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Developing Vietnam's real estate market during the crisis period (2020-2023)

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ABSTRACT

This research examines the developing Vietnam's real estate market during the crisis period. The real estate market experiences development and downturn cycles, typically 8-10 years. As observed in Vietnam, the period from 2021 to 2023 marked a prolonged downturn, attributed to the compounded effects of COVID-19, energy crises, and the Russia-Ukraine conflict. During extended downturns, the real estate market inevitably contracts significantly, leading to the dissolution of numerous real estate enterprises. This study represents a groundbreaking endeavor in the development of the real estate market, integrating corporate financial data. Research data was collected from 80 listed real estate businesses from Q1 2020 to Q4 2023 and macro data from the General Statistics Office. The study uses a fixed effects estimation method with robust standard errors on dynamic panel data to overcome heteroscedasticity and autocorrelation. This study provides further evidence that timely governmental support policies are necessary to help businesses overcome prolonged downturns, in addition to efforts from real estate enterprises. Real estate enterprises need to restructure product portfolios to target low and middle-income customer groups, provide credit support to customers, and actively promote their products' images and legal credibility. Regarding governmental actions, credit support policies for real estate enterprises are essential to ensure liquidity and sufficient capital for sustaining business operations.

Contribution/ Originality: This study represents a pioneering effort in linking the development of the real estate market with corporate financial data, unlike previous studies that solely relied on general statistical data for the entire market. The product promotion policies, low-income product segment, and credit financing impact on real estate market development during the crisis.

1. INTRODUCTION

The real estate market serves both as a channel for asset accumulation and as an investment avenue for investors. It constitutes a significant portion of the total national gross domestic product, thus fostering economic growth through its development (Le & Nguyen, 2018). Vietnam's economy bears a close resemblance to that of China. In China's real estate market, research by Sun, Javeed, Tang, and Feng (2024) confirms that revenue sources from real estate, including property taxes and income taxes from real estate enterprises, contribute to local economic growth. A decrease in real estate market activities and transaction volumes significantly contributes to budget revenue reduction, thereby impacting China's economic growth (Zhang & Guo, 2018).

Between 2020 and 2023, both the global economy and Vietnam experienced numerous systemic risks. Following the aftermath of the COVID-19 pandemic (2020-2021), there ensued the repercussions of the energy crisis and

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inflation (2022-2023), resulting in a subdued real estate market. The Vietnam Association of Realtors (VARs) has reported that more than 90 percent of the real estate exchanges recorded a decrease in sales in the first quarter of 2023 compared to the same period last year (Vietnam News, 2023). The major difficulties for real estate businesses from 2021-2022 are reduced liquidity, pressure on debt, and interest (Le Vu, 2023). In light of this bleak scenario, the primary objective for real estate enterprises shifted from maximizing profits to ensuring sufficient sales for sustenance (Vietnam News, 2023). The predicament of being unable to sell products while still needing to cover operational expenses presents a considerable burden for real estate businesses (Dezan, 2023). Therefore, exploring strategies to boost sales and foster the development of the real estate market is crucial during times of crisis.

The real estate sector contributes significantly to the state budget due to its large transaction values. Real estate enterprises are subject to a 20% corporate income tax and a 10% value-added tax. Additionally, each real estate transfer activity incurs a 0.5% stamp duty on the transaction value. Therefore, maintaining and developing the real estate market significantly contributes to the nation's economic development. Prolonged downturns not only disadvantage real estate enterprises but also negatively affect the national budget.

Previous studies on the Vietnamese real estate market mainly examined the impact of macro factors such as the financial market, monetary policy, and credit policy on the real estate market (Nguyen & Bui, 2020; Phung & Nguyen, 2022). The variable representing the real estate market used is the number of projects and apartments in operation or transacted on the market provided by the General Statistics Office of Vietnam. Indicators are observed over a long period, including periods of growth and periods of crisis. The research model only considers the crisis period as a factor to verify its impact on the market, using it as a dummy variable (Nguyen & Bui, 2020). No previous research on Vietnamese real estate market has utilized data from real estate businesses during the crisis period. This is a pioneering study on the Vietnamese real estate market based on data from 80 listed real estate businesses during the crisis period.

