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Working Capital and Financial Performance: Comparing the COVID-19 Pandemic and the 2008 Economic Meltdown in Vietnam

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Abstract

This study analyzes how working capital management influenced financial performance during the COVID-19 pandemic and the 2008 economic meltdown, focusing on non-financial companies listed on the Ho Chi Minh City Stock Exchange. The results revealed during the COVID-19 pandemic, effective utilization of short-term assets and maintaining sufficient net working capital positively impacted return on assets (ROA) while focusing on short-term debt and poor cash flow management (CCC) had a negative effect. These findings highlight the need for companies to optimize WCM strategies to sustain operations and profitability insights during crises, providing valuable for financial managers (carefully balancing short-term financing and liquidity management) and retaining (appropriate financial regulations and interventions during times of economic uncertainty) in enhancing corporate resilience.

Keywords: Working capital management (WCM), financial performance, COVID-19, the 2008 economic meltdown, listed companies.

1. INTRODUCTION

Working capital management (WCM) is an important indicator of a company's current financial health and operating performance. Studies have shown that positive working capital usually indicates that a company has current assets exceeding current liabilities, while negative working capital indicates that current assets are insufficient to meet debt obligations (Ahmad et al., 2022). The working capital management strategies adopted by a company play an important role in corporate finance, greatly affecting the development and performance of the company (Al-Mawsheki, 2022; Attom & Rahman, 2022). In particular, working capital management becomes more challenging in the context of a global economic downturn, where supply chain disruptions and revenue declines are common impacts (Tsuruta, 2019; Akbar et al., 2021).

This study focuses on analyzing the impact of working capital management on financial performance during the two great crises: the COVID-19 pandemic and the 2008 economic meltdown. Previous studies have mainly focused on the impact of the COVID-19 pandemic on financial performance from a macro perspective (Tsiotas & Tselios, 2022; Iyke, 2020), and few studies directly compare these two crises in terms of working capital management and financial performance (Ahmad et al., 2022). This makes the current study urgent in clarifying the differences and similarities between the two crisis periods, thereby helping businesses and managers develop more effective working capital management strategies.

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The reason for choosing Vietnam as the research context is that Vietnam is one of the few countries that have successfully controlled the COVID-19 pandemic, creating a unique and valuable research context. Vietnam's capital market, specifically the Ho Chi Minh City Stock Exchange (HOSE), has unique characteristics compared to other markets, such as high working capital utilization rates and a heavy reliance on short-term assets to sustain operations (Nguyen et al., 2020). Compared to more developed markets, the Vietnamese market has a capital structure that relies heavily on short-term debt, creating a higher level of risk in the context of the crisis (Le, 2019; Liu & Xu, 2021). However, businesses in Vietnam have demonstrated the ability to adapt and optimize working capital effectively, helping them overcome difficulties during the crisis (Liu & Xu, 2021).

Empirical results show that, in the context of Vietnam, managing short-term assets and maintaining a reasonable level of net working capital are key factors in maintaining profitability during the pandemic (Nguyen et al., 2020). This is different from developed markets, where cash flow management (CCC) often plays a more important role in optimizing financial performance (Deloof, 2003). The heavy dependence on short-term debt in the capital structure in Vietnam makes short-term debt management (CLTA) a significant challenge, especially during crises such as the COVID-19 pandemic. Therefore, in addition to clarifying the factors of working capital management affecting the financial performance of listed companies in Vietnam during two major crisis periods, this study also provides useful information for business managers and policymakers in optimizing working capital management strategies.

This study makes three significant contributions to the existing literature on the WC: (1) it expands the body of research on WC activities during periods of CRISIS; (2) it provides comparative insights into WC activities between major crises, such as COVID-19 and the 2008 economic meltdown; (3) the findings offer valuable guidance for companies in better managing WC during crises. Additionally, this study aids government organizations in formulating beneficial policies to enhance WC effectiveness in times of economic turmoil. The structure of this paper is as follows: Part 2 covers the review of literature and hypothesis development. Part 3 outlines the research methods. Part 4 presents the experimental results and discussion. Lastly, Section 5 concludes the study.

2. THE REVIEW OF LITERATURE AND HYPOTHESIS DEVELOPMENT

2.1. WCM - STRATEGIES AND THEORIES

WCM (working capital investment and financing strategies) are important elements in corporate financial management. Working capital investment strategies can be divided into two categories: aggressive and conservative. Aggressive strategies focus on investing in short-term assets that are high-risk but can yield high returns, while conservative strategies aim to maintain liquidity by investing in safer assets (Goyal, 2018; Ahmad et al., 2022). Similarly, working capital financing strategies are also divided into aggressive and conservative financing, with aggressive financing using short-term debt and conservative financing relying on long-term debt (Tahir & Anuar, 2016; Farhan et al., 2021).

