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APICHAT PONGSUPATT
Kasetsart University, Thailand

THARINEE PONGSUPATT
Kasetsart University, Thailand

THE INFLUENCE OF WORKING CAPITAL ON PROFITABILITY: EVIDENCE OF LISTED COMPANIES IN THAILAND MARKET FOR ALTERNATIVE INVESTMENT (MAI)

Abstract:

The objective of this study is to investigate the relationship between working capital management and profitability on the Market for Alternative Investment (MAI) in Thailand's capital market. The general objective of MAI is compatible to the Stock Exchange of Thailand (SET) which is to act as a capital market for various businesses, but this market is focus on small and medium-sized enterprises (SMEs) and innovation. From existing literature reviews, we select five factors including receivables collection period, inventory conversion period, payable deferral period, cash conversion cycle and current ratio as explanatory variables. At the time, firm size and debt ratio are assigned as controllable variables. While return on invested capital (ROIC), a dependent variable is employed as proxy for profitability. This study uses secondary data collected from annual financial statements of companies in MAI index for the period of 10 years from 2014-2023. After examining the data, only 826 samples are qualified under the criteria. The multiple regression model is implemented for statistical testing at the significant level 0.05. The results indicate a negative significant relationship between the receivable collection period and payable deferral period with profitability. This model is supported with R2 of 0.144. We also observe that all types of MAI firms can increase their profitability by shortening the receivable collection period and curtailing the payable deferral period. The findings in this study can assist investors or managers to comprehend the effect of specific determinants to the SME's profitability in Thailand.

Keywords:

Working Capital Management; Cash Conversion Cycle; Receivable Collection Period; Inventory Conversion Period; Payable Deferral Period; Return on Invested Capital; Thailand MAI Index

JEL Classification: L25, M41, Y10

1. Introduction

The primary objective of a business enterprise is to create maximum value of stock price. The types of actions which managers should take to maximize the value of the firm are appropriate decision making in capital raising, long-term investment and in working capital management. The importance of working capital arrangement is not new in finance literature. Many previous studies suggested the importance of working capital management such as De Almeida and Eid Jr. (2014) have analyzed the relationship between working capital and company value and how financial constraints on access to financing affect this relationship. Vural et.al (2012) investigated the relationship between working capital management components and performance of the firms. Kieschnick et.al. (2013) provide the first empirical study of the relationship between corporate working capital management and shareholders' wealth. Enqvist et.al. (2014) find the impact of business cycle on the working capital–profitability relationship is more pronounced in economic downturns relative to economic booms.

In this study, we empirically investigate the effect of working capital management on financial performance of the MAI listed firms in Thailand. We hypothesize that working capital management leads to improved profitability. Section 2 provides literature background and hypotheses development. In Section 3, we discuss research design. Empirical results are discussed in section 4 and conclusions are presented in the last section.

2. Literature Reviews

2.1 Working capital management

Working capital management has for a long time played a leading role in enabling the success of companies in recent decades. Working capital, which refers to the amount of money a business has available to cover its day-to-day operations and expenses, is a crucial element in the management of a business. It plays a significant role in ensuring that the business functions smoothly and effectively [Sogomi et.al. (2024)]. Working capital refers to the difference between current assets and current liabilities and is considered fundamental for the financial performance of companies, as it represents the link between profitability and liquidity. Liquidity is basically measured using the current ratio and the quick ratio. The current ratio is determined by dividing current assets by current liabilities, while the quick ratio is obtained by dividing current assets net of inventories by current liabilities. It is evident that strategic management of working capital, encompassing sound decision-making, proactive control of current asset movements, an effective Cash Conversion Cycle (CCC) [Sogomi et.al. (2024)]. Efficient management of working capital is an essential condition of rise in profitability of a company [Arbidane and Ignatjeva (2012)].

2.2 Working Capital and financial performance

Profitability is the result of many company management policies and decision-making. Profitability is the company's ability to generate net income from activities carried out in the accounting period. Several factors contained in a company influence the company's ability to earn profits. The impact of working capital management is either positive enough to bring growth and profits or negative enough to bring decline and losses [Mogaji and Daniel (2024)]. Many researchers found the empirical analysis of the impact of working capital on profitability [Rahmawati et.al. (2024), Sogomi et.al. (2024), Lukić (2023), Alvarez and Vazquez (2021)]. Alavinasab and Davoudi (2013) assert that working capital management indicates policies and decisions which are adopted about working capital to change types of current assets and short-term financial resources. Correctly

controlling the working capital management can affect importantly the firm's profitability. In this study, Return on Invested Capital (ROIC) is used as a proxy for profitability.

