



Cash Conversion Cycle and Profitability of Indonesian Property and Real Estate Companies: Quarterly Evidence across Pre-, During-, and Post-COVID-19 Periods

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Abstract

Background: The property and real estate sector is characterized by extended development timelines and substantial working capital requirements, making effective working capital management a critical determinant of firms' financial performance.

Objective: The present study investigates the effects of CCC and its sub-components on the financial performance of property and real estate companies listed on the Indonesia Stock Exchange (IDX) over the 2017 Q2–2025 Q1 observation period.

Methods: The study uses quarterly panel data from 37 companies, comprising 1,184 firm-quarter observations. Financial performance is operationalized using Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q, while working capital management is measured using CCC, Days Sales Outstanding (DSO), Days Inventory Outstanding (DIO), and Days Payable Outstanding (DPO). The analytical framework employs a Random Effects model with cluster-robust standard errors, supplemented by the two-step System Generalized Method of Moments (System GMM) estimator as a robustness check.

Results: Under the Random Effects model, CCC exhibits a negative and statistically significant association with ROA and ROE but has no significant relationship with Tobin's Q. Both DIO and DPO are negatively and significantly associated with ROA and ROE, whereas DSO does not reach statistical significance. When estimated using System GMM, the effects of CCC, DIO, and DPO lose statistical significance after controlling for dynamic effects and potential endogeneity, while DSO exhibits a positive and statistically significant effect on ROA.

Conclusion: The findings indicate that working capital management is more strongly associated with accounting-based profitability than with market-based performance measures, with these associations weakening considerably when dynamic panel effects are incorporated into the estimation.

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INTRODUCTION

Property development firms typically conduct their operations within a business environment characterized by extended project timelines and deferred income generation, attributable to the time required for project completion and unit sales. Such conditions may trigger project delays, budget overruns, and fluctuations in investment returns, ultimately affecting the financial performance of property developers (Marzouk & Hamdala, 2025; Pereira et al., 2020).

Within the Indonesian economic landscape, the property and real estate industry ranks among the most capital-intensive sectors (Dananjaya et al., 2025; Silalahi et al., 2025). Within this industry, profitability is also shaped by how efficiently firms manage their working capital. Earlier empirical investigations have commonly employed the Cash Conversion Cycle (CCC), along with its subcomponents, to investigate the relationship between working capital management efficiency and firm financial performance (Karim et al., 2024). The CCC and its constituent components serve as indicators of the quality of working capital management and are used to evaluate their respective effects on corporate profitability under diverse operating conditions (Aldubhani et al., 2022). Consequently, evaluating the CCC is pertinent to understanding whether inefficiencies in capital allocation translate into greater pressure on profitability.

The theoretical foundation of this study rests on Working Capital Management Theory, which emphasizes the importance of prudently managing a firm's short-term assets and liabilities to maintain sufficient liquidity while simultaneously maximizing profitability. Consistent with this theoretical perspective, firms can enhance their financial performance by shortening the time required to convert inventories and trade receivables into cash while simultaneously optimizing payment terms negotiated with suppliers. The Cash Conversion Cycle (CCC), originally formulated by Richards and Laughlin (1980) and Galil et al. (2026), has gained broad acceptance as a comprehensive metric of working capital efficiency because it quantifies the time interval between cash outflows associated with operating activities and subsequent cash inflows from sales.

In addition, this study draws upon Agency Theory, which suggests that managers are responsible for allocating firm resources efficiently to maximize shareholder wealth. Inefficient working capital management may result in excessive capital being tied up in inventories and receivables, thereby reducing profitability and increasing agency costs (Naz et al., 2022). From this perspective, shorter cash conversion cycles are generally expected to strengthen operational efficiency and improve firm profitability.

Additionally, the Liquidity-Profitability Trade-off Theory posits that corporations must reconcile the competing demands of liquidity preservation and profit generation. While maintaining elevated liquidity levels mitigates financial risk, an excess of liquid resources may signal suboptimal resource deployment, which can adversely affect profitability. Accordingly, prudent management of receivables, inventories, and payables is indispensable to achieving an equilibrium between liquidity and profitability, particularly in capital-intensive industries such as property and real estate.