Although studies have shed light on WCM strategies, they often do not provide sufficient information on how these strategies perform in different economic contexts, especially during economic crises. This study will shed more light on how these strategies are adjusted during periods of major economic crises. Based on the above arguments, this study proposes the following hypotheses:

Hypothesis 1 (H1): A positive correlation exists between the WC investment strategy and the financial performance of non-financial companies listed on the Ho Chi Minh City Stock Exchange (HOSE).
Hypothesis 2 (H2): A negative correlation exists between the WC financing strategies and the financial performance of non-financial companies listed on HOSE.

2.2. THE IMPACT OF CCC AND NWC ON FINANCIAL PERFORMANCE

CCC and NWC are two important factors in WCM that greatly affect the financial performance of enterprises. Some studies have shown that CCC has a negative impact on corporate profitability, while other studies show a positive or ambiguous relationship between CCC and financial performance (Chang, 2018; Dalci & Ozyapici, 2018). Studies show that NWC can have a positive or negative impact on financial performance, depending on the specific conditions of each enterprise and market (Senan et al., 2022; Tahir & Anuar, 2016). However, previous studies often lack consistency in assessing the impact of CCC and NWC on financial performance, especially during crisis periods. This study will examine this relationship in the context of Vietnam through the two great crises. This study proposes the subsequent hypotheses:

Hypothesis 3 (H3): A negative correlation exists between CCC and the financial performance of non-financial companies listed on HOSE
Hypothesis 4 (H4): A positive correlation exists between NWC and the financial performance of non-financial companies listed on HOSE.

2.3. COMPARING THE IMPACT OF WCM ON FINANCIAL PERFORMANCE IN THE TWO GREAT CRISES (COVID-19 AND THE 2008 ECONOMIC MELTDOWN)

During economic crises, businesses often have to adjust their WCM strategies to cope with financial challenges. Rozari et al. (2015) found that the relationship between working capital investment strategies and financial performance may weaken during crisis periods. Ahmad et al. (2022) also found that the COVID-19 pandemic had a greater impact on WCM than the 2008 economic meltdown, requiring businesses to adopt more conservative strategies to maintain liquidity and minimize risks. This is because previous studies lack direct comparisons between different crises and how they affect WCM. This study will compare the impact of WCM in the two great crises in Vietnam, thereby providing practical recommendations. This study proposes the subsequent hypotheses:
Hypothesis 5 (H5): During the COVID-19 period, the WC investment strategy had a notably more positive effect on financial performance than the 2008 economic meltdown.
Hypothesis 6 (H6): During the COVID-19 period, the WC financing strategy had a notably more negative effect on financial performance than the 2008 economic meltdown.

2.4. THE IMPACT OF WCM ON FINANCIAL PERFORMANCE THROUGH CRISIS PERIODS

Studies have shown that firms face different WCM challenges during different crisis periods. Some studies suggest that CCC may have a greater negative impact during a crisis, while others suggest that this relationship may vary depending on specific economic conditions (Enqvist et al., 2014; Safitri et al., 2022). Similarly, NWC may help firms maintain financial performance during crisis periods if managed effectively (Afrifa, 2016; Ahmad et al., 2022). However, existing studies have not provided a comprehensive picture of how CCC and NWC affect financial performance during different crisis periods. This study will fill this gap by comparing the impacts of CCC and NWC during two crisis periods in Vietnam. Based on these arguments, this study proposes the subsequent hypotheses:

Hypothesis 7 (H7): During the COVID-19 period, the CCC had a markedly more negative effect on financial performance in comparison with the 2008 economic meltdown.
Hypothesis 8 (H8): During the COVID-19 period, the NWC had a markedly more positive effect on financial performance in comparison with the 2008 economic meltdown.

3. RESEARCH METHODS

3.1. DATA

This study examines non-financial listed companies on the Ho Chi Minh City Stock Exchange (HOSE) during two periods: (i) the 2008 economic meltdown (2007–2009) and (ii) the COVID-19 pandemic (2019–2021). After filtering out companies with incomplete information and those not listed since 2006, the final sample comprises 123 companies with 369 observations. Secondary data were collected from the primary financial statements of these listed companies, while macroeconomic data were gathered from the websites of the General Statistics Office (GSO) and the State Bank of Vietnam (SBV).

3.2. RESEARCH VARIABLES

Dependent variable: Numerous studies have examined the impact of WC on corporate financial performance using accounting-based measures such as return on assets (ROA), return on equity (ROE), and net profit margin (Liu & Xu, 2021; Akgun & Karataş, 2021; Tahir & Anuar, 2016; Pestonji & Wichitsathian, 2019; Farhan et al., 2021; Mandipa & Sibindi, 2022). ROA and ROE are the most commonly used indicators of financial performance (Xu & Jin, 2022; Xu & Li, 2019; Boitor & Mureșan, 2021). In this study, ROA is employed to measure the financial performance of non-financial listed companies on HOSE.

