The Impact of Working Capital Management and Financing Strategies on Profitability: Evidence from Property & Construction Firms Listed on the Market for Alternative Investment (mai) in Thailand

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Abstract

The objectives of this study are to examine the influence of working capital management and financing strategies on the profitability of the property & construction companies listed on the Market for Alternative Investment (mai) in Thailand. It also examines whether firm size affects the relationships between working capital components, financing indicators, and profitability. The sample consists of ten firms listed on the mai and observed from 2020 to 2025. Multiple regression analysis is employed to assess the effects of key variables on Return on Assets (ROA), Return on Equity (ROE), and Operating Profit Margin (OPM).

The results show that the Debt Ratio has a strong negative effect on all profitability indicators, underscoring the risk associated with high leverage. Firm size exhibits a significant positive association with ROA, ROE, and OPM, suggesting that larger firms benefit from performance advantages arising from scale and resource efficiency. The average collection period is negatively associated with ROA and ROE, whereas its effect on OPM is insignificant.

The average payment period exhibits a significant negative influence on OPM. Conversely, the inventory conversion period and the long-term debt-to-total debt ratio do not have a statistically significant effect on the profitability indicators. Overall, the findings underscore the importance of effective liquidity management and prudent financing decisions in enhancing firm performance within emerging capital markets.

Key words: Working Capital Management, Financing Strategies, Profitability, Property & Construction Firms, Market for Alternative Investment

1. Introduction

In the context of severe economic volatility and the unpredictability of global events, such as global economic crises, financial instability in individual countries, the COVID-19 pandemic, uncertainty in economic policies, and rapid technological and innovative advancements, businesses face significant challenges in adapting and responding effectively. A lack of adaptability, combined with ineffective planning and financial management, may result in liquidity shortages and constrain the firm's ability to generate adequate profitability. Consequently, effective working capital management is essential for businesses of all sizes, as it is crucial for maintaining liquidity and supporting the firm's ability to generate profits. (Sagner, 2014).

It is essential to understand Net Working Capital, Operational Working Capital, and Financial Working Capital. Net Working Capital refers to the difference between current assets and current liabilities. Operational Working Capital consists of accounts receivable, inventory, and accounts payable (Knauer and Wohrmann, 2013), while Financial Working Capital refers to the funds invested in current assets to support business operations. Therefore, managers must carefully manage working capital, considering both the level of investment in current assets and the sources of funds used to finance these assets.

Establishing an appropriate balance among the components of working capital, including accounts receivable, inventory, trade credit, and achieving suitable levels of profitability and cash flow, is essential for financial managers (Afrifa, 2016). Maintaining this balance allows firms to earn returns that reflect the risks involved in managing current assets efficiently (Tsagem, Aripin, and Ishak, 2015). When a firm maintains a high level of investment in current assets, such as account receivables or inventory, it can better cope with price fluctuations, prevent stockouts, and strengthen customer relationships by extending trade credit. However, this approach may have negative implications, as it can constrain the firm's capacity to pursue expansion or market opportunities offering higher potential returns than current asset investments. Conversely, when a firm maintains a low level of current assets, it may experience liquidity problems that limit its ability to meet short-term obligations, thereby increasing the risk of default. Therefore, effective working capital management requires maintaining an appropriate balance of current assets and

liabilities, as well as determining the optimal level of working capital. Firms must establish an appropriate working capital management policy that supports profitability and enhances shareholder value (Nguyen, Phan and Nguyen, 2020).

Financing represents an essential component of managerial decision-making, requiring managers to select appropriate methods and strategies for raising and utilizing capital to achieve the firm's operational objectives (Nyabakora, Mng'ang'a, and Chibona, 2020). This reflects the firm's ability to raise capital in line with its financial objectives, whether through short-term debt, long-term debt, equity, or a mix of debt and equity financing. The outcomes of these financing decisions can significantly impact organizational performance. Therefore, the most appropriate proportion of debt to equity varies depending on firm-specific circumstances (Modigliani and Miller, 1958; Myers 1984; Tudose, 2012).

The real estate sector has a significant impact on Thailand's economy, supporting the expansion of tourism and household consumption. Investment in real estate not only directly contributes to the country's gross domestic product but also generates indirect effects by fostering growth in related industries and employment, such as construction materials, electrical appliances, household goods, insurance and housing loans. Thailand's real estate market has experienced significant expansion, largely driven by infrastructure development and urbanization, although periodic slowdowns have occurred due to economic factors. Over the past decade, rapid changes in the market have been observed, partly resulting from urban development, which has led to numerous new projects.

The COVID 19 pandemic has had a widespread impact on the global economy, and the real estate sector is no exception. This unprecedented economic uncertainty severely threatened the operational stability and liquidity of Market for Alternative Investment (mai) listed Property & Construction (PROPCON) firms, which are inherently less resilient than larger companies. The crisis triggered a severe liquidity squeeze due to major disruptions: the combination of construction delays (increasing the Days Inventory Outstanding) and stagnant property sales lengthened the Cash Conversion Cycle (CCC), while the economic slowdown heightened Days Sales Outstanding risks. Consequently, the problem is the critical need to analyze the role and effectiveness of Working Capital Management as a vital financial buffer for these resource

constrained PROPCON firms in mitigating severe liquidity risk, managing operational cycle distortions, and ensuring business continuity during the COVID 19 crisis.