Beyond the pandemic, the global property sector has faced additional headwinds since 2022, including rising interest rates in major economies, persistent inflationary pressures on construction costs, and a broad slowdown in residential and commercial property markets across Asia, Europe, and North America. In the Indonesian context, Bank Indonesia raised its benchmark interest rate multiple times between 2022 and 2024, increasing financing costs for property developers and constraining demand from homebuyers. These macroeconomic conditions further underscore the importance of working capital efficiency, as developers must manage increasingly tight cash flows while maintaining project completion timelines and meeting debt service obligations (Silalahi et al., 2025). This environment underscores the importance of understanding how the Cash Conversion Cycle and its constituent components shape profitability within the Indonesian property sector under changing macroeconomic conditions.

As articulated by Pereira et al. (2020), property development endeavors are structured across multiple sequential stages, beginning with project initiation, proceeding through active implementation, and concluding with handover, with inherent risks potentially arising at each stage. One such risk materialized with the outbreak of COVID-19, which persisted from March 2020 through June 2023. The pandemic exerted a pervasive influence on both individuals and corporate entities, leading to the enforcement of strict movement restrictions that affected a considerable share of the global population and economic activity (Yamaka et al., 2022; Yu et al., 2022). Balemi et al. (2021) and Cui (2023) contend that real estate markets across all regions suffered varying degrees of disruption in the wake of the viral outbreak. Even in suburban localities such as Krakow County, where property prices remained comparatively resilient, the volume of property transactions fell substantially owing to curtailed physical interactions and mounting economic uncertainty (Witek et al., 2024).

Heriyanto et al. (2023) documented that, within the Indonesian context, the financial performance of property and real estate firms listed on the IDX experienced substantial deterioration during the COVID-19 period compared with the period preceding the pandemic. Their empirical findings reveal that the pandemic intensified financial pressures across multiple performance dimensions, particularly those associated with profitability and asset utilization. This evidence suggests that the pandemic not only contracted business operations in the property sector but also exposed operational vulnerabilities related to cash flow management.

Notwithstanding the expanding body of research on working capital management, systematic empirical investigation of the relationship between the CCC and firm profitability within the Indonesian property and real estate context remains limited (Hatane et al., 2023). Prevailing research has also predominantly treated the CCC as a composite performance indicator without adequately distinguishing the individual contributions of DSO, DIO, and DPO in project-oriented industries.

Although prior scholarly work has devoted considerable attention to the relationship between working capital management and corporate profitability, several important lacunae in the existing literature remain unresolved. To begin with, most of the extant research concentrates on manufacturing, retail, or diversified industries, with comparatively scant attention directed toward the property and real estate sector, which is distinguished by unique operational attributes, including prolonged project timelines, substantial inventory holdings, and deferred revenue recognition.

Second, existing studies often evaluate the CCC as a single aggregate indicator without examining the distinct effects of its individual components (Days Sales Outstanding (DSO), Days Inventory Outstanding (DIO), and Days Payable Outstanding (DPO)) particularly in project-driven industry settings. Understanding these individual effects is important because each component reflects different managerial decisions related to receivables, inventories, and payables.

Third, limited studies have investigated working capital management using quarterly panel data encompassing the pre-COVID-19, during-COVID-19, and post-COVID-19 periods. No prior study has assessed the CCC and its constituent components within the Indonesian property and real estate industry using quarterly data, pre-, during-, and post-COVID-19 periodization, component-level CCC decomposition (DSO, DIO, and DPO), and the System GMM estimator in an integrated manner. Consequently, this study enriches the scholarly discourse by providing comprehensive empirical evidence derived from Indonesian property and real estate companies over the period from 2017 Q2 to 2025 Q1 and by deploying both Random Effects and System GMM estimation procedures to concurrently address endogeneity concerns and dynamic panel effects, thereby producing more reliable empirical results.

This study advances the existing literature through three distinct contributions. First, it utilizes high-frequency quarterly panel data spanning 2017 Q2 to 2025 Q1, permitting an examination of working capital dynamics across pre-COVID-19, during-COVID-19, and post-COVID-19 phases, a temporal scope that has not previously been explored within the Indonesian property sector. Second, in contrast to prior investigations that employ the CCC as a single aggregate measure, this study independently examines the roles of DSO, DIO, and DPO, yielding a more disaggregated perspective on how each working capital component shapes profitability in a project-based setting. Third, the study utilizes a dual-estimation strategy that integrates Random Effects with cluster-robust standard errors and a two-step System GMM specification, facilitating a rigorous evaluation of both cross-sectional and temporal dynamics while controlling for endogeneity and firm-level heterogeneity. These methodological and contextual innovations distinguish this study from the extant body of literature and advance scholarly understanding of working capital management in capital-intensive, project-oriented business settings.