3. Research Methodology

3.1. Population and Sample

The population of this study is 106 companies listed on the Stock Exchange of Thailand in the market for alternative investments as called MAI Index. They represent 106 stocks that meet the most conditions under the SET's conditions. The data was collected from these companies over 10 years starting from 2014 to 2023. By gathering listed firms with complete financial information, we found 803 samples are qualified.

3.2. Data collection method

Secondary data were derived from Refinitiv Workspace during the period from 2014 to 2023. Besides using the financial statements of secondary data, we also compiled financial information from the Stock Exchange of Thailand's website, the annual financial statements submitted by the Company to the Office of the Securities and Exchange Commission (SEC) and the Stock Exchange of Thailand.

3.3. Data analysis methods

Descriptive analysis is used to describe the general characteristics of the sample by using mean, median, maximum, minimum and standard deviation. Multiple regression analysis has been implemented to fulfill all seven assumptions such as the normality assumption Test, the linearity assumption test of each of the independent variables with the dependent variable, the Durbin Watson *d* statistic test for detecting serial correlation and the multicollinearity test in trying to understand the significant and the insignificant variables. Multicollinearity can be spotted through the correlation between the explanatory variables and the Variance Inflation Factor (VIF). Ordinary Least Squares (OLS) is a widely accepted technique used by many researchers to empirically test the impact of working capital management policies on firms' profitability [Hassan et.al. (2024)].

After considering literatures and concepts related to the working capital choice, as well as the conclusions drawn from reviewing various research, the conceptual framework of our study is summarized in Figure 1 while Table 1 summarizes dependent, explanatory, control variables along with their measurement.

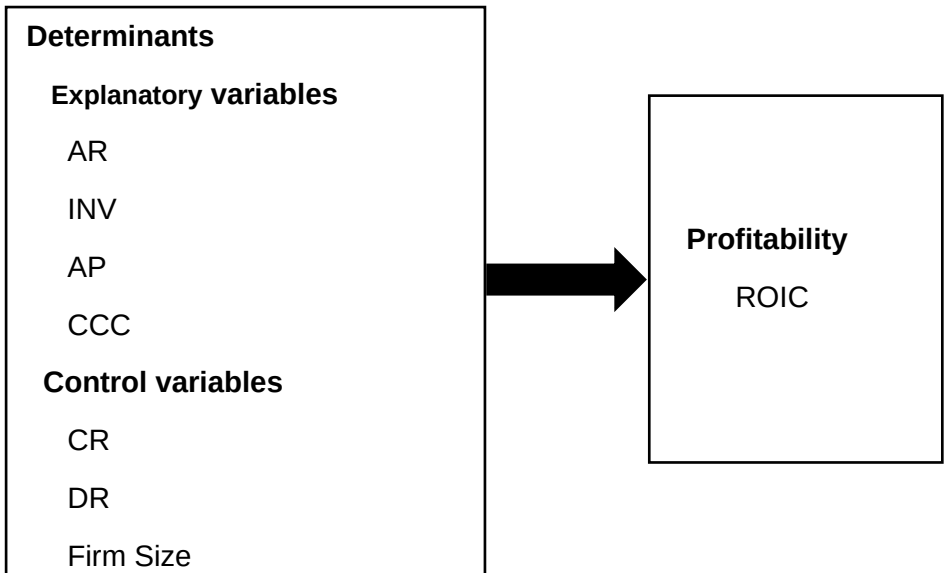

Figure 1: Conceptual Framework

Table 1: Explanatory, Control, Dependent variables and their measurement

Explanatory Variables	Definition	
Receivables Collection Period	AR	Accounts Receivables/Sales x 365
Inventory Conversion Period	INV	Inventory/Cost of Sales x 365
Payable Deferral Period	AP	Accounts Payables/Cost of Sales x 365
Cash Conversion Cycle	CCC	(Receivables Collection Period + Inventory Conversion Period) – Payables Deferrals Period
Control variables		
Current ratio	CR	Current Assets/Current Liabilities
Debt ratio	DR	Long-term Debt/Total Capital x 100
Firm size	SIZE	Natural Log of Total Sales
Dependent Variables		
Return on invested capital	ROIC	Net Operating Profit After Tax (NOPAT)/ Invested Capital

3.4 Hypothesis of this study

H_1: Receivables Collection Period has a positive effect on profitability.
H_2: Inventory Conversion Period has a positive effect on profitability.
H_3: Payable Deferral Period has a positive effect on profitability.
H_4: Cash Conversion Cycle has a positive effect on profitability.

