Received 12 June 2024
Revised 15 October 2024
6 December 2024
31 December 2024
7 January 2025
Accepted 8 January 2025

Determinants of market capitalization of listed firms: evidence from an emerging country

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Abstract

Purpose – This study investigates the determinants of the market capitalization of listed companies through evidence from an emerging country.

Design/methodology/approach – This research employs the system generalized method of moments for a dataset of 7,608 observations from 687 Vietnamese listed firms.

Findings – Our findings show that both external and internal factors affect market capitalization. Intellectual capital, sales growth, profit, leverage and crises are positively linked to market capitalization; meanwhile, foreign direct investment, inflation and gross domestic product negatively affect market capitalization. The negative effect of macrofactors reflects the fact that the macroeconomic environment can deteriorate investment values and then market capitalization. This implies that macroeconomic stability is very crucial for firms and financial stability. The COVID-19 and financial crisis have a moderating influence on market capitalization through sales growth, profitability and leverage. Unlike previous studies, we find that intellectual capital plays a very essential role regardless of whether there is a crisis or not. Therefore, firms should focus on intellectual capital to grow market capitalization sustainably.

Originality/value – This paper contributes to the literature of market capitalization by investigating the determinants of market capitalization with a joint assessment of the financial crisis and the COVID-19 pandemic, which have not yet been considered together in previous studies. It enriches the literature by investigating the moderating effect of COVID-19 and financial crisis on the relationships between some key determinants and market capitalization. Unlike previous studies, our study highlights the essential role of intellectual capital in enhancing market capitalization regardless of whether there is a crisis.

Keywords Market capitalization, Listed firms, Global crises, Determinants, Intellectual capital

Paper type Research paper

1. Introduction

Financial resources are one of the most crucial causes of economic growth and development, since using this resource efficiently can help the economy go well and make a nation richer. This resource not only comes from the banking industry but also from the stock exchange. The stock market acts as an intermediary to get funds for investment (Nasir *et al*., 2020). It is thus argued that the stock market plays a vital role in providing funds for corporate investment. Most countries, therefore, have established their stock exchanges to foster national investments for their growth and development.

The importance of this topic has encouraged scholars to study the determinants of market capitalization. Nguyen and Ha (2012) examine the case of Southeast Asian countries to conclude that financial development, stock market liquidity, saving rate, income growth rate and macroeconomic stability are key factors affecting market capitalization. They also indicate that the

JEL Classification — O34, G30, L25

Journal of Economics and Development
Vol. 27 No. 1, 2025
pp. 38-55
Emerald Publishing Limited
e-ISSN: 2632-5330
p-ISSN: 1859-0020
DOI 10.1108/JED-06-2024-0202

financial crisis is negatively correlated with market capitalization. Artha *et al*. (2023) analyze the external and internal factors influencing market capitalization and indicate that profitability, dividend policy and economic growth affect market capitalization. Traditionally, researchers indicate that firm characteristics like sales growth and return on asset (ROA) and macro factors such as inflation and gross domestic product (GDP) affect market capitalization. In the contemporary knowledge-driven economy, intellectual capital might play a vital role in market capitalization. Intellectual capital components include relational capital, human capital, capital employed and structural capital and present the intangible properties and abilities which drive innovation, effectiveness and competitive advantage. However, the effect of the intellectual capital and lagged intellectual capital on market capitalization has been fully ignored. The interaction between the crises and firm characteristics has been overlooked in the existing literature.

Previous researchers mainly focus on the determinants of market stock return or stock market development. Studies on the determinants of market capitalization are still limited. The role of intellectual capital in market capitalization and the joint influence of the financial crisis and COVID-19 have not received much attention. The moderating effect of these crises has not been examined in the existing literature. The role of lagged intellectual capital has been ignored. The system generalized method of moments has not been employed. Therefore, this research contributes to the existing literature as follows. Firstly, unlike previous scholars suggesting that firms should focus on their characteristics such as profitability and sales growth to deal with uncertainties, we find that intellectual capital plays an essential role in market capitalization before, during and after crises. Secondly, the research extends the understanding of market capitalization by employing the system generalized method of moments to analyze the determinants of market capitalization with a joint assessment of the COVID-19 and financial crisis, which have not yet been considered together in previous research. The joint analysis of the global crises provides an understanding of how different crises affect market capitalization. It enables a comparative analysis of crisis-induced market fluctuations, indicating different patterns of reduction and recovery. The financial crisis could lead to continued and systemic market capitalization reduction, especially in the financial sector; meanwhile, COVID-19 could lead to severe but shorter-run reductions with quick recoveries thanks to the technology and healthcare industries. The joint analysis also clarifies investor behavior and sectorial shifts, displaying how risk perception and safe-haven behavior differ between financial and nonfinancial crises. The COVID-19 pandemic encourages digital transformation and enhances emphasis on environmental, social and governance investments, and hence restructuring long-run market capitalization trends. Our joint analysis of these crises expands our understanding of the global market connection, sectorial recovery capabilities and structural changes arising from technology changes and sustainability priorities. It highlights the role of policy interventions in steadying markets. Thirdly, this research examines the impact of intellectual capital, the COVID-19 and the financial crisis on market capitalization. It also analyzes the effect of lagged intellectual capital on market capitalization, which has been overlooked in the existing literature. Examining the effect allows researchers to evaluate the postponed influence of intellectual capital property, offering perceptions into how long it takes for the intellectual capital investments to influence market awareness and estimation. This analysis assists firms in planning and investing in novelty, human resources and technology to improve market outcomes and investor confidence. Lastly, this research analyzes the moderating effect of the crises on the relationships between some main determinants and market capitalization through an emerging country, through the Vietnamese context. By investigating these crises as moderating effects, the research offers novel insights into the flexibility and weakness of Vietnam's market. It extends the understanding of how worldwide economic shock influence market capitalization, supporting better risk assessment and investment tactics in similar developing economies.