While rigorous working capital management was essential for the short-term survival and liquidity of mai-listed PROPCON firms during the COVID-19 crisis, the sector continued to face problems even after the pandemic began to ease. Instead, the post-crisis environment brought about a new set of structural economic pressures and market imbalances. However, under the current economic conditions, real estate developers, particularly small and medium enterprises, are facing considerable challenges, with many projects remaining unsold. Developers are currently facing challenges arising from increasing construction costs and weakening consumer purchasing power. In response, the government has implemented various policies to support the growth of the real estate sector, including reductions in mortgage registration fees and transfer fees, Loan to Value (LTV) regulations, and the introduction of additional financing options. Furthermore, tax incentives, such as corporate income tax and value added tax exemptions for digital token issuers, providing real estate developers with alternative financing channels to raise capital

Several previous studies have examined the relationship between working capital management and organizational performance across different countries and industries (Tahir and Anuar, 2016; Rehman and Anjum, 2013). However, a review of prior research indicates that studies specifically focusing on the real estate sector remain limited, and few have incorporated financing strategy variables into their analyses. Therefore, this study aims to examine the impact of working capital management and financing strategies on organizational performance, with a particular focus on property & construction firms listed on the Market for Alternative Investment (mai) in Thailand. According to the mai Index Highlight as of October 2024, the property & construction sector ranked second in terms of market capitalization on the mai, totaling 63,446 billion THB. The Services sector held the top position with a market capitalization of 92,162 billion THB. Although the property & construction sector ranks below the Services sector in absolute market value, it remains one of the largest and most significant sectors in the mai market. This underscores its attractiveness to investors and highlights its potential for growth within Thailand’s alternative investment landscape.

In this context, the objectives of this study are to examine the influence of working capital management (average collection period, average sale period, and average payment period) and financing strategies on the profitability of property & construction companies listed on the Market for Alternative Investment (mai) in Thailand. Additionally, this study also examines the influence of selected proxies for firm size on the relationship between working capital management policies, financing strategies, and profitability.

2. Literature Review and Hypotheses Development

Bellouma (2011) described working capital management as an approach that emphasizes liquidity, which results from allocating high investments in current assets and, consequently, may reduce profitability. Conversely, allocating too little to current assets in pursuit of higher profits can lead to liquidity problems and even stockouts. Therefore, managers must exercise caution in managing working capital to ensure that the business maintains sufficient liquidity while generating profits efficiently. It is crucial for businesses to understand how to manage current assets and liabilities effectively, as each component requires distinct management approaches. Proper management of working capital components is essential, as it contributes to improved organizational performance (Ang et al., 2021; Ukaegbu, 2014).

Accounts receivable (AR) refers to the amount of money a business is entitled to receive from the sale of goods or the provision of services. It is classified as a current asset because it is expected to be collected within one year. The management of accounts receivable begins with establishing credit policies. However, businesses must also implement an effective system to monitor and control credit, as well as to evaluate and adjust credit-granting procedures to ensure their accuracy and appropriateness. To achieve these objectives, it is essential for businesses to maintain an efficient accounts receivable management system. According to Bieniasz and Gołas (2011) and Enqvist, Graham, and Nikkinen (2014), accounts receivable is negatively related to business profitability, indicating that a shorter collection period leads to higher profits. In contrast, Jakpar et al. (2017), Alvarez et al. (2021), and Amponsah-Kwatiah and Asiamah (2020) reported a positive relationship between accounts receivable and business profitability. Meanwhile, Arnaldi et al. (2021) and Sensini et al. (2021) found no significant relationship between accounts receivable and business profitability.

Inventory (INV) refers to a firm's current assets that are a held for sale in the ordinary course of business, assets that are in the process of being converted into finished goods, and raw materials or supplies intended for use in the production of goods or the provision of services. The process of inventory management constitutes a critical component of production management. Firms must maintain an appropriate level of inventory to meet customer demand, which functions as a key source of revenue for the manufacturing sector and, in turn, has a direct influence on overall business profitability. Enow and Brijlal (2014) and Olaoye, Adekanbi, and Oluwadare (2019) indicated that inventory level exhibits a positive relationship with business profitability, as maintaining higher inventories can prevent revenue loss from missed sales opportunities. However, some studies have reported a negative relationship between inventory level and business profitability (Arnaldi et al., 2021; Aytac et al., 2020; Hogerle, Charifzadeg, Ferencz, & Kostin, 2020).

Accounts payable (AP) refers to the amounts owed for the acquisition of raw materials, goods, or services used in the ordinary course of business operations. Such payables arise when a firm procures raw materials or finished goods on credit and payment has not yet been remitted to supplier. Account payable must be recognized as part of the firm's liabilities and are classified as current liabilities on the statement of financial. Accounts payable are a crucial component of working capital management, encompassing trade credit and accrued expenses that serve as a source of short-term financing, thereby enabling the firm to sustain its operational activities (Bhattacharya, 2021). Gonçalves et al. (2018), Aldubhani, Wand, and Gong (2022), and Mathuva (2010) found that accounts payable exhibits a positive relationship with business profitability, suggesting that firms may enhance their profit levels by securing longer credit periods from suppliers. In contrast, Deloof (2003) and Enqvist et al. (2014) reported a negative relationship between accounts payable and business profitability.