Independent variables: To measure WC strategies, the ratio of current assets to total assets (CATA) is used for WC investment strategies, and the ratio of current liabilities to total assets (CLTA) is used for WC financing strategies (Ahmad et al., 2022; Al-Mawsheki, 2022; Tahir & Anuar, 2016; Vuković & Jaksić, 2019). The cash conversion cycle (CCC) and net working capital (NWC) are utilized to measure WCM (Liu & Xu, 2021; Ahmad et al., 2022; Tarkom, 2022).

Control variables: SIZE and firm LEV are firm-specific control variables (Liu & Xu, 2021; Ahmad et al., 2022; Al-Mawsheki, 2022; Mardones, 2022; Korent & Orsag, 2022), while the gross domestic product (GDP) growth rate is a country-specific control variable. Additionally, this study examines whether the effects of COVID-19 on the relationship between WC and ROA are more pronounced than that of the 2008 economic meltdown by including two dummy variables (CRISIS and COVID). The variable CRISIS takes the value of 1 if the period is 2008-2009 and 0 otherwise, while COVID takes the value of 1 if the period is 2020-2021 and 0 otherwise.
Model (1) examines the impact of WC on the ROA of non-financial listed companies on HOSE for two periods of the great CRISIS.

$$ROA = \beta_0 + \beta_1 WC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 GDP_{i,t} + \varepsilon_{i,t} \quad (1)$$

Models (2), and (3) compare the impact of WC and ROA of non-financial listed companies on HOSE between the two periods of the great CRISIS.

$$ROA = \beta_0 + \beta_1 CRISIS_{i,t} + \beta_2 CRISIS_{i,t} * WC_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 GDP_{i,t} + \varepsilon_{i,t} \quad (2)$$
$$ROA = \beta_0 + \beta_1 COVID_{i,t} + \beta_2 COVID_{i,t} * WC_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 GDP_{i,t} + \varepsilon_{i,t} \quad (3)$$

Where: *WC: working capital (CATA, CLTA, CCC, NWC); CATA: WC investment strategy; CLTA: WC financing policy; NWC: Net WC; CCC: Cash conversion cycle; AID: Average inventory days; ARD: Average collection days; APD: Average payable days; CRISIS: Financial CRISIS 2008; COVID: COVID-19 pandemic; SIZE: Company SIZE; LEV: Financial LEVerage; GDP: GDP growth rate; i: Represents the ith company; t: Represents the year; β: Represents the regression parameter; ε: represents the error*.

Table 1. Description of study variables.

Variables	Measure
ROA	$\text{ROA} = \frac{\text{Net profit}}{\text{Total assets}}$
CATA	$\text{CATAR} = \frac{\text{Current assets}}{\text{Total assets}}$
CLTA	$\text{CLTAR} = \frac{\text{Current liabilities}}{\text{Total assets}}$
NWC	$\text{NWC} = \frac{\text{Current assets} - \text{Current Liabilities}}{\text{Total assets}}$
CCC	$\text{CCC} = \text{DAR} + \text{DI} - \text{DAP}$
DAR	$\text{DAR} = \left(\frac{\text{Short} - \text{term receivables}}{\text{Net revenue}}\right) * 365$
DI	$\text{DI} = \left(\frac{\text{Average inventory}}{\text{Cost of goods sold}}\right) * 365$
DAP	$\text{DAP} = \left(\frac{\text{Short} - \text{term payables}}{\text{Cost of goods sold}}\right) * 365$
CRISIS (Dummy)	Assigned a value of 1 if it belongs to the period 2008-2009, otherwise 0
COVID (Dummy)	Assigned a value of 1 if it belongs to the period 2020-2021, otherwise 0
LEV	$\text{LEV} = \frac{\text{Liabilities}}{\text{Equty}}$
SIZE	$\text{SIZE} = \ln(\text{Total assets})$
GDP	$\text{GDP} = \frac{\text{GDP}_t - \text{GDP}_{t-1}}{\text{GDP}_{t-1}}$

(Source: Author)

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Table 2. Descriptive statistics.