The remaining parts of the research are designed as follows. We present the literature review and hypothesis development after the introduction. The research then presents the research methodology. The following research results, the discussion is presented. The conclusion is our final section.

2. Literature review and hypothesis development

2.1 Theoretical framework

Market capitalization is understood as the total value of a firm's outstanding stocks, which describes the multiplication of the share volume with the closing market price (Fitrah *et al*., 2022). Resource-based view theory presented by Barney (1991) points out that intellectual capital affects market capitalization because it provides a sustainable competitive advantage. Stakeholder theory states that intellectual capital can improve relationships that can increase loyalty and trust, leading to higher financial outcomes and market capitalization. Signaling theory of Spence (1973) points out that higher sales growth sends a signal to investors that they can get a benefit if they invest more in shares, thereby increasing market capitalization. The efficient market hypothesis offered by Fama (1970) recommends that higher profitability sends a good signal to investors, and then investors can buy more shares, leading to higher share prices and market capitalization. The dividend discounted model of Williams (1938) indicates that investors can get higher returns because higher profits can assist firms in paying higher dividends or higher capital investment. The Modigliani–Miller theory indicates that debt financing might create a tax shield that might enhance corporate value and market capitalization. Trade-off theory written by Kraus and Litzenberger (1973) posits that higher debt can generate a tax shield but also create the risk of bankruptcy, which might deteriorate market capitalization. Behavioral finance theory of Kahneman and Tversky (1979) posits that the global crises can create fear and uncertainty that can lead to panic selling and herd behavior, leading to lower market capitalization. The discounted cash flow model of Williams (1938) indicates that macroeconomic factors like inflation, GDP growth and FDI change the future cash flow and discounted rate, which can influence market capitalization. The arbitrate pricing theory of Ross (1976) posits that these macroeconomic factors alter share returns and market capitalization. Therefore, these theories are employed to analyze the determinants of market capitalization.

2.2 Hypothesis development

2.2.1 Intellectual capital and market capitalization. Intellectual capital is the asset which employees might achieve from practice, expertise and consumer relations (Smriti and Das, 2018). Capital employed efficiency, human capital efficiency and structural capital efficiency are three components of intellectual capital. Human capital is measured by a worker's competence, commitment, motivation and loyalty. Structural capital is measured by databases, firm culture, procedures and firm structures. Relational capital reflects the relationship between firms and partners like customers, producers, creditors and other parties (Dharmakeerthi and Ranjani, 2022). However, measuring intellectual capital in terms of currency is difficult, and thus previous scholars have developed a new measurement, the value-added intellectual coefficient (VAIC). Ali *et al.* (2022) point out that VAIC does not measure the relational capital, and the modified VAIC (MVAIC) is thus employed to replace VAIC since it includes relational capital. Relational capital is measured by spending on marketing, promotion, selling and donations.

The common theories which can explain the association between intellectual capital and market capitalization are resource-based view theory and stakeholder theory. Resource-based view theory recommends that intellectual capital in forms of knowledge, skills and innovations might offer a sustainable competitive advantage, thereby enhancing financial results and higher market capitalization. Stakeholder theory implies that intellectual capital, especially relational capital, improves relationships among consumers, staff and investors, which might increase loyalty and trust, leading to better financial results. Empirically, Nguyen and Doan (2020) employ the case of Vietnam to show that intellectual capital is positively linked to corporate market value. Dharmakeerthi and Ranjani (2022) analyze the impact of intellectual capital on company value and conclude that intellectual capital has a positive result on company market value. In contrast, Hamdan (2018) reports that there is no relationship

between intellectual capital and corporate market value. Ermawati *et al*. (2023) provided evidence that intellectual capital is negatively related to market capitalization. Therefore, we posit the following hypothesis.

H1. Intellectual capital has a positive effect on market capitalization.

2.2.2 Sales growth and market capitalization. Company sales growth partly reflects the management's ability to increase assets and profits. Signaling theory states that higher sales growth and assets indicate bigger opportunities for firms and investors to realize future benefits. Firms will invest more for their development and investors will buy more shares, hence improving market capitalization (Bose *et al*., 2021). Growth opportunity theory indicates that higher sales imply higher profit and potential expansion, thereby attracting investors and hence higher share price and market capitalization (Pandey, 2010). The efficient market hypothesis points out that financial markets might reflect information about sales growth, which signals investors, hence higher share price and market capitalization (Fama, 1970). Sales growth affects market capitalization through the following mechanisms. It signals business enlargement, enhanced profit and robust competitive situation to affect market capitalization. Firms attract investors when they have larger revenues and increased earnings due to sales growth. When sales grow, profit can increase and enhance demand for shares, leading to a higher share price and higher market capitalization. Empirically, Liviani and Rachman (2021) report that firm growth positively influences market capitalization. Sales growth might lead to better operating performance and firm outlook, which can improve external shareholders and investors' trust. In contrast, Nguyen *et al*. (2021) indicate that sales growth is negatively related to market capitalization. Sugianto *et al*. (2020) point out that sales growth is not significant with market capitalization. So, we come to the following hypothesis.

H2. Sales growth has a positive effect on market capitalization.