Working capital management refers to the management of current assets and the sources of financing used to support these assets, with the aim of sustaining adequate organizational liquidity. A key aspect of this process involves reducing the accounts receivable collection period. However, firms must exercise caution: if the collection period is shorter than the industry average, it may undermine the firm's sales competitiveness by signaling overly stringent trade

credit policies. Conversely, if the collection period is excessively long, liquidity may become tied up in receivables for an extended duration, thereby heightening the risk of bad debts.

Another important aspect of working capital management aimed at maintaining adequate liquidity is reducing the inventory conversion period, which entails accelerating the sale of products to prevent excessive capital from being tied up in inventory for extended periods. This approach also mitigates the risk of inventory obsolescence, which may render products unsellable. Additionally, extending the accounts payable deferral period constitutes a critical strategy in working capital management. By doing so, firms can preserve sufficient cash to manage working capital efficiently, thereby ensuring adequate liquidity for the smooth continuation of operational activities.

The cash conversion cycle (CCC) encompasses the process by which firms acquire or produce inventory, hold it for a time, and then sell it and receive cash. The duration of the CCC may vary across industries, depending on the nature of the products and the specific characteristics of the business (Brigham & Houston, 2022). Several studies on the cash conversion cycle have found an inverse relationship between the CCC and business profitability, indicating that a shorter cash conversion cycle can lead to higher profits (Arnaldi et al., 2021; Aldubhani et al., 2022; Bieniasz & Gołas, 2011; Enow & Brijlal, 2014; Enqvist et al., 2014). In contrast, Jakpar et al. (2017), Rey-Ares et al. (2021), and Osazevbaru et al. (2021) reported that the cash conversion cycle has no significant relationship with business profitability.

The cash conversion cycle is calculated as the sum of the inventory conversion period and the receivables collection period, less the payables deferral period (Richards and Laughlin, 1980). The equation demonstrates that the cash CCC provides a comprehensive measure of a company's liquidity, as it incorporates the turnover rates of accounts receivable, inventory, and accounts payable to determine the period during which cash is tied up in inventory and receivables. The period in which cash remains invested in inventory and accounts receivable represents the timeframe over which the company must secure short-term financing. Conversely, the credit period granted by suppliers through accounts payable reduces the firm's short-term financing requirements. Therefore, shortening the cash conversion cycle, or even achieving a negative CCC, generally enhances a company's liquidity position.

The review of relevant literature and research indicates that numerous studies have examined the impact of working capital management on profitability across different time periods, from the past to the present. Ray (2014) studied how companies can continue to operate without generating profits, noting that survival is impossible without adequate working capital. Consequently, effective working capital management is essential, as it influences both profitability and the level of risk faced by the firm. This perspective is consistent with the study by Singhania, Sharma, and Rohit (2014), who analyzed the relationship between working capital management and the payment capacity of organizations worldwide. Their analysis, based on sales growth, net income growth, and return on investment, concluded that both working capital management and payment capacity serve as critical indicators of financial efficiency and are essential determinants of an organization's overall financial health.

The capital structure theory, as developed by Modigliani and Miller (1958), asserts that a firm's choice between debt and equity financing in the capital market does not influence its overall performance. This theory has been widely applied in research to examine financing decisions and their subsequent impact on organizational performance. Short-term debt financing can positively influence organizational performance. Panda and Nanda (2018) explains that the interest rate on short-term loans is typically lower than that of long-term loans due to the shorter repayment period. Moreover, short-term loans generally offer greater flexibility compared to long-term financing (Baños-Caballero, Garcia-Teruel, P.J. and Martinez-Solano, P., 2016). These loans also help mitigate agency problems between shareholders and long-term creditors or bondholders (Díaz-Díaz, García-Teruel and Martínez-Solano, 2016). Tran, Abbott, and Jin Yap (2017) note that short-term loans are relatively easy to access because lenders perceive lower risk and can conveniently monitor the borrower's status through repeated lending. However, if the volume of short-term debt reaches a controlled maximum threshold, it may negatively impact profitability. An increasing debt burden elevates financial obligations, which can impair the firm's ability to meet repayment requirements within the stipulated period.

Rasyid, Lukman, Husni and Adrimas (2018) studied the profitability of 158 non-financial companies listed on the Indonesian Stock Exchange (IDX) from 2012 to 2015, examining the relationship between aggressive working capital management policies and firm value. Working

capital management policy can be assessed using two approaches: the Aggressive Financing Policy and the Aggressive Investment Policy. Under an Aggressive Financing Policy, a firms maintains a high proportion of current liabilities relatives to total liabilities, whereas an Aggressive Investment Policy involves maintaining a low level of proportion of current assets relative to total assets. In summary, all firms require working capital to sustain operational liquidity, with the optimal level varying according to management's approach to profitability and their tolerance for risk.