Variables	Obs	The period 2007 - 2009				The period 2019 - 2021			
		Mean	Std. dev	Min	Max	Mean	Std. dev	Min	Max
ROA	369	0.1094	0.1989	-0.1874	2.2594	0.0673	0.0981	-0.4673	1.5100
CATA	369	0.6425	0.9899	0.0227	18.9646	0.6115	0.5689	0.0007	8.4274
CLTA	369	0.4033	0.8569	0.0149	16.0491	0.3781	0.3468	0.0276	4.9814
NWC	369	0.2392	0.2678	-0.6218	2.9155	0.2334	0.4747	-2.1194	5.6300
CCC	369	135.04	336.61	-634.75	5865.31	-69.1035	3798.94	-53929.18	6738.36
SIZE	369	26.9902	1.3869	20.2309	30.1462	28.3149	1.3419	24.9184	32.8141
LEV	369	1.2355	1.2007	0.0003	6.7233	1.1521	1.3638	-4.8314	13.5170
GDP	369	0.1726	0.0697	0.0869	0.2577	0.1055	0.0730	0.0387	0.2069
CRISIS	369	0.6667	0.4720	0	1				
COVID	369					0.6667	0.4720	0	1

(Source: Authors calculated and synthesized using STATA17)

Table 2 presents descriptive statistics of the variables during the two major crisis periods: the 2008 economic meltdown and the COVID-19 pandemic, which helps to clarify the differences in WCM and financial performance between the two periods.

2007 - 2009 period (2008 financial crisis). The average ROA is 0.1094, indicating that companies still achieved a certain return on assets during this difficult period. The average value of CATA is 0.6425, indicating that companies maintained a large amount of short-term assets to ensure liquidity. The average CLTA is 0.4033, indicating that companies managed short-term debt at a reasonable level to finance business operations. The average NWC is 0.2392, indicating that companies' short-term solvency is good, helping them overcome liquidity challenges during the crisis. However, the average CCC is up to 135.04 days, reflecting the long collection period of cash from sales revenue, which may pose liquidity risks. This shows the need for more effective cash flow management in the context of the crisis.

2019 - 2021 (COVID-19 Pandemic). The average ROA decreased to 0.0673, indicating that the profitability of assets has significantly deteriorated compared to the 2008 crisis. This may be because companies face greater challenges, such as supply chain disruptions and revenue declines. The average CATA decreased slightly to 0.6115, still indicating that companies maintain relatively good liquidity. The average CLTA is 0.3781, indicating that the ratio of short-term debt to total assets has decreased compared to the 2008 period, indicating more caution in the use of short-term debt. The average NWC was 0.2334, indicating that the short-term solvency of the companies remained stable. Notably, the average CCC during this period was -69.10 days, meaning that companies were able to collect money from customers before paying suppliers, indicating more efficient working capital management in the difficult context.

These descriptive statistics highlight that in both crises, companies adjusted their working capital management strategies to cope with economic challenges. During the 2008 financial crisis, maintaining large current assets and effectively managing current liabilities helped companies maintain profitability. However, the prolonged cash collection period indicates the need for improved cash flow management. In contrast, during the COVID-19 pandemic, despite a decline in asset profitability, companies improved their working capital management efficiency, as evidenced by a negative CCC, indicating the ability to collect payments from customers before paying suppliers. This reflects the companies' adaptation in managing cash flows to maintain operations in difficult circumstances.

These results highlight the importance of adjusting WCM strategies according to each stage of the crisis, helping companies optimize resources and maintain financial performance even in times of economic uncertainty.

4.2. Correlation analysis

Table 3 presents the correlations between variables in the context of the Vietnamese capital market during the 2008 economic meltdown. Specifically, ROA is strongly correlated with CATA (0.6299) and CLTA (0.6199), indicating a close relationship between return on assets and the assets and short-term liabilities of companies. CATA is highly correlated with CLTA (0.9681), reflecting the simultaneous management of assets and short-term liabilities. CLTA also shows a significant correlation with ROA, highlighting the considerable impact of short-term debt on asset efficiency.

Table 3. Correlation analysis for the period 2007 – 2009.

	ROA	CATA	CLTA	NWC	CCC	CRISIS	SIZE	LEV	GDP
ROA	1.0000								
CATA	0.6299	1.0000							
CLTA	0.6199	0.9681	1.0000						
NWC	0.3444	0.5984	0.3786	1.0000					
CCC	-0.0576	-0.0277	-0.0218	-0.0325	1.0000				
CRISIS	-0.0143	-0.0723	-0.0600	-0.0753	-0.0552	1.0000			
SIZE	-0.1526	-0.2354	-0.2115	-0.1931	0.1123	0.0559	1.0000		
LEV	-0.1647	0.0120	0.1479	-0.4289	0.0819	0.0022	0.1330	1.0000	
GDP	-0.0650	-0.0119	-0.0058	-0.0256	-0.0015	0.0015	-0.0517	0.0097	1.0000

(Source: Authors calculated and syntheSIZEd using STATA17)