2.2.3 Profitability and market capitalization. Most researchers indicate that profitability has an influence on market capitalization since profitability is a good indicator that investors use to make their investment decisions. Theoretical frameworks such as the Efficient Market Hypothesis and Dividend Discounted Model suggest that profitability can affect market capitalization. The efficient market hypothesis indicates that higher profitability can signal robust financial outcomes and positive expectations to investors, leading to higher investor confidence, share market demand and higher market capitalization. The Dividend Discounted Model suggests that higher profits can help firms increase dividend payments or higher capital investments, which enhance shareholders' expected returns and market capitalization. Empirically, previous studies show that higher profitability reveals a good financial condition for firms and affects investors' investment intention, influencing share price and hence market capitalization (Endri and Fathony, 2020). Fitrah *et al.* (2022) provided evidence that ROE is positively correlated with market capitalization. In contrast, Sugianto *et al*. (2020) show no relationship between profit and market capitalization. Based on previous evidence and real Vietnamese situations, the following hypothesis is proposed.

H3. Profitablity has a positive effect on market capitalization.

2.2.4 Financial leverage and market capitalization. The Modigliani–Miller theory and trade-off theory suggest that financial leverage affects market capitalization. The Modigliani–Miller theory indicates that debt financing can generate a tax shield which can increase the firm's value and positively impact market capitalization. Trade-off theory suggests that leverage can have two opposite side effects on market capitalization. Debt financing can create a tax shield but generate the possibility of large financial problems that can reduce market capitalization. Empirically, the market reacts negatively when firms issue new debt which is higher than the industry average, and it responds positively when the issue is lower than the industry average (Zimny, 2021). Higher debt, which can increase business risk, might negatively affect but leverage, which can reduce the cost of capital and prove the firm leaders' optimism, might positively influence market

capitalization. The optimal capital structure is a good indicator for debt issuing. The debt level is up to the optimal structure, the new debt issuance affects positively, but beyond this structure, the new debt issuance affects negatively market capitalization (Hodgson and Stevenson-Clarke, 2000). Hirdinis (2019) evidences that leverage has a positive result on market capitalization, whereas Ibrahim and Isiaka (2020) and Lestari *et al*. (2020) report that leverage has an enormously negative consequence. By contrast, Jao *et al*. (2020) state that financial leverage does not affect market capitalization. In addition, Vietnamese firms normally issue more debt since they need more capital to finance their investment. They might issue the new debt, which is beyond the optimal structure. Therefore, we propose the following hypothesis.

H4. Financial leverage has a positive effect on market capitalization.

2.2.5 Global crises and market capitalization. The two theories, behavioral finance theory and efficient market hypothesis, point out that international crises like the COVID-19 and financial crisis strongly influence market capitalization. Behavioral finance theory indicates that investor psychology expresses an essential role in stock markets during global crises. These crises can generate fear and uncertainty, which might lead to panic selling and herd behavior, thereby causing a sharp reduction in share prices and hence, market capitalization. The efficient market hypothesis presents that markets are rational and all information accessible is rapidly revealed in securities prices. Therefore, the global crises make markets drop sharply and lead to a large variation in market capitalization. Empirically, financial crises normally come with economic contraction and a recession in the stock market (Huang and Chang, 2022). COVID-19 immediately affected the global financial market (Baker *et al*., 2020). Cox *et al*. (2020) state that the US share market was affected by COVID-19, in which investors were reluctant to invest and hence, a decline in share prices.

Moreover, the global crises might have a moderating effect on the relationships between some major determinants, including intellectual capital, sales growth, ROA and leverage and market capitalization. This is because intellectual capital may support recovery ability but decline under disruption, while reducing leverage, sales growth and ROA can erode firm valuation. Global crises might amplify weaknesses, change how these factors affect market capitalization and create a moderating effect. Furthermore, the environmental turbulence is normally created by the crises. These crises can have a moderating effect due to this turbulence (Zambon *et al.*, 2021). Minh and Nguyen (2024), Nguyen and To (2024), Nguyen (2023) and Nguyen (2024a, b, c, d, e) provide evidence that the global crises have a moderating impact on the relationships between some determinants and investment decisions, intellectual capital performance, bank profitability, firm performance, return intention and bank risk-taking. Therefore, we posit the following hypotheses.

H5a. Global crises have a negative effect on market capitalization.

H5b. Global crises have a moderating effect on the relationships from intellectual capital, sales growth, ROA and leverage to market capitalization.

2.2.6 Macroeconomic factors and market capitalization. The discounted cash flow model and arbitrage pricing theory are the two key theories explaining how macroeconomic factors can influence market capitalization. The discounted cash flow model suggests that market capitalization can be affected by the future cash flows discounted by a relevant rate. Inflation, GDP growth, interest rates and FDI are macroeconomic factors affecting firms future cash flows and the discount rate. Arbitrage pricing theory indicates that these macroeconomic factors affect stock returns and hence, market capitalization.

It is argued that FDI affects market capitalization since foreign investors can invest in domestic stock exchanges, leading to a higher level of market capitalization. Phuong *et al*. (2023) report that FDI has a positive influence on market capitalization. By contrast, Farooq *et al*. (2023) indicate that FDI reduces corporate investment and lowers the level of market capitalization. Thus, we suggest the following hypothesis.

H6. FDI has a positive effect on market capitalization.

Previous scholars have shown a negative relationship between market capitalization and inflation. Higher inflation leads to higher operating costs for firms and higher capital costs for investors, and hence, the share market becomes unattractive. Phuong *et al*. (2023) confirmed that inflation is significantly negatively associated with market capitalization. In contrast, Ndunda (2016) found that market capitalization is positively influenced by inflation. Thus, we have the following hypothesis.