Businesses employ various strategies to finance their current assets. Nadeem, Waris, Asadullah, and Kamran (2020) outlined three key approaches to working capital management policy: 1) Moderate Approach, this approach adopts a matching financing strategy aligned with the maturity structure of a company's liabilities and the useful life of its assets. 2) Conservative Approach, Under this strategy, the firm favors long-term borrowing over short-term financing. This approach is suitable for companies with a low proportion of working capital in their capital structure. It mitigates the risk of defaulting on loan repayments and reduces exposure to interest rate fluctuations. 3) Aggressive Approach, the aggressive approach is the converse of the conservative strategy, relying primarily on short-term financing. This approach exposes the firm to higher risks, particularly the possibility of being unable to secure new loans at favorable terms and the vulnerability to interest rate fluctuations. Nevertheless, its advantage lies in the potential for higher profitability, as the firm can benefit from the lower cost of short-term financing.

The findings of the study on financing indicate that the sources of capital used to invest in various assets significantly influence both business liquidity and profitability. Each firm adopts its own policy for sourcing funds to finance current assets. For the purpose of this research, the Capital Structure Theory is applied to analyze financing strategies, which are categorized into two types: the Aggressive Financing Policy, which emphasizes the use of high levels of debt to minimize the cost of raising working capital, and the Conservative Financing Policy, which prioritizes long-term capital from owners' equity to reduce the risk of failing to meet debt repayment obligations on time (Chaichan and Wichitsathian, 2019).

Organizational performance reflects a firm's success in generating profit over a specific period. Taani (2012) examined the impact of working capital management policy and financial leverage on companies in Jordan, measuring performance through Return on Equity (ROE) and Return on Assets (ROA). The study found that a company's working capital management policy, financial leverage, and firm size are significantly associated with performance in terms of both ROA and ROE. Malik and Bukhari (2014) discussed methods for analyzing working capital, including the Average Age of Inventory, the Average Collection Period, the Average Payment Period, the Operating Cycle, and the Cash Conversion Cycle (CCC), using ROE as a measure of organizational efficiency. The findings indicated that the Average Payment Period has a significant negative effect, whereas the CCC has a significant positive correlation with ROE. Zafar, Nazam, Hanif, Almas, and Sana (2016) studied the relationship between working capital management and firm profitability in the Pakistani food industry. Key variables used in the analysis included Return on Assets, the Current Asset to Total Asset Ratio, the Debt to Equity Ratio, and the Current Ratio. The finding revealed a significant relationship between the efficiency of working capital management and firm profitability.

Nguyen and Mohanlingam (2018) found that the cash conversion cycle has a negative relationship with return on equity and return on assets among agriculture and food companies in Thailand. The literature indicates that ROA and ROE are commonly used as proxies for organizational performance. While some studies, such as Pais and Gama (2015), Singh and Kumar (2017), and Nyeadi, Sare and Aawaar (2018), rely exclusively on ROA as a performance measure, many others, including Nguyen and Mohanlingam (2018), Kayani, De Silva and Gab (2020), and Samo and Murad (2019), employ both ROA and ROE to assess organizational performance. In addition to ROA and ROE, another key indicator of organizational performance is the Operating Profit Margin (OPM), defined as earnings before interest and taxes. OPM measures a company's profitability without considering interest expenses and taxes, thereby reflecting the outcomes of business operations directly related to asset management efficiency and operating cost control. The operating profit margin indicates a firm's capacity to generate revenue sufficient to cover fixed and operating expenses and is influenced by the cost of goods sold; an increase in the cost of goods sold leads to a decrease in OPM. Given that working capital management directly

affects operating expenses, this study assesses organizational performance using three indicators: Return on Assets, Return on Equity, and Operating Profit Margin.

3. Research Methodology

3.1 Data and Sampling

This study employs a quantitative research approach, focusing on property & construction companies listed on the Market for Alternative Investment (mai). Based on data availability, annual reports from a total of 10 listed firms are collected. Secondary data are obtained from the SET Fin Lab at the Maruey Library and the SETSMART database (SET Market Analysis and Report Tool), both provided by the Stock Exchange of Thailand (SET). The dataset covers a five-year period, from the first quarter of 2020 to the second quarter of 2025. The analytical procedures include descriptive statistics, Pearson's correlation analysis, and panel regression analysis.

3.2 Research Models and Variable Definitions

Independent Variable

1. Working Capital Management (WCM)

Working capital management focuses on the relationship between financing methods and financial costs. For example, funds used to invest in short-term assets should ideally come from short-term liabilities or short-term financing sources. Using long-term financing for short-term assets may results in higher financial costs, which can negatively affect profitability. Based on the literature, working capital management is measured using three variables: 1) the receivables collection period 2) the inventory conversion period and 3) the payable deferral period. The measurement of these variables is summarized as follows:

1) Receivables Collection Period (RCP)
   = (Average net receivables x 365) / Sales
2) Inventory Conversion Period (ICP)
   = (Average inventory x 365) / Cost of good sold
3) Payable Deferral Period (PDP)
   = (Average accounts payable x 365) / Cost of good sold

2. Financing Strategy (FS)

Financing strategy refers to a company's approach to raising capital from debt and equity sources. Differences in financing strategies among firms are often evaluated through financial leverage, which serves as a reliable proxy for assessing financing decisions that influence operational performance. This variable indicates whether a company adopts an aggressive financing strategy, assuming higher financial risk to pursue growth, or a conservative financing strategy, emphasizing caution and minimizing financial risk. In this study, the financing strategy is measured using two financial ratios: 1) Debt to Total Assets Ratio (DTA) and 2) Long-Term Debt to Total Debt Ratio (LTD). The measurement of these two variables is summarized as follows:

1) Debt to Total Assets Ratio
   = Total debt / Total assets
2) Long-Term Debt to Total Debt Ratio
   = Long-term debt / Total debt

Dependent Variable

Financial ratios are employed as the three indicators of performance: 1) Return on Assets (ROA), 2) Return on Equity (ROE), and 3) Operating Profit Margin (OPM), as identified in the literature review. The measurement of these three dependent variables is summarized as follows:

1) Return on Assets
   = Net income / Total assets
2) Return on Equity
   = Net income / Total equity
3) Operating Profit Margin
   = Earning before interest and tax / Total revenue

Control Variable

The control variable is firm size, which accounts for the scale of the company and its potential influence on the relationship between financial strategies, working capital management, and profitability.