NWC is positively correlated with ROA (0.3444), CATA (0.5984), and CLTA (0.3786), suggesting that NWC positively influences profitability and asset structure. CCC has a weak negative correlation with other variables, implying that it has little direct impact on other financial factors. CRISIS is negatively correlated with most variables, indicating a slight impact of the 2008 economic meltdown on the financial fundamentals of firms. SIZE is negatively correlated with ROA (-0.1526), CATA (-0.2354), CLTA (-0.2115), and NWC (-0.1931), suggesting that larger firms tend to have lower profitability and different asset structures compared to smaller firms. LEV is negatively correlated with ROA (-0.1647) and NWC (-0.4289) but slightly positively correlated with CLTA (0.1479) and CATA (0.0120), indicating that debt levels affect a firm's profitability and working capital structure. GDP shows very weak correlations with all variables, suggesting that overall economic growth had little direct impact on the financial indicators of listed companies during the 2008 economic meltdown.

Table 4. Correlation analysis for the period 2019 – 2021.

	ROA	CATA	CLTA	NWC	CCC	SIZE	LEV	GDP	GDP
ROA	1.0000								
CATA	0.0340	1.0000							
CLTA	-0.0369	0.5539	1.0000						
NWC	0.0677	0.7938	-0.0667	1.0000					
CCC	-0.0711	0.0333	0.0228	0.0233	1.0000				
SIZE	-0.0507	-0.1247	-0.0306	-0.1271	0.0700	1.0000			
LEV	-0.1282	0.0292	0.2532	-0.1500	0.0418	0.1388	1.0000		
GDP	-0.0002	-0.0461	0.0042	-0.0583	0.0479	-0.0381	-0.0101	1.0000	
COVID	0.0082	0.0357	-0.0166	0.0549	-0.0469	0.0431	0.0147	-0.9835	1.0000

(Source: Authors calculated and syntheSIZEd using STATA17)

Table 4, which presents the correlations between variables in the context of Vietnam's capital market during the COVID-19 period, reveals some notable relationships. ROA has a weak correlation with both CATA (0.0346) and CLTA (-0.0369), indicating that the profitability of assets is minimally affected by current assets and current liabilities during this period. CATA is strongly correlated with NWC (0.7938), ensuring good liquidity for the company. CLTA has a weak negative correlation with NWC (-0.0667) and ROA, suggesting that current liabilities have little impact on working capital and profitability. NWC is positively correlated with CATA and weakly correlated with other variables such as ROA (0.0677) and CLTA, indicating that NWC positively influences asset structure.

CCC is weakly negatively correlated with ROA (-0.0711) and weakly correlated with other variables, implying that CCC has little impact on other financial factors. SIZE is weakly negatively correlated with most variables, such as ROA (-0.0507), CATA (-0.1247), and NWC (-0.1271), implying that larger firms tend to have lower profitability and working capital. LEV is negatively correlated with ROA (-0.1282) and NWC (-0.1506) but positively correlated with CLTA (0.2532), CATA (0.0292), and CCC (0.0418), indicating that the level of debt usage affects the financial structure of the firm. GDP is very weakly correlated with all variables, indicating that overall economic growth has little direct impact on the financial indicators of firms during the pandemic. COVID is very weakly correlated with most variables, suggesting that the effects of COVID-19 on the fundamental financial factors of listed companies are minimal.

In summary, the correlation analysis results indicate a clear difference in the impact of WCM factors between the two periods. Specifically, (1) during the 2008 economic meltdown, listed companies on HOSE tended to increase short-term borrowing to maintain operations. CATA is strongly correlated with ROA (0.6299) and CLTA (0.9681), suggesting that investment in short-term assets positively impacts return on assets. CLTA is highly correlated with ROA (0.6199) and NWC (0.3786), indicating that the use of short-term debt significantly affects ROA. NWC is positively correlated with ROA (0.3444) and CATA (0.5984), suggesting that effective NWC management improves profitability.

CCC has a weak negative correlation with other variables, implying that it does not have a significant direct impact on other financial factors of the company. (2) During the COVID-19 pandemic, companies adapted and adjusted their WCM strategies more effectively. CATA is weakly correlated with ROA (0.0346) and CLTA (-0.0369), indicating that current assets do not significantly impact profitability during this period. CLTA is weakly negatively correlated with NWC (-0.0667) and ROA (-0.0369), suggesting that current liabilities do not significantly impact WC and profitability. NWC is positively correlated with CATA (0.7938) but weakly correlated with ROA (0.0677), indicating that while WCM continues to play an important role in asset management, it has little impact on profitability. CCC is weakly negatively correlated with ROA (-0.0711), implying that CCC has little impact on other financial factors.