Grounded in the aforementioned research gaps, this study aims to examine the effect of working capital management efficiency on the financial performance of property and real estate firms listed on the Indonesia Stock Exchange (IDX) over the period from 2017 Q2 to 2025 Q1. More specifically, the investigation assesses the effect of the Cash Conversion Cycle (CCC) on firm-level profitability and market performance, as captured by Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q, while simultaneously evaluating the independent roles of its constituent subcomponents, namely, Days Sales Outstanding (DSO), Days Inventory Outstanding (DIO), and Days Payable Outstanding (DPO). Moreover, this study ascertains whether the

relationship between working capital management and profitability persists under dynamic panel conditions by accounting for potential endogeneity and dynamic effects through the System Generalized Method of Moments (System GMM) estimation framework. By highlighting the distinctive features of the Indonesian property and real estate industry, this research aims to broaden the frontier of knowledge concerning working capital management while providing practical guidance for industry practitioners in formulating receivable, inventory, and payable management strategies that reinforce firm performance and long-term financial sustainability.

METHOD

This investigation adopted a quantitative explanatory research framework to assess the influence of working capital efficiency on corporate profitability within the Indonesian property and real estate industry. The empirical data were obtained from secondary sources comprising quarterly financial disclosures and annual reports of property and real estate companies listed on the Indonesia Stock Exchange (IDX). The observation period encompassed 2017 Q2 through 2025 Q1 (32 quarters), facilitating analysis across the pre-COVID-19 (2017 Q2–2020 Q1), during-COVID-19 (2020 Q2–2023 Q2), and post-COVID-19 (2023 Q3–2025 Q1) sub-periods. Quarterly data were employed because working capital indicators in property firms may fluctuate substantially over shorter operating periods due to project milestones, seasonal sales patterns, inventory movements, and payment obligations. The research instruments comprised company financial reports and the following measurement indicators: (1) DSO = (Accounts Receivable / Revenue) $\times$ 90; (2) DIO = (Inventory / Cost of Goods Sold) $\times$ 90; (3) DPO = (Accounts Payable / Cost of Goods Sold) $\times$ 90; (4) CCC = DSO + DIO – DPO; (5) ROA = Net Income / Total Assets; (6) ROE = Net Income / Total Equity; and (7) Tobin's Q = (Market Capitalization + Total Debt) / Total Assets. With respect to Tobin's Q, market capitalization was derived by multiplying the closing share price by the total number of shares outstanding at the end of each quarter, after which total debt was added and the resulting sum was divided by total assets. The remarkably elevated mean Tobin's Q value (mean = 17,543) reflected the Indonesian property sector's characteristics, including large book-value asset bases relative to market capitalization and substantial reliance on debt financing. This value pattern was consistent with findings from studies of capital-intensive sectors with project-based revenue structures (Dananjaya et al., 2025). The final sample comprised 37 property and real estate companies, resulting in 1,184 firm-quarter observations.

The definitive sample encompassed 37 property and real estate firms, generating 1,184 firm-quarter observations. Sample selection adhered to a purposive sampling procedure based on the following eligibility requirements: (1) classification as property and real estate enterprises with uninterrupted listing status on the IDX throughout the full observation period; (2) continuous listing and active trading from 2017 Q2 to 2025 Q1 without delisting or extended trading suspensions; (3) availability of complete quarterly financial data for all 32 quarters; and (4) positive total assets and equity to ensure meaningful financial ratio calculations. Companies with data gaps exceeding three consecutive quarters were excluded. Descriptive statistics revealed considerable variation in working capital indicators, particularly DIO, which recorded extreme maximum values exceeding 140,000 days. These extreme figures reflected the structural characteristics of project-based real estate enterprises, in which completed but unsold units may remain in inventory for prolonged periods. No winsorization was applied in order to preserve the observed distribution of working capital measures within the property sector; nonetheless, regression specifications incorporating cluster-robust standard errors and System GMM were expected to provide greater resilience to potential outlier-induced bias.