Conceptual Framework

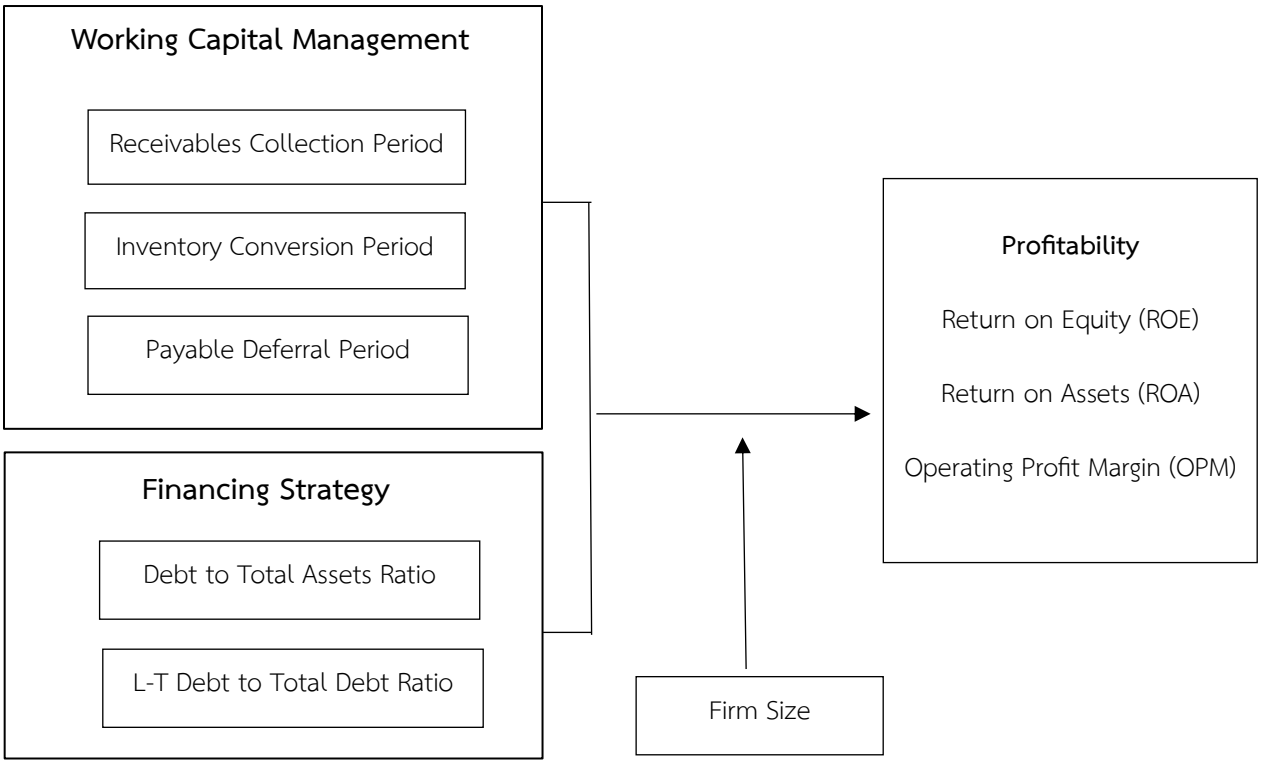

Figure 1 : The impacts of Working Capital Management and Financial Strategies on Profitability

Research Hypothesis

Based on the conceptual framework that illustrates the relationships among the variables, the following research hypotheses are formulated to address the research objectives.

Hypothesis 1

Receivables Collection Period is negatively correlated with profitability

Hypothesis 2

Inventory Conversion Period is negatively correlated with profitability

Hypothesis 3

Payable Deferral Period is positively correlated with profitability

Hypothesis 4

Debt Ratio is negatively correlated with profitability

Hypothesis 5

L-T Debt to Total Debt Ratio is negatively correlated with profitability

Hypothesis 6

Firm Size is negatively correlated with profitability

To examine the relationship between working capital management, financing strategies, and profitability, this study employs the following models:

Model 1 Return on Assets (ROA)

$$ROA_{it} = C + \beta_1 RCP_{it} + \beta_2 ICP_{it} + \beta_3 PDP_{it} + \beta_4 DTA_{it} + \beta_5 LTD_{it} + \beta_6 FSI_{it} + \varepsilon_{it}$$

Model 2 Return on Equity (ROE)

$$ROE_{it} = C + \beta_1 RCP_{it} + \beta_2 ICP_{it} + \beta_3 PDP_{it} + \beta_4 DTA_{it} + \beta_5 LTD_{it} + \beta_6 FSI_{it} + \varepsilon_{it}$$