4.3. Experimental results

4.3.1. The relationship between WC and ROA between the two great crises

After handling the phenomena (autocorrelation, multicollinearity, heteroscedasticity) that appeared in the model and may affect the final analysis results. The empirical results and the summary of the empirical results with the research hypothesis are presented in Tables 5 and 6, illustrating the impact of WCM factors on ROA during the 2008 financial crisis and the COVID-19 pandemic, specifically During the 2008 financial crisis, a positive relationship between CLTA and ROA (P-value < 0.05), implying that the companies effectively used short-term debt to finance their operations, but contrary to the expectation of H2. This result is different from previous studies (Liu & Xu, 2021; Akgün & Karataş, 2021) that found that increased short-term debt during the crisis increased financial risk. This difference may stem from the specific context of Vietnamese SMEs (short-term debt may have been managed more conservatively to maintain liquidity and continuity of operations).

Table 5. Regression analysis results (FGLS).

ROA	**CRISIS**			**COVID-19**		
	(1a) FEM	**(1b) FEM**	**(1c) FEM**	**(1a) FEM**	**(1b) REM**	**(1c) REM**
C	**-.1050***	**.5606*****	**.2834*****	**.1279*****	**.1604*****	**.1554*****
	(0.082)	(0.000)	(0.000)	(0.002)	(0.001)	(0.001)
CATA	.0163			-.0046		
	(0.171)			(0.199)		
CLTA	**.1118*****			.0097		
	(0.000)			(0.266)		
CCC		-7.79e-06			-4.53e-07	
		(0.247)			(0.632)	
NWC			**.1803*****			**-.0049****
			(0.000)			(0.030)
SIZE	**.0078*****	**-.0150*****	**-.0074*****	-.0022	**-.0034****	**-.0031****
	(0.000)	(0.000)	(0.001)	(0.125)	(0.037)	(0.046)
LEV	**-.0360*****	**-.0225*****	**-.0067*****	**-.0063*****	**-.0053*****	**-.0061*****
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
GDP	**-.1112*****	**-.1481*****	**-.1111*****	**.0247*****	**.0244*****	**.0227****
	(0.000)	(0.000)	(0.001)	(0.008)	(0.008)	(0.019)
Obs	369	369	369	369	369	369
Prob	**0.0000*****	**0.0000*****	**0.0000*****	**0.0001*****	**0.0000*****	**0.0000*****

(Source: Authors syntheSIZEd using STATA17)

Table 6. Summary of experimental results and research hypotheses.

Variables	**(Hs)**	**Expectation Sign**	**CRISIS**			**COVID-19**		
			Sign	**P-value**	**Results**	**Sign**	**P-value**	**Results**
CATA	H1	+	+	0.171 > 0.05	Rejected	-	0.199 > 0.05	Rejected
CLTA	H2	-	+	0.000 < 0.05	**Accept**	+	0.266 > 0.05	Rejected
CCC	H3	-	-	0.247 > 0.05	Rejected	-	0.632 > 0.05	Rejected
NWC	H4	+	+	0.000 < 0.05	**Accept**	-	0.030 < 0.05	**Accept**

(Source: Authors synthesized using STATA17)

At the same time, there is a positive relationship between NWC and ROA, consistent with H4, which is similar to the study by Nguyen et al. (2020) that suggests that effective NWC management contributes to improved profitability. However, the negative impact of NWC on ROA during the COVID-19 pandemic (P-value < 0.05) contradicts this hypothesis. This difference reflects the challenges that SMEs face in managing increased inventories and receivables during supply chain disruptions (Afrifa, 2016). This result implies that, although NWC benefits SMEs, its effectiveness may be impaired under severe external pressures (e.g., global pandemics).

Therefore, to achieve an effective WCM strategy as demonstrated by the empirical results, the companies should adjust their WCM strategy in the following directions: (1) optimize the use of CLTA, ensuring that the use of short-term debt must be accompanied by an effective liquidity management strategy to avoid financial risks. (2) maintain and effectively manage NWC by optimizing inventory processes and strictly controlling receivables to maintain liquidity and short-term solvency. (3) adjust the CATA strategy, ensuring that investments in short-term assets must be flexible enough to meet liquidity needs without increasing risks. (4) flexibly manage CCC by improving debt collection processes and inventory management to shorten CCC and minimize the time locked in current assets. (5) Regularly monitor macroeconomic and microeconomic factors and regularly review WCM strategies in light of current economic conditions, ensuring that they are appropriate to specific economic conditions and can adjust quickly as conditions change. (6) Strengthening contingency planning and risk management is extremely important (especially during crisis periods) through the development of different scenarios and taking precautions to protect working capital and maintain liquidity in worst-case scenarios.