2. LITERATURE REVIEW

The development of the real estate industry follows an average cycle of approximately 8 to 10 years. Notable within recent cycles are two periods of real estate booms and two periods of stagnation in the market. During the period of (2007–2008), Vietnam's accession to the World Trade Organization purred a significant influx of investment from domestic and international markets, leading to a surge in real estate prices ranging from 50% to 70% (Elite Real Estate, 2023). In the subsequent period (2017-2018), the real estate market experienced renewed vigor, marked by an average price escalation of 10%, attributable to the diverse array of products available in the market. In comparison, the stagnation cycles span approximately 10 years, typically occurring after a phase of robust growth in the real estate sector. In 2012-2013, government implementation of tightened credit policies aimed at curbing the real estate bubble led to an average price decline of 30% to 40% (Do, Zhang, & Zheng, 2014). Likewise, during the period of (2022-2023), the real estate market underwent a significant downturn attributed to post-pandemic crises and inflation control policies (Elite Real Estate, 2023).

The role of the real estate market is important in the economic development and stability of each country, especially countries with open, transitional, and developing economies such as Vietnam. Kuang and Liu (2015) studied the relationship between inflation and housing prices in China from 1996 to 2010. When inflation increases, money loses value. Investors will seek to shelter their assets in real estate, thereby increasing real estate prices. Research on the real estate market in Vietnam is quite limited. Research conducted by Nguyen and Bui (2020) explored the influence of financial market development on Vietnam's real estate market spanning the period (2004 - 2018) through the real estate market growth index. The growth rate in the number of successful real estate transactions during the period determines this index. Thus, there are real estate resale transactions between investors that are still statistically included in the real estate market growth index. This volume of transactions enhances the vibrancy of the real estate market and generates new supply. However, if the market mainly deals in real estate resale transactions

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between investors, the market for new real estate transactions from real estate businesses is narrowed. Especially during a prolonged crisis, real estate transactions are largely just resale transactions on properties between investors. Therefore, to truly impact the survival of real estate companies during times of crisis, research on real estate market development should focus on the transaction value of newly sold real estate.

Research conducted by Phung and Nguyen (2022) aimed to identify strategies to promote market development following the outbreak of COVID-19 in 2021. Utilizing analytical data encompassing the number of real estate projects, the number of transactions of apartments and individual housing, and the credit balance of real estate business activities throughout the quarters of 2021, the study also attributes the market decline in 2021 to the impact of the COVID-19 pandemic. Proposed solutions to enhance the real estate market post-COVID-19 include the government refining the legal framework governing real estate businesses and businesses introducing numerous new real estate products priced appropriately for the income levels of the majority of citizens. Similarly, Nguyen (2023) conducted research on the real estate market in Hanoi up to the first quarter of 2022 by analyzing heterogeneous data about the supply and demand of apartments and urban housing. The study also observed a decline in the real estate market in 2022. Real estate market studies published in 2022 and 2023 take into account the crisis period due to COVID-19. However, the studies solely concentrate on analyzing the volume of the real estate goods traded during the period using descriptive statistics, and then compare these fluctuations to draw a conclusion. Research results are still subjective to analysts.

2.1. Research Gaps

Past studies on the real estate market relied on the market's general data provided by the General Statistics Office regarding the quantity of each real estate product group (Nguyen, 2023; Phung & Nguyen, 2022) or the general growth index of the real estate market (Le & Nguyen, 2018; Nguyen & Bui, 2020). During that period, the research findings indicated that macro factors influenced the volume of real estate goods across the entire market without being linked to the financial data of real estate businesses. Consequently, previous studies only proposed general policies for the real estate sector without a foundation to suggest policies related to the business performance of real estate enterprises. This study represents a groundbreaking endeavor in connecting the development of the real estate market with corporate financial data. The research findings will serve as the groundwork for proposing policies on financial management within real estate companies.

3. DATA AND METHODOLOGY

3.1. Methodology

According to Kahr and Thomsett (2005) the real estate market is the totality of real estate transactions based on goods-currency relationships that take place over some time and in certain locations. Thus, the development of the real estate market can be measured through the indicator of the volume of goods traded or the turnover of goods transactions. If measured through the quantity of goods, the types of goods must be similar. However, the products of real estate businesses are diverse and have a low level of similarity, so adding up the quantity is not appropriate. When these goods are traded to generate sales, the monetary value of the sale is uniform. Therefore, it is appropriate to evaluate the development of the real estate market through the sale level of each enterprise in each period.

