sample consists of 60 listed real estate companies on the Vietnamese stock market, and data was collected from Q1/2018 to Q3/2021. The study is divided into two periods to assess the impact of these factors on ROA, which are (a) the period before the Covid-19 from Q1/2018 to Q4/2019 and (b) the period during Covid-19 from Q1/2020 to Q3/2021. By dividing the period, the studies allow authors to see how Covid-19 affects Vietnamese real estate businesses quickly. With the data sample having a much shorter observation than the number of observations, the study is suitable for using the regression estimation technique on the static table according to the Ordinary Least Squares - OLS, Fixed Effect Model - FEM techniques, and Random Effect Model – REM. Firstly, the article examined the association among the variables using Fem. It is an appropriate model when the study has autocorrelation and heteroscedasticity issues. The equation for FEM is given as under:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + u_{it} \quad \textbf{(2)}$$

In the equation mentioned above, subscript (i) shows the individual country and made the different countries concerning their characteristics. The FEM equation uses understudy variables as under:

$$ROA_{it} = \beta_{1i} + \beta_2 DR_{it} + \beta_3 SDR_{it} + \beta_4 BE_{it} + \beta_5 AT_{it} + \beta_6 CR_{it} + \beta_7 AG_{it} + \beta_8 CG_{it} + u_{it} \quad \textbf{(3)}$$

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Secondly, the article has also investigated the nexus among variables using the REM. REM has preserved the intercept inversely and assumed that constructs are random and have a mean value of β_1 other than β_{1i}. Differences of individuality are imitated in error terms (ε_i) (Damodar N Gujarati & Porter, 2003). The REM equations are as under:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \mathcal{E}_i + u_{it} \quad \textbf{(4)}$$

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + w_{it} \quad \textbf{(5)}$$

In equations 4 and 5, $w_{it} = \varepsilon_i + \mu_{it}$ and ε_i show the individual error component while μ_{it} shows the time-series error as well as the combined cross-section component. The REM using understudy variables:

$$ROA_{it} = \beta_1 + \beta_2 DR_{it} + \beta_3 SDR_{it} + \beta_4 BE_{it} + \beta_5 AT_{it} + \beta_6 CR_{it} + \beta_7 AG_{it}\ \beta_8 CG_{it} + w_{it} \quad \textbf{(6)}$$

The study also uses tests to evaluate the phenomenon of correlation and variance and compare which estimation technique is suitable for the research results. Using this estimation technique is similar to the studies of Diaz and Hindro (2017) and M.-L. T. Nguyen et al. (2019). The study focuses on assessing the impact of the Covid-19 pandemic on the profitability of real estate businesses by comparing the effect of independent factors on the profitability of businesses in two periods, before and during the pandemic.

4. EMPIRICAL RESULTS AND DISCUSSION

The descriptive statistics findings are shown in Table 2. From Q1 2018 to Q4 2019, eight observational periods for the pandemic preceding Covid-19 were gathered. From Q1/2020 to Q3/2021, seven observation periods are gathered for the Covid-19 era. According to Table 2, profitability, liquidity, asset management of firms, and macroeconomic indicators all deteriorated dramatically throughout the Covid period, with the debt management ratio increasing significantly over the Covid-19 period. The average debt ratio of Vietnam's real estate enterprises is greater than 50 percent, particularly 56.36 percent during the pre-Covid period and 58.91 percent during the Covid-19 period.

Due to the nature of the business, the majority of the real estate company's capital is tied to individual projects. If the project is in the formation phase, equity cannot be recorded until the government awards the firm the land use right. However, during the Covid-19 period, the government implemented long social distance in 2020 and 2021, delaying the recognition of ownership rights for some housing complexes. During this time, the invested capital in the project has not been registered, resulting in the financial structure of some real estate businesses shifting. During the Covid-19 period, several real estate firms have a debt-to-equity ratio greater than 100 percent, with the

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highest amount reaching 154.827 percent. With the prospect of receiving land-use rights for projects, real estate enterprises temporarily rely on short-term debt, which accounts for a significant amount of the enterprise's overall debt, averaging 71.611 percent during the pre-Covid period and 72.065 percent during the Covid period. Quarterly ROA fluctuates substantially. During the pre-Covid period, the average ROA per quarter is 1.114 percent, ranging from -10.611 percent per quarter to 17.37 percent per quarter. The steep decline in ROA during the Covid-19 period is attributable to adverse business conditions. The average ROA per quarter is only 0.806 percent, with the lowest ROA per quarter being -19.550 percent and the greatest ROA per quarter being 8.76 percent.