Model 3 Operating Profit Margin (OPM)

$$OPM_{it} = C + \beta_1 RCP_{it} + \beta_2 ICP_{it} + \beta_3 PDP_{it} + \beta_4 DTA_{it} + \beta_5 LTD_{it} + \beta_6 FSI_{it} + \varepsilon_{it}$$

Where,

ROA	= Return on Assets
ROE	= Return on Equity
OPM	= Operating Profit Margin
RCP	= Receivables Collection Period
ICP	= Inventory Conversion Period
PDP	= Payable Deferral Period
CCC	= Cash Conversion Cycle
DTA	= Debt to Total Assets Ratio
LTD	= Long-Term Debt to Total Debt Ratio
FSI	= Firm Size
C	= Constant Term
β	= Coefficient Term
ε	= Error Term
i	= Number of Companies
t	= Time Period Ranging From 2020 to 2025

4. Finding

4.1 Descriptive Statistics

Descriptive statistics, including percentages, mean, standard deviation, maximum, and minimum values, were used to summarize the characteristics of all variables based on data from ten property & construction firms for the period 2020–2025. The mean inventory conversion period was 330.79 days, indicating the average times requires for a firm to convert its inventory into sales. In this industry, this reflects the duration for which completed units or construction-related inventory remain unsold. A longer inventory period suggests slower inventory turnover, whereas a shorter period indicates higher sales efficiency. The standard deviation for the inventory period was 501.64 days.

The mean accounts receivable period was 67.43 days, implying that, on average, the firms took 67.43 days to collect payments from customers after sales were made. A longer receivable period indicates slower collection efficiency, while a shorter period reflects more effective credit and collection management. The standard deviation for this variable was 48.30 days.

Furthermore, the accounts payable period had a mean value of 141.77 days, representing the average number of days the firms delayed payment to suppliers after receiving construction materials and related services. The cash conversion cycle had a mean of 256.45 days, indicating that, on an average, the companies required 256.45 days to convert their inventory into cash. The standard deviation for the cash conversion cycle was 538.97 days.

The profitability measures had a mean ROA of 1.40 percent and a mean ROE of –2.98 percent, with corresponding standard deviations of 9.53 percent and 20.44 percent. These figures indicate modest returns on assets and negative returns on equity for the sector. The mean total debts-to-total assets ratio was 53.90 percent, indicating relatively high leverage. Additionally, the mean long-term debt-to-total debt ratio was 12.22 percent, indicating that long-term liabilities constitute only a small portion of the firms' total debt.

4.2 Inferential Statistics

Panel data analysis was employed to examine the relationships between variables over time and across companies. The analysis consisted of three main steps. First, the Hausman test was

performed to determine the most appropriate model between the Fixed Effect Model and the Random Effect Model. Second, the Wald test was applied to compare the Pooled Regression Model with the Fixed Effect Model to identify the most suitable analytical approach.

Prior to conducting the regression analysis, preliminary tests were performed. These included a unit root test to assess the stationarity of the data, multicollinearity tests using Tolerance and the Variance Inflation Factor (VIF), autocorrelation testing with the Durbin-Watson (D.W.) statistic, and tests for heteroskedasticity. In addition, Pearson's correlation coefficient was employed to examine the strength and direction of the relationships among the independent, dependent, and control variables. Panel regression analysis was conducted to test the research hypotheses, ensuring that the selected model appropriately reflects the relationships among the variables.

Table 2 to Table 4 presents the linear relationship between the independent variables and firm profitability. The findings from the analysis are reported as follows.

Table 2: Effects of independent Variables on Return on Assets (ROA)

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-0.085081	0.833206	-0.102113	0.9188
D(RCP)	-0.017859	0.009746	-1.832495	0.0686*
ICP	-0.000816	0.001913	0.426632	0.6702
PDP	0.003269	0.003666	0.891655	0.3738
D(DTA)	-0.696375	0.082334	-8.457976	0.0000***
LTD	0.010206	0.011998	0.850643	0.3961
D(LOG(SFI))	33.41406	4.367417	7.650760	0.0000***
R-Squared	0.427000	F-Statistic		3.704718
Adjusted R-Squared	0.311742	Prob(F-statistic)		0.000000
Durbin-Watson stat	1.789756			

*** significant at .01 level, ** significant at .05 level, * significant at .10 level

The Panel Least Squares under the Fixed Effects specification reveals that the multiple regression model explains 42.70% of the variation in ROA (R-Squared = 0.4270). After adjusting for the number of independent variables, the Adjusted R-Squared decreases to 0.3117, indicating that the model exhibits an acceptable level of explanatory power within the financial context. Moreover, the F-statistic of 3.7047 (p-value = 0.0000) confirms the joint significance of the explanatory variables, suggesting that the model accounts for approximately 31.17- 42.70% of the variation in ROA after controlling for the required fixed effects.