H7. Inflation has a negative effect on market capitalization.

Most researchers indicate that economic growth positively affects market capitalization. This is because higher GDP leads to higher future cash flows and thus generates more investment chances in share markets. Farooq *et al*. (2023) indicated that GDP growth is positively associated with market capitalization. In contrast, some scholars, such as Qurashi and Zahoor (2016) and Phuong *et al*. (2023), confirm a negative relationship between GDP growth and market capitalization. Consequently, we posit the following hypothesis.

H8. GDP has a positive effect on market capitalization.

3. Research methodology

3.1 Data collection

We gather data on 687 listed firms on the Vietnamese securities exchange between 2007 and 2022. There are 370 listed manufacturing firms and 317 listed service firms, which are collected from the websites of Vietstock and CafeF. We have 7,608 observations. The macroeconomic data were collected from the State Bank of Vietnam and the General Office of Statistics of Vietnam.

3.2 Model and variable measurement

Grounded on the regression models of Xu *et al*. (2023), intellectual capital, financial crisis (CRISIS), COVID-19 pandemic, sales growth, inflation, FDI and GDP are added to obtain the following models:

Model 1:

$$\begin{aligned} MC_{it} = {} & \beta_0 + \beta_1 MC_{it-1} + \beta_2 MVAIC_{it} + \beta_3 MVAIC_{it-1} + \beta_4 SGR_{it} + \beta_5 ROA_{it} + \beta_6 LEV_{it} \\ & + \beta_7 CRISIS_t + \beta_8 COVID\text{-}19_t + \beta_9 FDI_t + \beta_{10} INF_t + \beta_{11} GDP_t + \varepsilon_{it} \end{aligned} \quad (1)$$

Model 2:

$$\begin{aligned} MC_{it} = {} & \beta_0 + \beta_1 MC_{it-1} + \beta_2 MVAIC_{it} + \beta_3 MVAIC_{it-1} + \beta_4 SGR_{it} + \beta_5 ROA_{it} + \beta_6 LEV_{it} \\ & + \beta_7 CRISIS_t + \beta_8 COVID\text{-}19_t + \beta_9 FDI_t + \beta_{10} INF_t + \beta_{11} GDP_t \\ & + \beta_{12} CRISIS_t x MVAIC_{it} + \beta_{13} CRISIS_t x SGR_{it} + \beta_{14} CRISIS_t x ROA_{it} \\ & + \beta_{15} CRISIS_t x LEV_{it} + \beta_{16} COVID\text{-}19_t x MVAIC_{it} + \beta_{17} COVID\text{-}19_t x SGR_{it} \\ & + \beta_{18} COVID\text{-}19_t x ROA_{it} + \beta_{19} COVID\text{-}19_t x LEV_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

where the explained variables are MC_{it} in the current year. Following are the explaining variables of company investment indicators of the previous year: MC_{it-1}, $MVAIC_{it-1}$. $MVAIC_{it}$,

ROA_{it}, SGR_{it}, LEV_{it}, $CRISIS_t$, $COVID\text{-}19_t$, INF_t and GDP_t are the current year. ε_{it} is the error term for i, at the current time period t. Table 1 describes all variables in models 1 and 2.

Our model also considers the impact of lagged intellectual capital on market capitalization because intellectual capital can generate innovation and competitive advantage, which might increase a firm's future financial performance. The intellectual capital investment in the previous period, such as employee training, new technologies and infrastructure, shows a sustained effect on market capitalization over time. In addition, the previous market performance affects investor insights, prospects and confidence in the company's future visions. Higher market capitalization in the previous period normally signals stability, growth prospective and investor confidence, leading to sustained investment in the current period and presenting higher market capitalization.

3.3 Regression methods

The system generalized method of moments regression methods is employed in this research since it can resolve the problems of endogeneity, heteroscedasticity and multicollinearity (Nguyen, 2024a, b, c). In addition, Blundell and Bond (1998) indicate that the system generalized method of moments might enhance effectiveness and that the system generalized method of moments regressors are superior to the generalized method of moments ones. The difference generalized method of moments can be better if a dataset with a very small number of groups is applied. Dahir *et al.* (2018) point out that the system generalized method of moments is better than the difference generalized method of moments since the system generalized method of moments uses a system which combines regression of levels and first differences. We employ Stata 15 to run our estimations.

4. Research results

4.1 Descriptive statistics

Table 2 illustrates the standard deviation, minimum and maximum values and mean values of all variables are presented in Table 2. These results reveal that all variables are good and there

Table 1. Variable definition and variable measurement

Variable	Variable definition	Variable measurement
Explained variable		
MC	Market capitalization	Log (market value of outstanding shares)
Explaining variables		
MVAIC	Modified value-added intellectual capital	HCE + SCE + CEE + RCE
HCE	efficiency	Value added/human capital
SCE	Human capital efficiency	Structural capital/Value added
CEE	Structural capital efficiency	Value added/capital employed
RCE	Capital employed efficiency	Expenses on relationship/Value added
SGR	Relational capital efficiency	Percentage increment in total sales
ROA	Sales growth rate	EBIT/total assets
LEV	Return on assets	Total debt/total asset
CRISIS	Financial leverage	1 for financial crisis and 0 otherwise
COVID-19	Financial crisis between 2008 and 2009	1 for COVID-19 pandemic and 0 otherwise
	COVID-19 pandemic between 2020 and 2021	Log (FDI)
FDI	Foreign direct investment	Percentage change in CPI
INF	Inflation	Logarithm of GDP
GDP	Gross domestic product	