The dependent variables in this study comprised Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q. ROA and ROE served as measures of accounting-based profitability, whereas Tobin's Q captured market-oriented financial performance. The primary independent variable was the Cash Conversion Cycle (CCC), which measured the number of days required for a firm to convert working capital invested in inventories and trade receivables into cash, after accounting for the period of credit obtained from suppliers. The second model disaggregated the CCC into three component measures, namely Days Sales Outstanding (DSO), Days Inventory Outstanding (DIO), and Days Payable Outstanding (DPO). This study also incorporated Firm Size (FS), Revenue Growth (GR), Financial Leverage (LV), and Current Ratio (CR) as control variables to capture firm-specific characteristics that might systematically influence profitability.

The econometric specifications employed in this investigation were formulated as follows:

Model 1

$$FP_{i,t} = \alpha + \beta_1 CCC_{i,t} + \beta_2 FS_{i,t} + \beta_3 GR_{i,t} + \beta_4 LV_{i,t} + \beta_5 CR_{i,t} + \varepsilon_{i,t}$$

Model 2

$$FP_{i,t} = \alpha + \beta_1 DSO_{i,t} + \beta_2 DIO_{i,t} + \beta_3 DPO_{i,t} + \beta_4 FS_{i,t} + \beta_5 GR_{i,t} + \beta_6 LV_{i,t} + \beta_7 CR_{i,t} + \varepsilon_{i,t}$$

in which *i* identified the specific firm and *t* represented the quarterly period. Each profitability measure (ROA, ROE, and Tobin's Q) was estimated independently. Model 1 evaluated the effect of the composite Cash Conversion Cycle on firm profitability, whereas Model 2 examined the individual effects of DSO, DIO, and DPO on profitability outcomes.

The analytical process adopted a sequential approach: (1) descriptive statistics were used to characterize the distribution of variables and detect potential extreme observations; (2) Pearson and Spearman correlation analyses were conducted to evaluate initial associations and potential multicollinearity concerns; (3) panel model specification diagnostics comprised the Breusch–Pagan LM test (contrasting Pooled OLS with RE), the Hausman specification test (comparing FE with RE), and the Modified Wald test for groupwise heteroskedasticity; (4) Random Effects (RE) estimation was performed using cluster-robust standard errors. The RE estimator was selected based on the Hausman test, which indicated no systematic correlation between unobserved firm effects and the regressors, consistent with (Baltagi 2026; Wooldridge, 2010). Cluster-robust standard errors were used to address within-firm serial correlation and heteroskedasticity Cameron and Trivedi (2005) and Croissant (2025); (5) two-step System GMM was employed as a robustness assessment. The System GMM estimator developed by Blundell & Bond (1998) and Blundell and Bond (2023) was applied to address potential endogeneity arising from bidirectional causality between working capital management and profitability, persistence in profitability outcomes, and measurement error. Instrument exogeneity was assessed using the Hansen test of overidentifying restrictions, together with the AR(2) diagnostic for second-order serial autocorrelation; and (6) diagnostic verification procedures encompassed the AR(1) and AR(2) tests, the Hansen J-statistic, and an assessment of the instrument count relative to the number of firm groups. All estimations were conducted using Stata statistical software. System GMM was employed to account for potential endogeneity, simultaneous causality, and dynamic panel effects.

RESULTS AND DISCUSSION

Results

Descriptive Statistics

A comprehensive summary of the descriptive statistics for all variables incorporated into this study is presented in Table 1. The table reports the number of observations, arithmetic mean, standard deviation, median, minimum, and maximum values for each variable. Both mean and median statistics are reported because several variables exhibit wide dispersion and extreme observations. This is particularly notable for working capital indicators in the property and real estate sector, where project timelines, sales seasonality, and inventory realization may diverge substantially across firms.

Table 1

Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Median	Min	Max
DSO	1184	51.33021	205.3533	13.50158	0	5269.114
DIO	1184	1129.6	5415.404	367.5918	0	140717.1
DPO	1184	69.04909	193.9281	22.97643	0	3131.291
CCC	1184	1111.881	5384.513	368.8237	-128.686	139766.3
ROA	1184	0.0151037	0.0478291	0.0080075	-0.2974229	0.4306983
ROE	1184	0.0219113	0.0846618	0.0144603	-0.4587441	0.9421629