In summary, through the empirical results in Tables 5 and 6, we can see the implications and challenges for the listed companies, the Vietnamese capital market, and other markets:
Implications for Vietnamese listed companies: (i) In different crisis periods, WCM (CATA and CLTA) impacts ROA differently, so companies need to effectively manage WCM to avoid liquidity pressure. (ii) because NWC has a mixed impact on ROA, reflecting the difficulty in managing inventories and receivables due to supply chain disruptions. Therefore, companies need to focus on effectively managing NWC to maintain liquidity and short-term solvency. (iii) Although CCC did not have a significant impact on ROA in both crisis periods, CCC management was still an important factor. Companies should focus on optimizing CCC (improving debt collection processes and inventory management).

Challenges for the Vietnamese capital market: (i) The Vietnamese capital market, with its capital structure mainly based on short-term debt, poses a major challenge in liquidity management (especially during crisis periods), requiring companies and managers to take prudent short-term debt management measures to avoid financial pressure. (ii) The difference in the impact of WCM on ROA between the two crisis periods emphasizes the importance of adjusting WCM strategies to suit the specific economic context, requiring companies in Vietnam to be flexible and adapt quickly to market fluctuations.

Implications for other markets: (i) The research results are not only meaningful for Vietnamese listed companies but also for other emerging markets (which may have similar economic conditions). These markets need to adjust WCM strategies to suit the specific economic context and type of crisis. (ii) Policymakers in similar economies should consider supporting companies in developing effective WCM strategies to mitigate risks and enhance economic resilience to major shocks.

4.3.2. Comparing the impact of WC on ROA during two periods of the great CRISIS

The results from Tables 7 and 8 show the differences in the impact of WCM factors on ROA during the two crisis periods. Specifically, the WCM-related factors during the COVID-19 period (COVID_CATA, COVID_CLTA, COVID_CCC, and COVID_NWC) all have significant impacts on ROA, emphasizing the importance of managing these factors to maintain and improve profitability. In particular, NWC has a significant positive impact on ROA (COVID-19 period), suggesting that effective working capital management can help companies overcome difficulties. However, the differences between crisis periods suggest that WCM strategies need to be flexibly adjusted to suit each specific crisis context. For example, during the 2008 financial crisis, CRISIS_CATA had a positive impact on ROA, and this relationship was statistically significant in all models, which highlights the important role of effective working capital management in maintaining profitability during the crisis. This result is consistent with previous research (Rozari et al., 2015; Ahmad et al., 2022) that working capital investment strategies can help mitigate the negative impact of the crisis.

Table 7. Analysis results (FGLS).

COVID-19				CRISIS			
ROA	**(3a) FEM**	**(3b) REM**	**(3c) REM**	**ROA**	**(2a) FEM**	**(2b) FEM**	**(2c) FEM**
C	**.0576*****	**.0592*****	**.0601*****	C	**.3071*****	**.5714*****	**.4800*****
	(0.000)	(0.000)	(0.000)		(0.004)	(0.000)	(0.000)
PC1	**-.0013****	-.0004	-.0002	CRISIS	**-.0865*****	.0044	-.0055
	(0.016)	(0.355)	(0.659)		(0.000)	(0.360)	(0.340)
PC2	**-.0102*****	**-.0106*****	**-.0092*****	CRISIS_CATA	**.1299*****		
	(0.000)	(0.000)	(0.000)		(0.000)		
PC3	-.0006	.0029	-.0013	CRISIS_CLTA	.0171		
	(0.757)	(0.397)	(0.558)		(0.539)		
PC4	-.0010	.0016	**-.0075*****	CRISIS_CCC		-.0000	
	(0.475)	(0.488)	(0.000)			(0.198)	
PC5	-.0038	**.0237*****	**.0251*****	CRISIS_NWC			.0152
	(0.143)	(0.000)	(0.000)				(0.288)
PC6	**.0222*****	-	-	SIZE	-.0055	**-.0155*****	**-.0121*****
	(0.000)				(0.153)	(0.000)	(0.000)
				LEV	**-.0260*****	**-.0222*****	**-.0213*****
					(0.000)	(0.000)	(0.000)
				GDP	**-.1716*****	**-.1521*****	**-.1534*****
					(0.000)	(0.000)	(0.000)
Obs	369	369	369	*Obs*	369	369	369
Prob	**0.0000*****	**0.0000*****	**0.0000*****	*Prob*	**0.0000*****	**0.0000*****	**0.0000*****

(Source: Authors syntheSIZEd using STATA17)

Table 8. Summary of experimental results and research hypotheses.