Note(s): Structural capital = value added – human capital. Intellectual capital efficiency = HCE + SCE. Intellectual capital (VAIC) = HCE + SCE + CEE + RCE
Source(s): Nguyen (2024c) and Nguyen and To (2024)

Table 2. Descriptive statistics

Variable	Observations	Mean	Sd	Minimum	Maximum
MC	7,608	2.4473	0.0678	2.2594	2.6797
MVAIC	7,608	7.9493	26.9579	−117.3436	179.7481
MVAIC (−1)	6,795	7.9268	26.6304	−117.3436	179.7481
HCE	7,608	12.5272	17.7205	−53.2050	178.5473
SCE	7,599	−5.0081	16.2207	−118.0761	138.8743
CEE	7,608	0.1833	0.1663	−5.2743	1.2705
RCE	7,608	0.2411	0.9516	−44.2234	59.4248
SGR	7,595	0.8393	31.9825	−1	2.1140
ROA	7,608	0.0617	0.0806	−1.5874	0.7837
LEV	7,608	0.4911	0.2263	0.0027	1.2945
CRISIS	7,608	0.0664	0.2490	0	1
COVID-19	7,806	0.1710	0.3765	0	1
FDI	7,608	17.3854	7.9697	7.7	60.3
INF	7,608	0.0560	0.0498	0.0063	0.1989
GDP	7,608	5.5144	0.4036	4.3491	6.0132

Source(s): Authors' own work

is no abnormal value in these results. Table 3 displays that the correlation values of most of variables are smaller than 0.5. The correlation values between ROA and CEE, SIZE and CEE, LEV and CEE, LEV and ROA, LEV and SIZE, FDI and CRISIS, and FDI and INF are smaller than 0.5. These results might reveal no problem of multicollinearity. In addition, the mean VIFs shown in Table 4 are smaller than 5, illustrating no problem of multicollinearity.

4.2 Regression results

We apply the system generalized method of moments to estimate our results as shown in Table 4. Our results show that the problems of multicollinearity and autocorrelation do not exist in our results since the mean VIF is between 1.94 and 2.17, which is smaller than 5. AR (2) is varied between 0.112 and 0.577. The Sargan test *p*-values fluctuated from 0.280 to 0.998. The number of groups is bigger than the number of instruments for all estimations, as presented in Table 4. These results prove that all instruments are valid. Therefore, our estimated results are consistent and robust.

Intellectual capital is positively significant with market capitalization, as shown in Table 4. In contrast, the lagged MVAIC is negatively correlated with market capitalization. Similarly, ROA, LEV, SGR, CIRIS and COVID-19 are positively associated with market capitalization. However, FDI, INF and GDP are negatively related to market capitalization. The interaction between financial crisis and ROA and LEV is negatively significant. The interaction between COVID-19 and SGR and ROA is also negatively significant. In contrast, this interaction between COVID-19 and LEV is positively significant. Therefore, these results reveal that both the COVID-19 and financial crises confirm a moderating effect on the relationships between these fundamental determinants and market capitalization.

5. Discussion

Our result shows that intellectual capital is positively significant with market capitalization, meanwhile intellectual capital of the previous year is negatively significant (H1). As recommended by resource-based view theory and stakeholder theory, our results reveal that listed firms with efficient intellectual capital usage can have more innovations, product improvement and strong relationships, thereby increasing profits and attracting investors. As a rapidly developing economy, listed Vietnamese firms which have boosted a culture of novelty,

Table 3. Correlation matrix

	MC	MVAIC	MVAIC(-1)	HCE	SCE	CEE	RCE	SGR	ROA	LEV	CRISIS	COVID-19	FDI	INF	GDP
MC	1														
MVAIC	0.02	1													
MVAIC(-1)	0.01	0.76	1												
HCE	0.08	0.80	0.63	1											
SCE	−0.06	0.78	0.57	0.26	1										
CEE	−0.07	0.09	0.07	0.12	0.01	1									
RCE	0.03	0.03	0.02	0.002	−0.01	0.05	1								
SGR	0.04	−0.001	−0.03	0.004	−0.01	−0.01	−0.01	1							
ROA	0.15	0.09	0.06	0.14	−0.01	0.56	−0.01	0.05	1						
LEV	0.08	0.04	0.02	−0.01	0.07	−0.24	0.03	−0.002	−0.39	1					
CRISIS	−0.05	0.04	0.04	0.04	0.02	0.05	−0.01	0.01	0.09	−0.02	1				
COVID-19	0.15	−0.02	−0.02	−0.02	−0.001	−0.06	−0.003	0.01	−0.04	−0.002	−0.11	1			
FDI	0.01	0.03	0.01	0.04	0.01	0.03	−0.01	0.03	0.03	−0.03	0.57	−0.18	1		
INF	−0.17	0.04	0.06	0.05	0.02	0.06	−0.003	−0.01	0.06	0.01	0.36	−0.27	0.25	1	
GDP	0.20	−0.03	−0.05	−0.03	−0.02	−0.09	0.01	0.01	−0.11	−0.01	−0.62	0.42	−0.20	−0.73	1