Variable	Obs	Mean	Std. dev.	Median	Min	Max
TOBINSQ	1184	17543.06	84706.11	0.9298346	0.2016924	710570.1
FS	1184	27.06164	3.452194	28.1846	17.23523	31.96206
GROWTH	1184	0.5879728	4.800757	0.452444	-0.993854	153.68
LV	1184	0.3802767	0.181531	0.3716122	0.029539	0.8796066
CR	1184	2.873536	2.805061	2.142804	0.0764793	24.88188

Drawing from the descriptive statistics, the mean DSO stands at 51 days, accompanied by a standard deviation of 205.3533, implying that companies generally require nearly two months to collect their trade receivables. DIO records a mean of 1,129 days, accompanied by a standard deviation of 5,415.404, suggesting that firms typically hold inventory for approximately three years before it is sold or otherwise realized. Meanwhile, DPO yields a mean of 69 days, with a standard deviation of 193.9281, indicating that companies, on average, settle their supplier obligations within approximately two months. The maximum figures for DSO, DIO, and DPO are 5,269 days, 140,717 days, and 3,131 days, respectively. These values are exceptionally high but may reflect the structural characteristics of the property industry, which is project-oriented and characterized by protracted construction and sales timelines. In aggregate, CCC records a mean of 1,111 days, with a standard deviation of 5,384.513, confirming that property enterprises typically operate with an extended working capital cycle.

Regarding profitability, ROA has an average value of 0.015, reflecting a relatively low level of asset profitability in the property sector. ROE has an average value of 0.0219, indicating a relatively modest return to shareholders. Tobin's Q records an average value of 17,543, with a maximum value of 710,570, suggesting substantial variation in market expectations regarding the future prospects of individual property companies.

The Firm Size variable records a mean of 27.06, accompanied by a standard deviation of 3.45, indicating that firm size is comparatively stable and serves as an appropriate control variable. The Growth variable registers an arithmetic mean of 0.587, accompanied by a standard deviation of 4.801, indicating that revenue growth within the property sector demonstrates pronounced variability and heightened sensitivity to prevailing macroeconomic conditions. The Leverage variable yields a mean of 0.380, suggesting that companies maintain a considerable degree of external financing in response to the capital demands of the sector and its dependence on borrowed funds. The Current Ratio has a mean value of 2.87, indicating that firms generally possess adequate short-term financial resources to cover their near-term liabilities. This variable is incorporated as a control variable in the research model. Nevertheless, the broad standard deviations and extreme maximum values signal highly skewed distributions, implying that the median may offer a more representative characterization of prevailing working capital conditions in the property sector.

Panel Data Regression Results

Table 2 reports the regression estimation results for Model 1, which examines the effect of CCC on firm-level profitability using the Random Effects specification with cluster-robust standard errors. The dependent variables under consideration comprise ROA, ROE, and Tobin's Q.

The estimation results indicate that CCC has a negative and statistically significant effect on ROA (coefficient = -8.87E-07; $p < 0.01$). Similarly, CCC exhibits a negative and statistically significant effect on ROE (coefficient = -1.18E-06; $p < 0.01$). These results imply that an extended CCC is associated with diminished accounting-based financial performance. From an economic standpoint, a lengthening CCC signals that firms require more time to convert working capital into cash, resulting in greater capital immobilization and potentially higher financing costs, which consequently diminish both asset-based and equity-based profitability measures. By contrast, the relationship between CCC and Tobin's Q yields a positive but statistically insignificant coefficient (coefficient = 0.00952; $p = 0.946$). This result implies that working capital inefficiency does not exert a meaningful influence on market-based valuation. Stock market performance may be governed by broader determinants, such as investor sentiment and anticipated growth trajectories, that are not primarily conditioned by short-term working capital decisions.

Table 2*Panel Data Regression of CCC on Profitability*

		Model 1A	Model 1B	Model 1C
		ROA	ROE	Tobin's Q
CCC	Coefficient	-0.000000887	-0.00000118	0.009523
	p-value ($P> z $)	0.000	0.002	0.946
FS	Coefficient	-0.0008282	-0.0025292	-11792.05
	p-value ($P> z $)	0.358	0.087	0.177
Growth	Coefficient	0.0003407	0.0004754	2.363013
	p-value ($P> z $)	0.379	0.384	0.891
LV	Coefficient	-0.0578869	-0.0956347	-3862.028
	p-value ($P> z $)	0.038	0.198	0.532
CR	Coefficient	-0.0007517	-0.0011962	-26.84822
	p-value ($P> z $)	0.428	0.469	0.893
constant	Coefficient	-0.0624755	0.1311962	338198.7
	p-value ($P> z $)	0.026	0.007	0.173
Number of obs		1184	1184	1184
Number of groups		37	37	37
R-squared		0.0373	0.0285	0.3277