3.5 Model Specification

The regression model can be specified as given below:

$$ROIC = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 AR + \boldsymbol{\beta}_2 CR + \boldsymbol{\beta}_3 DR + \boldsymbol{\beta}_4 size + \boldsymbol{\xi}_{ik} \quad (1)$$

$$ROIC = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 INV + \boldsymbol{\beta}_2 CR + \boldsymbol{\beta}_3 DR + \boldsymbol{\beta}_4 size + \boldsymbol{\xi}_{ik} \quad (2)$$

$$ROIC = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 AP + \boldsymbol{\beta}_2 CR + \boldsymbol{\beta}_3 DR + \boldsymbol{\beta}_4 size + \boldsymbol{\xi}_{ik} \quad (3)$$

$$ROIC = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 CCC + \boldsymbol{\beta}_2 CR + \boldsymbol{\beta}_3 DR + \boldsymbol{\beta}_4 size + \boldsymbol{\xi}_{ik} \quad (4)$$

Where $\boldsymbol{\beta}_0$ = Constant, β_1, β_2, β_3, and β_4 are coefficients of the corresponding variables and $\boldsymbol{\xi}_{ik}$ is the error term.

4. Results and Data Analysis

4.1 Summary statistics

Table 2 below presents the descriptive statistics for the determinants of profitability in Thailand during 2014 to 2023. The table shows the mean, maximum, minimum and standard deviation values for each variable. From the table, the average and maximum of days in AR measured as accounts receivables divided by sales multiply 365 days are 87.37 and 437days for ten-year periods. Small and medium firms convert accounts receivable and inventory into cash within 87.37 days and 111.86 days respectively. The maximum, minimum and mean of profitability are 136.67percent, -93.70 percent and 6.82 percent respectively. This means, on average, firms generate profit 6.82 percent while maximum profit is 136.67 percent and maximum loss occurred for 93.70 percent. The average natural logarithm of sales for the past ten years is 13.60 with a maximum of 15.32 and minimum of 11.02. Consequently, cash conversion cycle in SME shows the highest standard deviation among all variables.

Table 2: Descriptive statistics of dependent and independent variables (2014-2023) (n=803)

Variables	Mean	Maximum	Minimum	Std. Dev.
AR (days)	87.37	437.00	2.00	52.33
INV (days)	111.86	585.00	2.00	102.34
AP (days)	71.08	358.39	1.83	45.38
CCC (days)	128.16	827.08	-283.15	111.01
CR (times)	2.16	16.09	0.14	1.83
DR (%)	23.70	117.82	0.01	18.66
LN_Sales	13.60	15.32	11.02	0.78
ROIC (%)	6.82	136.67	-93.70	16.62

The correlation between all the explanatory variables is given as the correlation matrix as shown in table three. If a very high correlation of 0.90 or above between the independent variables shows the presence of possible problematic multicollinearity. However, the current samples display no evidence for the multicollinearity.

Table 3: Correlation Matrix

	Variables	1	2	3	4	5	6	7	8
1	AR	1							
2	INV	-0.084*	1						
3	AP	0.262**	0.087*	1					
4	CCC	0.287**	0.847**	-0.205**	1				
5	CR	-0.046	0.078*	-0.237**	0.148**	1			
6	DR	0.131**	0.222**	0.020	0.259**	-0.532**	1		
7	LN_Sales	-0.041	-0.164**	-0.123**	-0.121**	-0.232**	0.125**	1	
8	ROIC	-0.325**	-0.060	-0.189**	-0.132**	0.142**	-0.232**	0.042	1

** Significant at the 0.01 level.
* Significant at the 0.05 level.

4.2 Regression Results

The OLS regression is run in a panel manner, thus, the study reports results of the OLS panel regression in Table 4 to Table 7. The results obtained after regressing equation (1), (2), (3) and (4)