Source(s): Authors' own work

Table 4. Empirical results

Variables	Model 1	Model 2	Moderating effect
MC_{t-1}	0.9006*** (0.000)	0.9009*** (0.000)	
MVAIC	0.0015*** (0.005)	0.0004*** (0.000)	
$MVAIC_{t-1}$	−0.0007*** (0.003)	−0.0001*** (0.000)	
SGR	−0.0101 (0.160)	0.0188*** (0.000)	
ROA	0.08339 (0.180)	0.1148*** (0.000)	
LEV	0.0514*** (0.000)	0.0118*** (0.002)	
CRISIS	0.0044* (0.097)	0.3026*** (0.000)	
COVID-19	0.0164*** (0.000)	0.0165*** (0.001)	
FDI	−0.0007*** (0.000)	−0.0017*** (0.000)	
INF	−0.1986*** (0.000)	−0.2117*** (0.000)	
GDP	−0.0169*** (0.000)	−0.0093*** (0.000)	
CRISIS × MVAIC		0.00002 (0.974)	No
CRISIS × SGR		0.1540 (0.224)	No
CRISIS × ROA		−1.6290*** (0.000)	Yes
CRISIS × LEV		−0.3576*** (0.000)	Yes
COVID-19 × MVAIC		0.0001 (0.499)	No
COVID-19 × SGR		−0.0183*** (0.000)	Yes
COVID-19 × ROA		−0.1965*** (0.000)	Yes
COVID-19 × LEV		0.0129* (0.093)	Yes
Constant	0.3242*** (0.000)	0.3151*** (0.000)	
Number of observations	6,794	6,794	
AR(2) test	0.112	0.577	
Sargan test	0.280	0.998	
Number of instruments	26	64	
Number of groups	687	687	
Mean VIF	2.17	1.94	

Note(s): *significant at 0.10, **significant at 0.05 and ***significant at 0.01. The *p*-value is in bracket with standard error

Source(s): Authors' own work

expertise, knowledge sharing and better intellectual capital could obtain sustained growth and development and attract more investors. The positive perception about these firms enhances investor confidence, boosts investors' investments and hence, increases market capitalization. This result is closely consistent with the findings of Nguyen and Doan (2020) and Dharmakeerthi and Ranjani (2022) that intellectual capital is positively linked to market value. However, these results also show that the intellectual capital of the previous year affects market capitalization negatively. These findings reveal that knowledge, skills, novelty and relationships in the previous period could reduce market capitalization. This is perhaps because these listed firms depend too much on the previous intellectual capital without innovating and updating their abilities. They have too standardized processes, which provide an inflexibility hindering innovations and novelty. This makes investors think that these firms become less competitive and less effective. As a result, investors reduce their confidence and then decrease their investments, leading to lower market capitalization. In addition, these findings indicate that these firms focus too much on tangible properties like financial resources and physical assets, which they could not drive market value efficiently. This led to the fact that investors would view these firms as inflexible, with lower innovation ability, lower growth potential and reduced profitability. Investors then invest less and share prices and market capitalization would be lower. This is also perhaps because these firms could not innovate or update their structural capital and hence were less competitive. They could not respond effectively to market changes, leading to lower investor confidence and lower market capitalization. This result is consistent with Ermawati *et al*. (2023).

Our results indicate that firm sales growth is positively related to market capitalization. This result confirms signaling theory and growth opportunity theory and supports our hypothesis H2. This reply that share investors need information about the financial statements before buying the shares. Firms with higher growth show a good performance and hence, investors buy more shares. In the context of signaling theory, the higher sales growth encourages investors to buy more shares and thus a higher level of market capitalization. This is because investors in Vietnam consider higher sales growth as a sign of a company's capability to extend its market share and growth prospective, create more income and improve profits over time. Listed firms in Vietnam have illustrated that consistent sales growth could assist them in generating new opportunities and evolving customer demands, which have fostered investor confidence, resulting in market capitalization. In the context of growth opportunity theory, our findings indicate that investors have viewed sales growth as a signal for efficient strategies in marketing, consumer retention, innovations and competitive advantage, thereby attracting more domestic and international investors, leading to higher share prices and market capitalization. This result is consistent with Liviani and Rachman (2021).

As suggested by the efficient market hypothesis and dividend discounted model, firms with higher profitability show good performance and higher expected returns and investors would be attracted to buy more shares, hence increasing the share price and the level of market capitalization. Our findings show that return on asset is positively significant and hence affecting positively market capitalization. This does support our hypothesis H3. This indicates the fact that firms with higher return on assets pay higher dividends and hence, investors buy more shares, leading to a higher level of market capitalization. Investors consider Vietnamese listed companies with higher profits as a good background for sustained growth and development, leading to higher investor confidence and market values. They view that these firms are financially healthy and able to maximize returns on their investments, attracting both domestic and international investors, leading to higher share prices and market capitalization. This result is consistent with Lubis and Adriani (2021).

Our findings show that financial leverage is positively significant, supporting our hypothesis H4. This confirms the Modigliani–Miller theory that debt affects market capitalization. This finding suggests that the positive effect of Vietnamese listed firms' financial leverage amplifies their ROE when their ROA exceeds their cost of debt. This foster investor confidence, upsurges share demand, and hence increases market capitalization. Moreover, the market reacts positively when firms issue new debt, which is lower than the industry average (Zimny, 2021). Because these listed firms in Vietnam lack sufficient capital for investment, leveraging enables them to finance growth, invest in projects, and enlarge their operations without diluting shareholder equity, thereby obtaining higher profitability and a stronger competitive position in the marketplace. Furthermore, leveraging might assist their effective usage of resources in obtaining growth opportunities, boosting profitability and investor confidence in the share market, leading to higher market capitalization. This finding is in line with Hirdinis (2019) but not consistent with Ibrahim and Isiaka (2020) and Lestari *et al.* (2020).