Although the numerical magnitude appears relatively small, the negative direction of the coefficients consistently lends support to the proposition that a protracted working capital cycle constrains internal financial returns. Taken together, the evidence indicates that the influence of CCC on profitability is partially substantiated. The research hypothesis receives empirical support with respect to the accounting-based performance indicators (ROA and ROE) but not with respect to the market-oriented performance proxy (Tobin's Q).

Regression Results of CCC Components

Table 3 summarizes the regression results derived from Model 2, which examines the differential effects of DSO, DIO, and DPO on ROA, ROE, and Tobin's Q. Under Model 2A, both DIO and DPO register negative and statistically significant coefficients, whereas DSO fails to produce a statistically significant effect on ROA. The negative DIO coefficient implies that profitability tends to deteriorate when inventory remains tied up in the operating cycle for a prolonged period.

Table 3*Panel Data Regression of CCC Components on Profitability*

		Model 2A	Model 2B	Model 2C
		ROA	ROE	Tobin's Q
DSO	Coefficient	-0.00000195	0.00000306	-1.301926
	p-value ($P> z $)	0.784	0.801	0.23
DIO	Coefficient	-0.000000701	-0.000000725	-0.0192804
	p-value ($P> z $)	0.000	0.012	0.29
DPO	Coefficient	-0.0000141	-0.0000391	2.437332
	p-value ($P> z $)	0.004	0.000	0.174
FS	Coefficient	-0.0006875	-0.0021988	-11825.72
	p-value ($P> z $)	0.458	0.142	0.18
Growth	Coefficient	0.0003226	0.0004385	3.281734
	p-value ($P> z $)	0.394	0.401	0.848
LV	Coefficient	-0.0578377	-0.0937402	-3982.058
	p-value ($P> z $)	0.04	0.208	0.524
CR	Coefficient	-0.008551	-0.0014461	-11.43553
	p-value ($P> z $)	0.369	0.382	0.953
constant	Coefficient	0.0598349	0.1243216	339031.9
	p-value ($P> z $)	0.035	0.01	0.176

	Model 2A ROA	Model 2B ROE	Model 2C Tobin's Q
Number of obs	1184	1184	1184
Number of groups	37	37	37
R-squared	0.0389	0.0317	0.3229

DIO and DPO retain negative and statistically significant effects on ROE (Model 2B), whereas DSO continues to lack statistical significance. These results suggest that inventory management constitutes an important working capital driver of internal profitability metrics. The consistently adverse influence of DIO on both ROA and ROE underscores the pivotal role of operational effectiveness in managing project execution timelines and inventory realization within property development enterprises. By contrast, none of the CCC subcomponents yield statistically significant effects on Tobin's Q (Model 2C). This pattern indicates that equity market valuation is not immediately responsive to shifts in receivables management, given the predominance of forward-looking growth expectations, asset quality assessments, and macroeconomic considerations over short-term working capital performance.

In summary, the results confirm that the aggregate influence of the CCC components (comprising DSO, DIO, and DPO) on profitability is partially substantiated. These findings reinforce the earlier conclusion from Model 1, affirming that working capital efficiency predominantly shapes internal accounting-based performance indicators rather than market-oriented valuation.

Robustness Test Using System GMM

The application of a Random Effects (RE) specification may introduce endogeneity concerns regarding the association between CCC and its components and firm profitability. Endogeneity may arise owing to the potential for bidirectional causality (reverse causation), whereby working capital management influences profitability and vice versa. To address this methodological concern, this study applies the Generalized Method of Moments (GMM) estimation strategy, specifically utilizing the System GMM procedure.

Regarding the relationship between CCC and profitability, the diagnostic results confirm that the estimated models are free from second-order serial autocorrelation, as demonstrated by the statistically insignificant AR (2) test results. The Hansen test broadly corroborates instrument validity, although certain specifications warrant cautious interpretation, and the instrument count remains below the number of firm groups. The empirical results reveal that CCC does not exert a statistically significant influence on ROA, ROE, or Tobin's Q when estimated using the System GMM framework. This finding implies that the negative relationship between CCC and accounting-based profitability that emerged under the Random Effects model ceases to attain statistical significance once dynamic effects and endogeneity considerations are incorporated into the model.