With this same view, Adlington et al. (2020) also define the real estate market as one that includes all transactions related to rights or interests in land and buildings. The temporary or permanent transfer of rights from one party to another in exchange for a sum of money represents this transaction. Therefore, the real estate market is often measured by revenue. Then, the dependent variable of the model is the Real Estate Market (Real_EM).

From the perspective of corporate finance theory, Sale = ∑ consumption output x unit selling price. Thus, sales is the outcome of a function involving two variables: sales volume and unit selling price. This determination of sale can be reformulated as a function:

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Sale (dependent variable) = f (Sales output, unit selling price).

Where the dependent variable Sale is measured by the size of the enterprise's sales during the period. Factors influencing consumption comprise:

(1) Sales Strategy (Strate): To sell more goods, businesses always implement sales policies such as extending credit terms to customers, offering discounts, and reducing prices (Brigham & Houston, 2017). All businesses utilize sales terms as one of these tools. The value of accounts receivable reflects the level of sales support provided by the enterprise to sell more goods. The study employs the variable of sales strategy through the *size of accounts receivable*.

(2) Product Diversity (Diver): Inventory reflects a business's ability to supply goods. A large inventory scale implies the business possesses a greater quantity and diversity of goods (Brigham & Houston, 2017). Ending inventory will provide additional products for consumption in the next period. Thus, the inventory variable represents a one-period lagged variable of *inventory size*, symbolizing product diversity.

(3) Product Promotion (Promo): In accounting guidelines at the enterprise, account 6418 - Other Cash Expenses reflects other cash expenses incurred in the sales process beyond the aforementioned costs, such as customer entertainment costs in the sales department, product introduction costs, advertising expenses, bidding costs, and customer conference expenses (Atrill & McLaney, 2015). Therefore, the study employs the variable of product promotion through the *size of sales expenses* of the enterprise.

(4) Managerial Responsibility (Manage): The responsibility of business managers is to operate the business in a manner that maximizes sales and generates profits for the owners (Brigham & Houston, 2017). The benefits they enjoy, as measured by their income, closely correlate with their responsibility. The study utilizes the variable *scale of management costs* to measure the level of managerial responsibility.

Within this framework, factors influencing selling prices include:

(5) Product Quality (Quali): Product quality encapsulates core values that contribute to the goods's worth, ranging from raw materials and labor expertise to the application of scientific and technological advancements in product formation. The measurement of product quality is based on the total costs of goods sold within each product (Atrill & McLaney, 2015). Thus, the study employs the variable of the cost of goods sold-to-sale ratio.

(6) Firm Brand (Brand): This is another factor affecting the prices of goods. For consumer goods and services, the product brand is often associated with the credibility and reputation of the product. The better the product brand, the higher the selling price (Atrill & McLaney, 2015). Evaluating the value of a business's brand is complex and challenging. In research, instead of using the business brand variable, researchers often utilize factors such as the scale or age of the business, which impact business growth (Evan, 1987; Hall, 1987; Jan & Le, 2023). Considering another perspective, a larger business scale enhances resilience to business losses. In this scenario, the business can competitively price its products in the market compared to other enterprises. In the real estate sector, large investment scales correspond to large transaction values. A long-standing business cannot instill trust in customers if its capital scale remains small. Therefore, the variable scale of total assets represents the brand value.

Additionally, macroeconomic factors also influence real estate industry development, specifically the sales volume of the real estate market. Ibrahim (2010) discovered the positive impact of economic growth and the consumer price index on the real estate market. Real estate values are significantly larger than individual or household incomes accumulated over decades. Hence, when purchasing real estate, customers often resort to bank loans. Nguyen, Xuan, and Bui (2020) found evidence of the impact of economic growth, inflation, money supply, and long-term lending interest rates on the real estate market in Vietnam during the period from the first quarter of 2005 to the fourth quarter of 2018. When deposit interest rates increase, investors tend to choose to invest in bank deposits because of their high liquidity instead of real estate investment. Therefore, deposit interest rates have a negative impact on the

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real estate market. At the same time, increasing deposit interest rates also increases lending interest rates. This limits the credit channel for the economy, thereby limiting the development of the real estate market (Chen et al., 2022). Moreover, the banking sector's capital mobilization through interest-bearing deposits presents an investment opportunity for customers with accumulated savings. Consequently, if investors choose the banking deposit investment channel, which leads to an increase in the volume of raised capital in the economy, their participation in the real estate market will be affected. Therefore, the speed of capital mobilization by credit institutions in the economy impacts the real estate market (Chen et al., 2022; Krajnakova, Jegelavičiūtė, & Navickas, 2018).