The correlation coefficients between independent variables are shown in Table 3 in both studied periods. The correlation coefficients of the variables belonging to the enterprise are statistically at the 1% significance level. Particularly, variables reflecting the economy, such as assets growth rate and credit growth rate, are common variables for the whole Vietnamese economy in each quarter, not just each enterprise. Therefore, it is possible that the correlation coefficient between the general variables of the economy may not be statistically significant with the individual variables of the enterprise. These correlation coefficients are lower than 0.6, indicating that the independent variables are unlikely to have multicollinearity.

Table 2: Descriptive Statistics before Covid-19 and during the Covid-19 Period

Variable	Before Covid-19				Covid-19			
	Obs	Mean	Min	Max	Obs	Mean	Min	Max
ROA	480	1.114	-10.611	17.372	420	0.806	-19.550	8.762
DR	480	56.361	3.258	101.834	420	58.911	3.034	154.827
SDR	480	71.611	4.376	100	420	72.065	7.292	100
BE	480	1.452	-9.124	25.947	420	1.098	-19.740	10.983
AT	480	0.108	-0.026	1.608	420	0.093	-0.025	2.161
CR	480	2.161	0.072	17.124	420	1.876	0.115	15.165
AG	480	3.154	1.9	4.32	420	2.467	0.68	5.02
CG	480	7.038	6.73	7.48	420	2.176	-6.17	6.61

Table 4 displays the estimated findings of the regression coefficient for factors affecting the profitability of real estate enterprises during the pre-Covid-19 period. The authors pick Pooled OLS over REM because the p-value of Breusch and Pagan's test for Pool OLS is more than 5%. The authors prefer FEM over Pool OLS because the p-value for the F test is less than 5%. The estimated regression coefficients are therefore based on the FEM approach. The statistical significance level of the beta coefficients for the variables DR, BE, and AT is 1 percent, whereas the significance threshold for CR, AG, and CG is 10 percent. The beta coefficient representing the influence of the debt ratio on the profitability of the real estate business is extremely low (beta

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coefficient -0.002), indicating that the debt ratio has a weak and negative impact on the profitability of the real estate business. The greater the amount of debt utilized by a company, the worse its profitability. Basic earnings, total asset turnover, asset growth, and credit expansion all contribute positively to the profitability of businesses. This demonstrates that liquidity considerations, such as asset management, debt management, and macroeconomic policies of the economy, all impacted the profitability of real estate companies before Covid-19.

Table 5 presents the regression coefficient for the Covid-19 era. In comparing Pooled OLS and REM, chose Pooled OLS because Breusch and Pagan's tests have a p-value greater than 5% for Pooled OLS. Pooled OLS is chosen over FEM because Pooled OLS has an F test with a 5 percent greater p-value. Consequently, the regression coefficient for the Covid-19 era was determined using the Pooled OLS approach. According to the computed regression coefficients, three elements determine the profitability of real estate businesses.

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Table 3: Correlation Coefficients

	DR	SDR	BE	AT	CR	AG	CG
DR		-0.164***	-0.190***	-0.008	-0.482***	0.000	-0.008
SDR	-0.091***		-0.104**	0.059	-0.223***	-0.031	-0.019
BE	-0.269***	-0.111**		0.499***	0.411***	0.123**	0.055
AT	-0.069	0.170***	0.446***		0.008	0.147**	0.033
CR	-0.386***	-0.317***	0.344***	-0.059		0.021	0.012
AG	0.013	0.006***	0.052	0.040	-0.007		0.282***
CG	0.003	-0.020	0.059	0.043	-0.005	-0.663***	
Note: ***, ** and * Indicates Significant at 1%, 5% and 10% Level of Significance Based on t-Statistics.							

Table 4: Estimated Regression Coefficient before the Covid-19 Period

Profitability (ROA)	**REM**		**POOL OLS**		**FEM**	
	Coefficient	**P-value**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
DR	0.002	0.316	0.003	0.262	0.042	0.000
SDR	0.000	0.993	0.000	0.995	0.006	0.222
BE	0.574	0.000	0.576	0.000	0.549	0.000
AT	0.652	0.002	0.637	0.002	3.254	0.000
CR	0.084	0.001	0.085	0.001	0.066	0.083
AG	0.153	0.008	0.153	0.008	0.105	0.057
CG	0.379	0.024	0.378	0.025	0.311	0.057
Constant	-2.903	0.030	-0.294	0.031	-5.375	0.000
Adjust R-square			**0.751**			
Breusch and Pagan test	**0.497**					
F-test					**0.000**	

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Basic profits and asset turnover have a 1 percent relevance level on profitability, while asset growth has a 10 percent importance level. According to Table V's Pooled OLS results, the adjusted R-square coefficient of 0.954 indicates that the study results account for 95.4% of the variance in profitability. The basic wage level continues to have a favorable impact on firms' profitability, as before the passage of Covid-19.