Table 4: OLS Regression results of Equation (1)

Parameters	AR	CR	DR	LN_Sales
Coefficient	-0.094	0.452	-0.155	1.352
t-value	-8.999	1.266	-4.473	1.892
Significance	0.000**	0.206	0.000**	0.059
VIF	1.021	1.452	1.418	1.060
Adj. R^2	0.143			
F-value	34.337			
F-Significance	0.000**			
D-W Stats.	2.103			

** Significant at the 0.01 level.
* Significant at the 0.05 level.

Table 4 shows the summary statistic of regression equation (1) for the period 2014–2023. Regression results reveal that there is a negative relationship between receivables collection and debt ratio with profitability, that is, return on invested capital which are considered important indicators of firm performance. This means the lesser the number of days of account receivables, the more the profitability of the firms which comply with the finance theory.

Table 5: OLS Regression results of Equation (2)

Parameters	INV	CR	DR	LN_Sales
Coefficient	0.000	0.401	-0.194	1.689
t-value	-0.060	1.047	-5.095	2.227
Significance	0.952	0.296	0.000**	0.026*
VIF	1.144	1.517	1.551	1.084
Adj. R^2	0.056			
F-value	12.793			
F-Significance	0.000**			
D-W Stats.	2.033			

** Significant at the 0.01 level.
* Significant at the 0.05 level.

Table 5 shows the summary statistic of regression equation (2). for a ten years period. The result shows no significant relationship between days in inventory and profitability of firm. The regression results reveal that number of days in inventory have not affect profitability of SME in Thailand. However, the result shows the negative relationship of control variable (debt ratio) and profitability which is found commonly in the literature. [Pouraghajan and Emamgholipourarchi (2012); Iqbal and Zhuquan (2015); Akoto et.al.(2013)].

Table 6: OLS Regression results of Equation (3)

Parameters	AP	CR	DR	LN_Sales
Coefficient	-0.067	-0.203	-0.219	0.964
t-value	-5.150	-0.526	-6.110	1.285
Significance	0.000**	0.599	0.000**	0.199
VIF	1.118	1.597	1.420	1.096
Adj. R^2	0.086			
F-value	19.847			
F-Significance	0.000**			
D-W Stats.	2.011			

** Significant at the 0.01 level.
* Significant at the 0.05 level.

Table 6 shows the summary statistic of regression equation (3). The results display negative relationships of payable deferral period and debt ratio with profitability. The number of days a firm takes to pay its creditors affects its profitability. More profitable firms pay their creditors early as compared to less profitable firms, which in turn affects profitability. Likewise, leverage has shown a statistically significant negative relationship to profitability, suggesting that an increase in debt has a negative impact on firm performance which demonstrate similar findings with Alvarez et.at. (2021).

Table 7: OLS Regression results of Equation (4)

Parameters	CCC	CR	DR	LN_Sales
Coefficient	-0.013	0.698	-0.158	1.524
t-value	-2.331	1.767	-4.004	2.031
Significance	0.020	0.078	0.000**	0.043
VIF	1.232	1.627	1.669	1.067
Adj. R^2	0.062			
F-value	14.237			
F-Significance	0.000			
D-W Stats.	2.037			

** Significant at the 0.01 level.
* Significant at the 0.05 level.

Table 7 shows the summary statistic of regression equation (4). The finding found no relationship between cash conversion cycle and profitability. But the result consistency found negative relationship of debt ratio and profitability.

5. Conclusions

The relationship between working capital management and profitability is like the relationship between finance and accounting in many aspects. The accountant needs to be familiar with financial models which provide practical methods to handle working capital elements like cash and inventory. The working capital investment and financing policies have the most significant impact on profitability [Morshed, A. (2020)].

The results indicate a negative significant relationship between the receivable collection period and payable deferral period with profitability. This model is supported with R^2 of 0.144. We also observe that all types of MAI firms can increase their profitability by shortening the receivable collection period and curtailing the payable deferral period. The findings in this study can assist investors or managers to comprehend the effect of specific determinants to the SME's profitability in Thailand.

Future research might consider other independent internal and non-financial variables such as product uniqueness, business risk, or firm age as well as external economic factors such as interest rate, inflation, exchange rate, economic and political development of the country, market environment.

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