Figure 1 illustrates the research model.

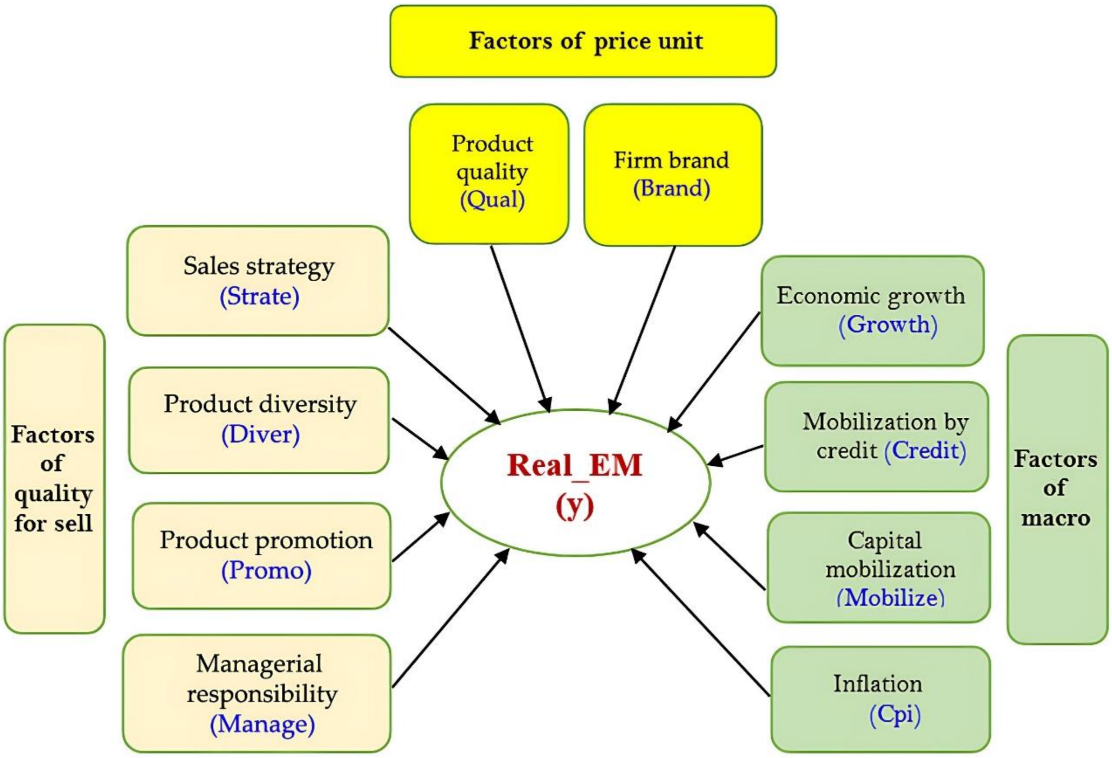

Figure 1. Research model.

The research model is rewritten:

$$y = Real\_EM_{i,t} = \beta_0 + \beta_1 * Strate_{i,t} + \beta_2 * Diver_{i,t} + \beta_3 * Promo_{i,t} + \beta_4 * Manage_{i,t} + \beta_5 * Qual_{i,t} + \beta_6 * Brand_{i,t} + \beta_7 * Growth_{i,t} + \beta_8 * Credit_{i,t} + \beta_9 * Mobilize_{i,t} + \beta_{10} * cpi_{i,t} + \varepsilon_{i,t} \quad (1)$$