Behavioral finance theory and the efficient market hypothesis indicate that global crises generate fear, uncertainty and all information about crises is revealed in share prices, leading to panic selling and herd behavior and hence reducing share prices and lowering market capitalization. Following these theories, our hypotheses present that global crises have a negative influence on market capitalization (H5a). Financial crisis has a negative effect on market capitalization (Bessler *et al.*, 2021). The COVID-19 affects negatively market capitalization (Basuony *et al.*, 2021). Interestingly, our findings indicate that the COVID-19 and financial crisis affect positively market capitalization. This reflects the fact that investors believe that production and business activities would be hard for a long period and during the crisis time. Vietnam has a record of deaths caused by the COVID-19, which made investors concerned during the pandemic (Hung *et al.*, 2021). However, the government provides supporting policies and hence, better market capitalization (Nguyen, 2024b). Government

support programs and undervalued stocks, which attracted foreign and domestic investors and fostering confidence are perhaps key reasons to explain the positive effect of the financial crisis. In addition, this finding reveals the real situation that investors invest a huge amount in securities exchange and real estate markets during the crises. Furthermore, the joint assessment of both crises on market capitalization in Vietnamese listed firms illustrates that both events have surprisingly had a positive impact. Investor confidence in the real estate market, stock market, growth potential and government policies of Vietnam assisted in stabilizing and fostering market capitalization in spite of economic disruption. These results reflect that these firms adapted to altering conditions, leading to innovations and enhanced effectiveness that appealed to investors. Previous studies normally focus on reducing investor confidence, declining liquidity, and market volatility; however, our findings disclose a positive influence, suggesting that the Vietnamese market exhibited flexibility and adaptability during these crises.

Our findings show that the global crises have a moderating effect on the relationships between key determinants and market capitalization because the interaction between the crises and other influencers, SGR, ROA and LEV, is significant. Specifically, the financial crisis has a moderating impact on the relationships between return on asset and financial leverage and market capitalization (H5b). This is because reducing Vietnamese listed firms' asset returns highlights their operational inefficiencies and decreased profitability, thus declining investor confidence in crises. The dual pressure reduces share evaluations and weakened financial basics intensify market pessimism and erosion of market capitalization. In addition, high leverage strengthens risks, which weaken debt repayment ability, enhance insolvency risks and erode investor confidence during the financial crisis. This leads to the fact that leveraged listed firms suffer a severe decrease in market capitalization when increased financial misery mixes with adverse market conditions during the crisis. COVID-19 also has a moderating relationship between sales growth, return on asset and financial leverage and market capitalization (H5b). Listed firms with larger leverage were better positioned to deal with the COVID-19's disturbances, sustaining investor confidence and stabilizing their market value. In contrast, the interaction between COVID-19 and sales growth and ROA is significantly negative. This finding indicates that COVID-19 disrupted sales growth, decreased revenue and signaling weak listed firms' performance, reducing investor confidence and lower market capitalization when they faced ambiguous recovery prospects. Interestingly, unlike previous scholars, we find that intellectual capital plays an important role in market capitalization whether there is a crisis or not because the interaction between COVID-19, financial crisis and intellectual capital and market capitalization is not significant. This finding suggests that firms should emphasize intellectual capital to enhance market capitalization sustainably. These findings are consistent with those of Zambon *et al.* (2021), Minh and Nguyen (2024), Nguyen and To (2024), Nguyen (2023) and Nguyen (2024a, b, c, d, e).

Our findings provide evidence that FDI (H6), inflation (H7) and GDP growth (H8) have a negative impact on market capitalization, as suggested by the discounted cash flow model and arbitrage pricing theory. Economic growth and inflation are negatively associated with market capitalization due to increasing costs and uncertainty. Although economic growth suggests a robust economy, it might lead to inflation when demand is larger than supply, leading to lower purchasing power. Therefore, the State Bank of Vietnam has upraised its interest rates to regulate inflation, leading to higher borrowing costs for firms. This in turn makes firms invest less, resulting in negative earnings and lower firm market values. The increased competition during the rapid growth might reduce firm profitability, which could discourage investors, reduce investor confidence, leading to lower share prices and lower market capitalization. In addition, this reflects the fact that economic growth affects negatively dividend policy, which negatively influences market capitalization (Artha *et al*., 2023). This result indicates that a higher inflation level encourages investors to be concerned about risks which firms would get a loss. This result is in line with Boshkovska *et al*. (2016) and Phuong *et al.* (2023). In addition, our results illustrate that FDI also has a negative guidance on market capitalization

(H6). This finding reflects the fact that FDI brings technology, management skills and capital into the Vietnamese economy, but foreign firms compete with domestic ones, leading to listed firms' lower profitability. Therefore, attracting more FDI assists Vietnam in improving international investor confidence but competing with listed firms, leading to lower domestic investments in stock markets and lower market capitalization.