The empirical analysis of the coefficients of all six independent variables and their statistical significance revealed that the Average Collection Period or Receivable Collection Period has a coefficient of -0.0179 (p-value = 0.0686), indicating that a negative relationship with ROA that is statistically significant at the .10 levels. This implies that an increase in the time required to collect receivables leads to a decrease in return on total assets, whereas a reduction in the average collection period would help improve asset returns. The Average Sale Period, also referred to as the Inventory Conversion Period, has a coefficient of -0.0008 (p-value = 0.6702), indicating that changes in the time required to sell goods do not have a statistically significant effect on ROA at the 5% significance level. The Average Payment Period, also known as the Payable Deferral Period, has a coefficient of 0.0032 (p-value = 0.3738), indicating that there is no statistically significant relationship between the payment period and ROA.

The Debt Ratio has a coefficient of -0.6964 (p-value = 0.0000), indicating a negative relationship with ROA that is statistically significant at the .01 level. This suggests that an increase in the debt ratio significantly reduces ROA. The Long-Term Debt to Total Debt Ratio has a coefficient of 0.0102 (p-value = 0.3961), indicating no statistically significant relationship with ROA.

Firm Size has a coefficient of 33.4141 (p-value = 0.000), indicating a positive relationship with ROA that is statistically significance at the .01 level. This implies that an increase in firm size significantly enhances ROA.

The relationship between the variables can be represented by the following model:

$$ROA_{it} = -0.0179\ (RCP_{it}) - 0.6964\ (DTA_{it}) + 33.4141\ (FSI_{it})$$

In summary, the factors that statistically influence ROA are the Debt to Total Asset Ratio and Firm Size, both significant at the .01 level, as well as the Average Collection Period, significant at the .10 level. Other working capital management factors, such as the Average Sale Period and the Average Payment Period, the result shows no statistically significant impact on ROA.

Table 3: Effects of independent Variables on Return on Equity (ROE)

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-1.022172	1.787559	-0.571826	0.5682
D(RCP)	-0.036961	0.020909	-1.767727	0.0789*
ICP	0.002089	0.004103	0.509162	0.6113
PDP	0.002729	0.007865	0.346924	0.7291
D(DTA)	-1.416608	0.176638	-8.019828	0.0000***
LTD	0.023039	0.025741	0.895050	0.3720
D(LOG(SFI))	72.28971	9.369849	7.715142	0.0000***
R-Squared	0.421109	F-Statistic		3.616426
Adjusted R-Squared	0.304666	Prob(F-statistic)		0.000000
Durbin-Watson stat	1.837654			

*** significant at .01 level, ** significant at .05 level, * significant at .10 level

The Panel Least Squares under the Fixed Effects specification reveals that the multiple regression model explains 42.11% of the variation in shareholders' return (R-Squared = 0.4211). After adjusting for the number of independent variables, the Adjusted R-Squared decreases to 0.3047, indicating that the model exhibits an acceptable level of explanatory power within the financial context. Moreover, the F-statistic of 3.6164 (p-value = 0.0000) confirms the joint significance of the explanatory variables, suggesting that the model accounts for approximately 30.47–42.11% of the variation in ROE after controlling for the required fixed effects.

The empirical analysis of the coefficients of all six independent variables and their statistical significance revealed that the Average Collection Period has a coefficient of -0.0370 (p-value = 0.0789), indicating that a negative relationship with ROE that is statistically significant at the .10

levels. This implies that an increase in the time required to collect receivables leads to a decrease in shareholders' return or a reduction in average collection period will help to increase shareholders' return. This finding aligns with financial theory, which asserts that longer collection periods negatively influence a firm's liquidity position and its overall capital utilization efficiency. The Average Sale Period has a coefficient of 0.0021 (p-value = 0.6113), indicating that changes in the time required to sell goods do not have a statistically significant effect on changes in ROE at the .05 significance level. The Average Payment Period has a coefficient of 0.0027 (p-value = 0.7291), indicating no statistically significant relationship between the payment period and shareholders' return. This finding is consistent with theoretical perspectives in certain industries where the payment cycle is not considered a primary determinant of return generation.

The Debt Ratio has a coefficient of -1.4166 (p-value = 0.0000), indicating a negative relationship with ROE that is statistically significant at the .01 level. This suggests that an increase in the debt ratio significantly reduces ROE, reflecting that high-debt capital structure increases financial costs and diminishes profitability. The Long-Term Debt to Total Debt Ratio has a coefficient of 0.0230 (p-value = 0.3720), indicating no statistically significant relationship with shareholders' return. This suggests that long-term debt does not have a significant impact on short-term profitability.

Firm Size has a coefficient of 72.2897 (p-value = 0.0000), indicating a positive relationship with ROE that is statistically significance at the .01 level. This implies that an increase in firm size significantly raises ROE, which aligns with the concept of economies of scale, where larger firms generally utilize costs and resources more efficiently.

The relationship between the variables can be represented by the following model:

$$ROE_{it} = -0.03970\ (RCP_{it}) - 1.4166\ (DTA_{it}) + 72.2897\ (FSI_{it})$$

In summary, the factors that statistically influence ROE are the Debt to Total Asset Ratio and Firm Size, both significant at the .01 level, as well as the Average Collection Period, significant at the .10 level. Some working capital management factors, such as the Average Sale Period and the Average Payment Period, do not appear to have a significant impact on shareholders' return.