Table 5: Estimated Regression Coefficient during the Covid-19 Period

Profitability (ROA)	**REM**		**POOL OLS**		**FEM**	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
DR	0.004	0.244	0.004	0.245	-0.003	0.729
SDR	0.000	0.896	0.000	0.896	-0.010	0.296
BE	1.137	0.000	1.137	0.000	1.163	0.000
AT	-0.515	0.000	-0.515	0.000	-0.479	0.000
CR	-0.066	0.142	-0.066	0.143	-0.074	0.221
AG	-0.091	0.065	-0.091	0.066	-0.097	0.051
CG	-0.010	0.599	-0.010	0.599	-0.010	0.587
Constant	-0.300	0.453	-0.300	0.454	0.818	0.376
Adjust R-square			0.954			
Breusch and Pagan test	**1.000**					
F-test					**0.392**	

5. DISCUSSIONS

Before and during covid-19, the data revealed a beneficial relationship between DR and the profitability of real estate. The results indicate that, under normal circumstances, real estate firms can develop their businesses through borrowings with the assurance of selling properties for a profit and paying off their obligations. However, in the covid-19, it becomes harder to borrow money and maintain consistent profitability in the real estate industry. According to (Baines & Hager, 2021), debts are the driving force behind the expansion of the real estate industry. However, profitability declined as the covid-19 outbreak spread. In this circumstance, financial institutions are hesitant to lend money, and high fixed interest rates raise total costs and decrease overall profitability. These results are also consistent with Oravsk, (Akinsomi, 2020; Del Giudice, De Paola, & Del Giudice, 2020), who found that debts contributed little to the profitability performance of real estate enterprises during covid-19 compared to marketing earnings before covid-19. Before and during covid-19, the data revealed a positive relationship between SDR and the profitability of real estate. The results indicate that the short-term lending facilities allow real estate companies to operate without missing any opportunities under typical circumstances. However, in covid-19, short-term debts are available in little sums and do not contribute significantly to the firm's profitability. These findings are corroborated by Milcheva (2021), which sheds light on the fact that short-term debts, typically useful for implementing immediate plans, are of little significance in covid-19. These results are also consistent with (Damodar N. Gujarati, Porter, & Gunasekar, 2012; Husna & Satria, 2019; Jafri, Khan, & Ahmad, 2019) findings, which indicate that during covid-19, the real estate industry was negatively impacted because most businesses relied on immediate debts. However, these debts could not be acquired, resulting in a decline in profitability (Jufrizen et al., 2019; Kaluarachchi, 2017).

Before and during covid-19, the data revealed a positive relationship between BE and the profitability of real estate. Before covid-19, total earnings are the source of investment, fuel for real estate enterprises, and profitability enhancement. During the covid-19 health crisis, the basic earnings per share reduce investor confidence, reducing the profitability of businesses. These results concur with Akinsomi (2020) conclusion that there was a sharp decline in real estate investment for decreased basic earnings in covid-19. The lowered investment diminishes the business's capacity and profitability. These conclusions are also consistent with those of (Martins, Serra, & Stevenson, 2019; Milcheva, 2021), who demonstrate that although basic earnings on shares contribute positively to the profitability of real estate, there is a sudden lack of basic earnings, and enterprises must absorb the loss. Before covid-19, the data indicated a positive relationship between AT and the profitability of real estate, but this relationship became negative. The results indicate that they can generate more profits when real estate companies sell their real assets under industry standards. However, during covid-19, the lack of demand for the lands and structures prevented the sales from generating the intended profits. These findings are backed by (Sikarwar, 2021; Tanrıvermiş, 2020; Ullah, Sepasgozar, Shirowzhan, & Davis, 2021), who stated that real estate companies must sell their properties regardless of profits or losses. These results are consistent with (H. T. X. Nguyen, 2022; Xiong, Wu, Hou, & Zhang, 2020) assertion that even the real estate business experiences financial crises due to a lack of demand for properties and the need for cash to pay for ordinary expenses. Therefore, they are compelled to sell the property at reduced prices. Consequently, during the pandemic, profit margins are poor.