3.2. Data

The research sample comprises 80 real estate companies listed on the Vietnam stock exchange from the first quarter of 2020 to the fourth quarter of 2023, spanning the COVID-19 outbreak period (2020-2021) and the inflation and energy crisis period (2022-2023). These listed real estate companies are large-scale publicly traded corporations. These are companies that provide new real estate products on the market. Small real estate companies, specializing in brokerage activities, primarily handle real estate transactions. According to data from the General Statistics Office (Satatista, 2023) the number of businesses operating in the real estate sector at the end of 2022 is 8,593 businesses. The number of unlisted real estate businesses is very large. Unlisted businesses are either small in size or are limited liability companies specializing in brokerage activities in real estate transactions. Leading the development of the real estate market belongs to companies that can provide new real estate products to the market. Therefore, the solutions provided by the study of over 80 large-scale public joint stock companies will contribute to stabilizing the real estate market during times of crisis.

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To ensure uniformity in data representation for estimation, size variables (such as real estate market, sales strategy, product diversity, product promotion, manager responsibility, and firm brand) will be determined by taking the natural logarithm of their values in million Vietnam dong units. Micro-level variables about real estate company data were computed by the authors from financial reports of the 80 listed real estate companies during the study period. The General Statistics Office of Vietnam collected macro-level variables from quarterly socio-economic reports.

The research data is penal, comprising 1,280 observations from 80 real estate enterprises over 16 observation periods from the first quarter of 2020 to the fourth quarter of 2023. The study will estimate regression coefficients to assess the impact of various factors on the real estate market through the sales of real estate enterprises. Appropriate tests about heteroskedasticity, autocorrelation, and multicollinearity will be employed to select a suitable estimation method. The estimated regression coefficients will determine the magnitude and direction of the impact of these factors on the real estate market during the crisis period.

Table 1 presents the variables in the research model.

Table 1. Information about variables in the research model.

No.	Variables	Represent	Measure	Sign.	Sources
1	Real estate market	Sale	Log (Sale)	Real_EM, y	Kahr and Thomsett (2005) and Adlington et al. (2020)
2	Sales strategy	Lagged 1 period of inventory	L.log (Inventory)	Strate	Brigham and Houston (2017)
3	Product diversity	Receivable	Log (Receivable)	Diver	Brigham and Houston (2017)
4	Product promotion	Selling cost	Log (Selling cost)	Promo	Atrill and McLaney (2015)
5	Managerial responsibility	Management costs	Log (Management cost)	Manage	Atrill and McLaney (2015)
6	Product quality	Rate of cost of goods sold on sale	$\frac{Cost\ of\ goods\ sold}{Sale}$	Qual	Atrill and McLaney (2015)
7	Firm brand	Enterprise size	Log (Asset)	Brand	Jan and Le (2023)
8	Economic growth	Economic growth rate	$\frac{GDP_t - GDP_{t-1}}{GDP_{t-1}}$	Growth	Ibrahim (2010)
9	Mobilization by credit	Credit capital ratio	$\frac{Credit_t - Credit_{t-1}}{Credit_{t-1}}$	Credit	Chen et al. (2022)
10	Capital mobilization	Ratio of capital mobilized	$\frac{Mobilized_t - Mobilized_{t-1}}{Mobilized_{t-1}}$	Mobilize	Hilbers, Lei, and Zacho (2001) and Chen et al. (2022)
11	Inflation	Consumer price index	$\frac{Cost\ of\ necessary\ goods_t}{Cost\ of\ necessary\ goods_{t-1}}$	cpi	Kuang and Liu (2015)

4. EMPIRICAL RESULTS AND DISCUSSION

The statistical results describing the research variables presented in Table 2 are as follows: The scale variables, taken as the common logarithm, are explained as follows: The average quarterly sale of real estate enterprises during the crisis period (2020-2023) reached 10^5 (million dong), equivalent to 100 billion dong. The lowest sale level is 10^1.4 (million dong), approximately over 25 million dong. The magnitude of scale variables such as sales strategy, product diversity, product promotion, manager responsibility, and firm brand are similarly measured by calculating the common logarithmic values. The average capital mobilization rate of credit institutions during this period was 2.38%, lower than the credit growth rate of the economy, which is 3.11%.

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Table 2. Descriptive statistics of research variables.