Table 4: Effects of independent Variables on Operating Profit Margin (OPM)

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.084960	0.077512	1.096092	0.2743
D(RCP)	-0.001895	0.001530	-1.238485	0.2170
ICP	7.99E-06	0.000110	0.072697	0.9421
PDP	-0.001150	0.000272	-4.221778	0.0000***
D(DTA)	-0.113125	0.012747	-8.874738	0.0000***
LTD	0.002243	0.001809	1.239579	0.2166
D(LOG(SFI))	6.679097	0.660477	10.11254	0.0000***
R-Squared	0.423794	F-Statistic		23.88411
Adjusted R-Squared	0.406763	Prob(F-statistic)		0.000000
Durbin-Watson stat	1.927632			

*** significant at .01 level, ** significant at .05 level, * significant at .10 level

The Panel Least Squares under the Random Effects specification indicates that the multiple regression model accounts for 42.38% of the variation in the Operating Profit Margin (R-Squared = 0.4238). After adjusting for the number of independent variables, the Adjusted R-Squared decreases slightly to 0.4068. This value indicates that the model exhibits an acceptable level of explanatory power within the financial context. Moreover, the F-statistic of 24.8841 (p-value = 0.0000) confirms the joint significance of the explanatory variables. This suggests that the model accounts for approximately 40.68–42.38% of the variation in OPM after controlling for the required random effects.

The empirical analysis of the coefficients of all six independent variables and their statistical significance revealed that the Average Payment Period has a coefficient of -0.0012 (p-value = 0.0000), indicating that a negative relationship with OPM that is statistically significant at the .01 levels. The Average Collection Period coefficient (β = -0.0019) is not statistically significant (p-value = 0.2170), indicating no significant relationship between the collection period and the Operating Profit Margin. Similarly, the Average Sale Period exhibits no statistically significant effect on the changes in OPM at the .05 significance level.

The Debt Ratio show a statistically significant negative relationship with OPM (β = -0.1131, p-value = 0.0000), significant at the .01 level. This indicates that an increase in the Debt Ratio significantly reduces OPM. This finding reflects that a high-debt capital structure elevates financial costs and subsequently diminishes overall profitability. Conversely, the Long-Term Debt to Total Debt Ratio coefficient ((β = 0.0022, p-value = 0.2166) is not statistically significant, suggesting no discernible relationship with the Operating Profit Margin.

Firm Size has a highly statistically significant positive relationship with the Operating Profit Margin (β = 6.6791, p-value = 0.0000), significant at the .01 level. This finding suggests that an increase in firm size significantly raises OPM. This result aligns with the concept of economies of scale, where larger firms are generally able to utilize costs and resources more efficiently.

The relationship between the variables can be represented by the following model:

$$OPM_{it} = -0.0012\ (PDP_{it}) - 0.1131\ (DTA_{it}) + 6.6791\ (FSI_{it})$$

In summary, the factors that statistically influence OPM are the Average Payment Period, the Debt to Total Asset Ratio, and Firm Size, all found to be significant at the .01 level. Conversely, several working capital management factors, specifically the Average Collection Period, the Average Sale Period, and the Long-Term Debt to Total Debt Ratio, do not exhibit a statistically significant impact on OPM.

5. Conclusion and Policy Implications

The comparative analysis of the three profitability measures (Return on Assets, Return on Equity, and Operating Profit Margin) indicates that two variables that consistently and significantly influence on firm performance. First, the Debt Ratio shows a strong negative effect on all profitability indicators. This result indicates that an excessive reliance on debt increases financial costs, which in turn reduces overall profitability and weakens the efficiency of asset utilization. Second, Firm Size demonstrates a highly significant positive relationship ($p < 0.01$) with ROE, ROA, and OPM. The relationship suggests that larger firms benefit from economies of scale, possess stronger bargaining power, and utilize resources more efficiently than smaller firms.

The negative and significant effect of the Average Collection Period on ROE and ROA is consistent with the financial characteristics of the real estate and construction industry. A longer Collection Period indicates delays in receiving payments for completed work or project milestones. These delays increase accounts receivable and expand total assets, which reduces ROA because the same amount of earnings is spread over a larger asset base. In addition, slower cash inflows limit liquidity and often force firms to rely more on short-term borrowing to support ongoing project activities. The resulting increase in interest expenses lowers net income and therefore reduces ROE.

However, Average Collection Period does not have a significant impact on Operating Profit Margin. In this industry, operating profitability is largely determined by factors such as project pricing, construction efficiency, and cost management rather than the timing of cash collections. Since OPM reflects profit before interest and taxes, it does not capture the financial burden caused by slow receivable turnover. As a result, average collection period affects profitability measures that include financing costs and asset levels such as ROE and ROA, but it does not directly influence operating performance as measured by OPM.

The Average Payment Period has no effect on ROE and ROA; however, it has a significant negative impact on OPM ($p < 0.01$). Extending the accounts payable period excessively may result in losing cash discounts, impairing relationships with suppliers, or incurring implicit costs, which can reduce operating profit margins. Nevertheless, it does not have an effect on asset utilization efficiency or shareholder returns.

In the property and construction industry, the Average Sale Period has no significant effect on ROE, ROA, or OPM. This may be because projects are long-term and highly specific, with profitability mainly determined by cost control and risk management rather than the speed of sales. In addition, sales are often planned in advance through contracts, and project characteristics vary widely, making the average sale period an unreliable indicator of financial performance.

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