6. Conclusion

Market capitalization plays a vital role in raising funds for firms with lower costs than other sources of finance like borrowing. Market capitalization in Vietnam has shown a big progress in the recent years. In this research, we analyze the factors influencing the market capitalization of listed firms operating in Vietnam. We employ the system generalized method of moments to conclude that the macroeconomic environment and firm characteristics affect market capitalization, with a joint assessment of the COVID-19 and financial crises, which have not yet been considered together in previous research. Our study delivers a comprehensive background for understanding the factors affecting market capitalization and the global crises' moderating effects. Intellectual capital, sales growth, return on assets, financial leverage and global crises have a positive influence on market capitalization, while FDI, inflation and GDP affect negatively market capitalization. These results suggest that investors should invest in firms which have higher sales growth, higher intellectual assets, higher profitability and higher financial leverage. Unlike other studies suggesting that firms should focus on their characteristics like profitability and leverage to deal with uncertainties, our finding suggests that firms should invest in intellectual capital to deal with external shocks like financial crises and COVID-19. The role of intellectual capital on market capitalization is important before, during and after crises, and hence listed firms should focus on intellectual capital to develop their market capitalization sustainably. All macroeconomic conditions also negatively affect market capitalization. This reflects the fact that the macroeconomic environment can deteriorate investment values and then market capitalization. This implies that macroeconomic stability is very significant for firms and financial stability (Nasir *et al*., 2020). The crises have a moderating effect on the relationship between sales growth, profitability and financial leverage and market capitalization.

6.1 Theoretical implications

Our findings offer vital theoretical insights into the determinants of market capitalization and the global crises' moderating impacts as follows. First, we develop the current models like Nguyen and Ha (2012), Artha *et al*. (2023) and Xu *et al*. (2023) by adding intellectual capital, financial crisis, COVID-19, sales growth, inflation and GDP. Doing so helps us enhance our model's ability to capture both internal and external influencers affecting market capitalization and provides a broad framework for understanding firm market value formation. Intellectual capital highlights the role of intellectual capital such as knowledge, skills and relationships in firm value generation, while our inclusion of global crises and macroeconomic factors reveals how external factors affect market sentiment and risk. Sales growth reveals firm capability to create firm future earnings. This result advances signaling theory by signaling robust management performance and future profitability to investors, constructing confidence and proposing higher forthcoming earnings. This general approach strengthens the understanding of how both internal and external factors affect market capitalization, especially in unpredictable situations. Second, the negative effect of intellectual capital from the last period indicates that intellectual capital might depreciate or develop less efficiently over time if not frequently reintroduced. This finding suggests that the dynamic nature of intellectual capital needs continuing investment and management. This result advances the resource-based view theory by highlighting the need for

continuous renewal of intellectual capital to maintain the competitive advantage and strengthen that static resources lose value. This finding also expands stakeholder theory by emphasizing that sustaining intellectual capital benefits stakeholders by assuring continued firm performance. Our findings expand the resource-based view theory by underlining that not all resources have a continued positive effect. Third, our findings show that the positive effect of firm leverage implies that reasonable debt can enhance company value. This finding refines the Modigliani–Miller theory by suggesting the relevant capital structure in perfect markets and highlighting the practical effect of leverage on value because of enlarged financial risk and bankruptcy outlays. This finding also enriches the trade-off theory by posting an optimal debt level where tax benefits of debt are balanced against financial distress expenses. Finally, the moderating effect of global crises on the relationships between sales growth, profitability and financial leverage and market capitalization can highlight the significance of dynamic abilities. Companies might improve their market value by adapting their strategies and leveraging their assets during the crises. Our finding extends behavioral finance theory by emphasizing how global crises produce cognitive biases like risk aversion and herding. This result also enriches the efficient market hypothesis by showing that markets can overreact to global crises by mispricing companies with adaptive abilities.

6.2 Practical implications

Our findings recommend several practical suggestions as follows. First, companies should invest in intellectual capital to improve market capitalization, of which they should develop human resources, sustain and develop structural capital and encourage strong relationships. They should prioritize investments in their human capital, structural capital and relational capital to drive novelty, effectiveness, long-run value generation, which can boost market perception and attract investors. Previous studies suggest that firms should focus on ROA, sales growth and financial leverage to face crises, but our findings suggest that firms should emphasize intellectual capital to develop their market capitalization sustainably because intellectual capital always plays a vital role in market capitalization before, during and after crises. Second, they should have good strategies for managing resources, which comprise evaluating the intellectual capital components' value and making essential modifications, especially during the crises. Third, they should generate dynamic abilities such as flexible business models and risk management strategies to adjust and reply effectively to the global crises. They should also recognize chances arising from crises and develop strategies such as innovation and diversification to improve market capitalization during the crises. Fourth, companies should improve their capital structure by harmonizing the adoption of debt and equity, which can avoid the problem of excessive leverage and risks. Fifth, investors should observe changes in firm financial indicators like financial leverage, return on asset and sales growth at each period of information disclosure. They should consider some variation in share prices before or after the information disclosure when they make investment decisions. The positive effect of sales growth on market capitalization suggests that firms should invest in marketing, product development and consumer acquisition to boost sales performance. The positive impact of ROA on market capitalization implies that they should focus on property usage to foster profitability. They should focus on enhancing operational efficiency, decreasing costs and maximizing property productivity. Sixth, investors should observe macroeconomic indicators to forecast price changes. Lastly, firm leaders might forecast the share price changes, which might help them resolve problems like buying shares to obtain from rivals and being active in information disclosure about purchasing and selling firm securities.

This study has the following shortcomings. Firstly, it emphasizes listed firms, and hence, the findings may not reveal all firms operating in Vietnam and other emerging or developed markets. Further study should include all firms in Vietnam and expand to other emerging

markets to compare the moderating impacts of the global crises on market capitalization. Secondly, other factors like innovation capacity, digital transformation and corporate governance are not examined in our research. Further study should include these factors to provide more insights into the factors affecting market capitalization during the crises. Thirdly, this study does not examine industry and country comparisons. This research advises that future work should analyze the industry and country comparisons to confirm the findings and enrich their applications.

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