Variables	Obs.	Mean	Standard errors	Min.	Max.
y (= Real_EM)	1.280	5.073	0.946	1.402	7.681
Strate	1.280	5.908	0.774	2.315	8.664
Diver	1.280	5.639	1.156	1.417	8.143
Promo	1.280	3.568	1.054	0.260	6.566
Manage	1.280	4.148	0.727	1.980	6.978
Qual (%)	1.280	67.656	24.625	11.745	176.802
Brand	1.280	6.626	0.660	5.325	8.826
Growth (%)	1.280	4.426	1.668	0.39	7.83
Mobilize (%)	1.280	2.384	1.544	0.07	5.17
Credit (%)	1.280	3.113	1.874	0.68	7.75
Cpi (%)	1.280	2.823	1.710	0.29	5.56

Table 3 displays the estimation results for the variables' correlation coefficient. The data in Table 3 indicates that the variables in the model have correlation coefficients lower than 0.8, meaning the variables meet the condition of independence, thereby multicollinearity is not present (Evans, 1996).

Table 3. Estimation results of correlation coefficients of variables.

Variables	y	Strate	Diver	Promo	Manage	Qual	Brand	Growth	Mobilize	Credit
Strate	0.659									
Diver	0.599	0.751								
Promo	0.741	0.624	0.531							
Manage	0.761	0.713	0.585	0.758						
Qual	0.022	0.073	0.046	-0.056	-0.065					
Brand	0.784	0.718	0.778	0.705	0.735	-0.008				
Growth	0.000	0.014	-0.006	0.007	0.011	-0.005	0.031			
Mobilize	0.075	-0.014	-0.002	0.061	0.059	0.035	-0.008	-0.233		
Credit	0.090	0.004	-0.004	0.073	0.071	0.025	0.018	0.155	0.718	
Cpi	-0.006	-0.004	0.004	-0.012	-0.0002	-0.013	-0.026	-0.678	0.097	-0.196

Source: Data analysis on Stata.

The study conducts tests according to Table 4 to select the appropriate estimation method. The results confirmed the suitability of employing the Fixed Effects Model (FEM) estimation technique. However, due to the model's heteroskedasticity and autocorrelation, robust standard errors need to be utilized in the FEM estimation model (Hoechle, 2007).

Table 4. Model testing values.

Item	Type of test	P-value test	Result
Compare OLS and REM	Breusch and Pagan test	P-value = 0.000	Choose REM because of P-value < 5%
Compare OLS and FEM	F test	P-value = 0.000	Choose FEM because of P-value < 5%
Compare REM and FEM	Hausman test	P-value = 0.000	Choose FEM because of P-value < 5%
Variance changes	Modified wald	P-value = 0.000	The model has the phenomenon of heteroskedasticity
Autocorrelation phenomenon	Wooldridge	P-value = 0.000	The model has an autocorrelation phenomenon

Source: Data analysis on Stata.

Table 5 displays the results of estimating the regression coefficients using the Fixed Effects Model (FEM) with robust standard errors. The research findings demonstrate that product diversity (Diver) and product promotion strategies (Promo) have a positive impact on the real estate market. This indicates that real estate enterprises with

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large inventory scales and diverse goods across multiple market segments in the current period will find it easier to sell in subsequent periods. Enterprises investing in product promotion to customers are better positioned to expand their market share. The research results are entirely consistent with the theory of financial management in enterprises.

During times of crisis, real estate transactions often focus on customers with essential needs and speculative customers waiting for opportunities to increase prices. At that time, low-value real estate was still the top choice of customers. Research results show that the representative variable for product quality, the cost-to-goods-sold ratio (Qual), impacts negatively on the real estate market. This suggests that a decrease in the cost-to-goods-sold ratio, when the target profit per product aligns with the plan, leads to a decrease in product prices. This, in turn, facilitates the sale of more goods, thereby boosting the enterprise's sales. Hence, the cost of goods sold impacts negatively on the real estate market (Atrill & McLaney, 2015). A low cost-to-goods-sold ratio is associated with products in the low-income segment, meaning real estate enterprises should supplement their products in the low and mid-income market segments. This explanation is entirely appropriate in the context of an economic crisis (2020-2023), where people's incomes and savings decrease, thus they tend to limit their investments in high-value real estate. Finally, the study also found evidence of the positive impact of the economy's credit growth rate on the real estate market, consistent with the research findings. People accumulated income becomes limited during times of crisis. Having access to more credit capital from commercial banks will make it easier for customers to buy real estate. Thus, when the credit ratio increases, meaning credit capital is strongly funded, it will promote the development of the real estate market during the crisis period.