Before covid-19, the data indicated a favorable association between CR and the profitability of real estate, but this relationship became negative. In a typical circumstance, the real estate enterprises' capacity to preserve liquidity enables them to expand and operate on profits. During covid-19, firms incur losses when attempting to acquire the same capability by selling assets. These findings are reinforced by (Del Giudice et al., 2020) who demonstrate that liquidity is a vital component of the real estate industry but that during covid-19, this policy results in a loss because the assets do not generate a high return when converted to cash. Before covid-19, the results indicated a favorable relationship between AG and the profitability of real estate, but this relationship became negative. These results concur with (Kaklauskas et al., 2021b; Kaluarachchi, 2017), who found that if enterprises continue to acquire assets even at the beginning of covid-19, they enclose their capital and suffer difficulties generating profits. Before covid-19, the results indicated a positive association between CG and the profitability of real estate, but this relationship became negative. These findings concur with Xiong et al. (2020) contention that real estate companies must engage in credit transactions. This aids in the expansion of their enterprises, but during covid-19, the growth in credit transactions will be detrimental to the profitability of real estate corporations.

6. CONCLUSION

Covid-19 has had a significant impact on all global economies. Months of rigorous lockdown and social isolation have had a devastating impact on all enterprises. As a result, consumer preferences have shifted toward necessities, and investors have turned to short-term investments. Therefore, the Covid-19 epidemic has significantly impacted the real estate industry. Comparing the impact of factors on the profitability of real estate enterprises throughout the pre-Covid-19 and Covid-19 eras is supported by research findings. In the pre-Covid-19 period, debt management (debt ratio), asset management (asset turnover, basic earnings), solvency (current ratio), monetary policy, and fiscal policy all contribute significantly to the profitability of real estate companies. Throughout the Covid-19 era, a long social distance has delayed the acknowledgment of land use rights within projects. Many individuals and families tend to reserve their assets or make short-term investments in the context of complex epidemics. This makes it more challenging for real estate companies to create sales, resulting in payment issues. This study's intriguing discovery is that many real estate brokers are willing to sell their inventory at a discount to cover their short-term debt obligations and fixed expenses. Therefore, asset turnover has a detrimental impact on the profitability of real estate companies. In addition, monetary policy does not completely support the real estate industry, and the increase in assets during this period makes it more difficult for real estate enterprises to generate profits. This demonstrates that when the virus is not completely under control, the population's health takes precedence. The government's assistance is only beneficial for the critical goods industry, while the others remain unidentified.

7. IMPLICATIONS

Covid-19 began in late 2019; after that, it peaked in 2020 and 2021, and it continues. It causes widespread destruction across the globe. It harms people's health, disrupts their social lives, and degrades the economy. It is feared that covid-19 would spread damage intermittently after its extinction. As the virus spreads, the real estate business, like the rest of the economy, is disrupted and destroyed by unfavorable events. Through a

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comparison of the profitability of real estate owners or operators based on several factors such as debt management (debt ratio), asset management (asset turnover, basic earning), solvency (current ratio), and other economic factors before and during the implementation of covid-19, this report provides guidelines for those interested in protecting the real estate industry. This study assists real estate owners and managers formulate loss-minimization strategies in anticipation of future covid-19 attacks. They should construct debt and investment portfolios incapable of causing future problems and financial difficulty. Their profitability performance must not be disrupted, debts that cannot be recouped during crises or are not very incompetent must be paid, investments must be structured as such, and they are not required to sell their properties or other assets at a loss. In addition, they must establish policies that do not give the full amount of profits to shareholders but rather set aside a predetermined amount to sustain basic earnings per share and the company's solvency capacity even in the future. By adhering to this principle, real estate owners and managers can maintain profitability.

8. LIMITATIONS AND FUTURE DIRECTIONS

The present study checks the impacts of only a specific number of factors: financial, such as debt ratio, short debt ratio, basic earning, asset turnover, current ratio, and assets growth and credit growth on the profitability of real estate firms. It is up to the authors in the future to check the real estate performance from different aspects. The data comparing real estate profitability performance before covid-19 and during covid-19 were taken from Vietnam only. Covid-19 is a global disease affecting all countries. It is recommended that future research must obtain data from more than one country for general findings. This study collected data only for the period before the Covid-19 from Q1/2018 to Q4/2019 and the period during Covid-19 from Q1/2020 to Q3/2021. The limited-time period selection for analysis of the factors keeps the study limited. Future studies are recommended to collect data to reflect more on the economic recovery of living with Covid-19.

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