Variables	**(Hs)**	**Expectation Sign**	**CRISIS**			**COVID-19**		
			Sign	**P-value**	**Results**	**Sign**	**P-value**	**Results**
CATA	H5	+	+	0.000 < 0.05	**Accept**	+	< 0.05	**Accept**
CLTA	H6	-	+	0.539 > 0.05	Rejected	-	< 0.05	**Accept**
CCC	H7	-	-	0.198 > 0.05	Rejected	-	< 0.05	**Accept**
NWC	H8	+	+	0.288 > 0.05	Rejected	+	< 0.05	**Accept**
COVID		+				-	< 0.05	**Accept**
CRISIS		-	-	0.000 < 0.05	**Accept**			

(Source: Authors synthesized using STATA17)

To achieve an effective WCM strategy, as demonstrated by the empirical results, listed companies should adjust their WCM strategies in the following directions: (1) Prioritize NWC management by ensuring that current assets are greater than current liabilities to enhance liquidity and the ability to cope with economic fluctuations. (2) Focus on investing in CATA (inventories or receivables) to enhance liquidity and optimize financial performance during the crisis. (3) CLTA needs to be flexibly adjusted according to specific economic conditions. In the current economic uncertainty, companies should consider minimizing the use of short-term debt to minimize liquidity risk and avoid financial risk. (4) Optimize CCC, minimize receivables collection time, effectively manage inventories, and extend payables payment time without affecting supplier relationships. (5) WCM elements need to be flexibly adjusted according to each crisis stage to ensure financial performance and maintain sustainable operations. (6) Develop different scenarios to prepare for sudden changes in the economy and build contingency plans to protect working capital and maintain liquidity. These findings are relevant not only to firms but also to the Vietnamese economy in general and other emerging markets, highlighting the importance of tailoring WCM strategies to specific economic contexts and types of crises. For firms, optimizing WCM strategies during crisis periods can help maintain stability and sustainable development. Policymakers in Vietnam should consider supporting firms in developing effective WCM strategies to mitigate risks and enhance the resilience of the economy to major economic shocks.

However, despite the valuable findings, this study still has some limitations. (i) focusing only on non-financial listed firms on HOSE, which may limit the applicability of the results to other industries or regions. (ii) using only ROA as a proxy for financial performance may ignore other aspects of firm performance (ROE or gross profit margin). (iii) the analysis focuses on only two specific crisis periods, thus not fully reflecting the broader range of economic fluctuations that firms may face. To address these limitations, future studies should expand the scope to include other industries and regions, use more diverse financial performance indicators, and consider additional crisis periods. This will enhance the comprehensiveness and applicability of the research results in working capital management and improving firm financial performance.

5. CONCLUSION

This study analyzed and compared the impact of WCM on financial performance (ROA) during two major crises (the 2008 economic meltdown and the COVID-19 pandemic). The results showed that CATA and NWC had positive impacts on ROA (during COVID-19), while CLTA and CCC had negative impacts on ROA. The impact of WCM on ROA was more evident during COVID-19 than during the 2008 financial crisis. In addition, this study has provided important contributions to both the theory and practice of WCM in the context of economic crises.

Theoretical contributions. (i) supplement the knowledge of WCM in crises by expanding the understanding of the impact of WCM strategies in crises. In particular, the study found that in the context of the COVID-19 pandemic, WCM policies have been adjusted and are more effective than during the 2008 financial crisis, helping companies maintain financial performance and liquidity. (ii) the study results have compared the differences in how WCM factors (CATA, CLTA, CCC, NWC) affect financial performance between the two crises, which previous studies have not done to clarify the role of WCM in coping with different economic crises.

Practical contributions: (i) The study recommends that companies optimize WCM strategies by adjusting factors such as CATA and NWC to suit the specific crisis context and ensure financial performance. In particular, in the context of an economic crisis, maintaining a high NWC ratio is necessary to ensure liquidity and business continuity. (ii) The study results also suggest that policymakers should facilitate financial policies to support companies in managing working capital effectively. This not only helps companies maintain operations but also contributes to enhancing the resilience of the economy to major economic fluctuations.

These results have important implications for stakeholders such as (1) listed companies, which need to develop and apply flexible WCM strategies that are suitable for specific economic conditions. In particular, focus on inventory and receivables management to optimize CCC and maintain liquidity during crisis periods. (2) Policymakers need to consider supporting companies in accessing long-term financial resources and providing financial support packages to help companies overcome difficulties during economic crisis periods.

However, this study also has some limitations, such as (i) the scope of the study only focusing on non-financial listed companies on HOSE, so the results may not apply to all other industries and regions. (ii) the data only covers two specific crisis periods and may not fully reflect other economic fluctuations. (iii) only using ROA as a measure of financial performance, other factors (ROE, gross profit margin, and other indicators) may be ignored. Future research should expand the scope of the study to include companies in different industries and regions to more comprehensively assess the impact of WCM. It is recommended to use a variety of measurement variables by combining different financial performance measures to have a more comprehensive view of the relationship between WCM and financial performance. Finally, further analysis is needed on the macroeconomic and microeconomic factors affecting WCM and the financial performance of companies in the context of the crisis.

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