Table 5. Estimation of factors influencing the real estate market (2022 – 2023).

Real_EM (y)	FEM		FEM với robust standard	
	Coefficient	P-value	Coefficient	P-value
Strate	0.104	0.081	0.104	0.198
Diver	0.223	0.000	0.223	0.025
Promo	0.296	0.000	0.296	0.000
Manage	0.108	0.016	0.108	0.157
Qual	-0.004	0.000	-0.004	0.003
Brand	-0.278	0.050	-0.278	0.339
Growth	-0.006	0.429	-0.006	0.507
Mobilize	-0.003	0.810	-0.003	0.800
Credit	0.030	0.002	0.030	0.003
Cpi	0.003	0.757	0.003	0.768
Constant	3.767	0.000	3.767	0.011

Source: Data analysis on Stata.

Furthermore, when comparing the beta coefficients of variables such as sales strategy (Strate), managerial responsibility (Manage), and Firm Brand (Brand) estimated by the Fixed Effects Model (FEM) and the Fixed Effects Model with robust features, the estimations are similar and only differ in statistical significance. This indicates that the direction of their impact on the real estate market is consistent but lacks statistical evidence of model robustness. It can also be concluded that sales strategy positively impacts the real estate market. The real estate market also benefits from managerial responsibility, suggesting a close relationship between managerial responsibility and business development goals. Finally, the firm brand, represented by enterprise size, negatively impacts the real estate market, meaning real estate enterprises with smaller sizes and real estate products targeting low-income segments will sell more products during periods of economic difficulties such as the period (2020 – 2023), consistent with the research findings of Jan and Le (2023) and Hromada (2021).

Analysis of the variables related to economic growth (growth), the capital mobilization rate of credit institutions (mobilize), and the inflation rate (cpi) did not find statistical evidence of their impacts on the real estate market during the crisis period (2020-2023). Therefore, amidst challenging economic conditions characterized by rising consumer

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goods prices and unstable incomes, individuals tend to save less and opt for short-term investment channels with lower capital, thus constraining real estate investment. Hence, analysis of these macrovariables did not find statistical evidence of their impacts on the real estate market.

5. CONCLUSION

During periods of economic instability fraught with systemic risks, making decisions to purchase real estate is indeed challenging because current accumulated income is low and future income is uncertain. Research results also affirm that the real estate market at this time depends on the rate of credit growth in the economy. Therefore, the government should implement credit support packages for businesses and the population, while credit institutions should reduce interest rates on new loans to stimulate growth in the real estate market. Credit support policies for real estate businesses are essential to help businesses ensure liquidity and enough capital to continue maintaining business operations.

For real estate enterprises, the study also asserts that diversifying products across multiple market segments, especially the low-income market segment, will facilitate product sales. This is because the low-income market is essential for housing demand and represents the majority. Transactions in this market are also easier due to lower real estate prices. Therefore, transaction volumes in this market segment will increase during times of crisis. Conversely, various investors do not choose to invest in high-end properties with high transaction values but low liquidity during crises, leading to a sharp decline in transaction volumes. Real estate enterprises need to focus on supplying additional properties for low-income customers to increase sales during crises. The crisis period is when business managers have to be proactive in finding markets, retaining customers, and creating customer trust through legal support channels. Therefore, managers' responsibilities during this period are crucial for market development. Additionally, product promotion strategies and credit support for real estate buyers are practical solutions that contribute to the development of the real estate market. Therefore, real estate enterprises must access credit sources from credit institutions or partner with credit institutions to implement deferred payment policies for future real estate buyers.

Small real estate companies participate in the market through real estate brokerage transactions and the provision of real estate rental services, in addition to the supply and demand of real estate goods provided by public joint stock companies. The number of these transactions is quite large; it also contributes to creating liquidity for new assets provided by large companies. However, small real estate companies are not listed on the stock exchange, so business data is still confidential. In the future, exploiting data from unlisted real estate companies to make research results more comprehensive is still the author's wish.

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