The two-step System GMM estimates for the CCC components suggest that most individual working capital components lack statistically significant effects on profitability after controlling for dynamic effects and potential endogeneity. The diagnostic assessments confirm that the specifications are free from second-order serial correlation, based on the insignificant AR(2) results, while the Hansen test broadly supports instrument validity. DIO and DPO are no longer statistically significant in explaining ROA, ROE, or Tobin's Q under the dynamic specification. Notably, however, DSO exhibits a positive and statistically significant association with ROA, implying that extended collection periods do not necessarily signal operational inefficiency within the property sector, as they may instead reflect installment-based sales structures or flexible credit arrangements with buyers. In aggregate, the System GMM findings yield a more conservative interpretation by demonstrating that the cross-sectional relationship between working capital management and profitability attenuates substantially when firm-level dynamic effects and heterogeneity are considered.

Discussion

Viewed through the lens of Working Capital Management Theory by Richards and Laughlin (1980) and Galil et al. (2026), the inverse association between CCC and accounting-based financial

performance (ROA and ROE) under the Random Effects specification is theoretically coherent: a lengthier CCC implies that capital remains immobilized in receivables and inventory for protracted periods, escalating the opportunity cost of tied-up resources and potentially necessitating costly external financing. This outcome is also consistent with Agency Theory, which predicts that an excess of working capital may be indicative of managerial inefficiency in resource allocation, culminating in suboptimal profitability (Jensen & Meckling, 1976; Safira & Yusnaini, 2024). In particular, the negative DIO coefficient aligns with the findings of Lyngstadås and Berg (2016), Huynh et al. (2025) and Enqvist et al. (2014), who demonstrate that poor inventory management diminishes profitability across diverse industries. The negative DPO coefficient aligns with Karim et al. (2024), who contend that unusually protracted payable periods in emerging-market firms frequently signal liquidity distress rather than strategic supplier financing arrangements. The statistically insignificant association with Tobin's Q is supportive of the Liquidity-Profitability Trade-off Theory perspective: market valuations incorporate forward-looking assessments of growth prospects and industry-level factors that are not reducible to short-term working capital movements Chang (2018) and Harris and Nguyen (2024). In comparison with Habib and Kayani (2022), who identify robust CCC effects on firm profitability in UAE enterprises, and Aldubhani et al. (2022), who document significant working capital-profitability linkages in Qatari companies, the Indonesian property sector demonstrates comparatively weaker and more conditional relationships, plausibly attributable to the sector's pronounced project-cycle heterogeneity, land-banking practices, and installment-based revenue models.

A comparative reading of the Random Effects (RE) and two-step System GMM results yields two complementary interpretive layers. The Random Effects model reveals that CCC exhibits a significant negative association with both ROA and ROE. This finding is consistent with the conclusions of Naz et al. (2022) and Habib and Kayani (2022), whose research demonstrates that efficient working capital management correlates with improved profitability outcomes. Nonetheless, the relationship with Tobin's Q does not achieve statistical significance, suggesting that CCC is more closely aligned with accounting-based performance metrics than with equity market valuation.

When dynamic effects and potential endogeneity are controlled through the System GMM framework, the relationship becomes statistically insignificant. CCC no longer registers a statistically meaningful influence on ROA, ROE, or Tobin's Q. This finding does not necessarily imply that CCC is irrelevant; rather, it indicates that the direct effect of CCC diminishes once dynamic profitability persistence and firm-specific heterogeneity are accounted for within the model. This outcome diverges from several prior studies that identified a robust inverse association between CCC and corporate performance. The discrepancy may be attributable to the distinctive characteristics of the property and real estate industry in Indonesia.

The subcomponent analysis of CCC furnishes a more nuanced account of the mechanisms through which working capital decisions shape profitability. DIO and DPO yield negative and statistically significant coefficients in relation to ROA and ROE. Consistent with Enqvist et al. (2014) and Iklimatu Adamu Umar et al. (2023), efficient inventory management assumes heightened importance for firm profitability. Although DSO is not statistically significant, its lack of significance is consistent with Lyngstadås and Berg (2016) and Huynh et al. (2025), who demonstrate that extending trade credit to customers may simultaneously enhance revenue and sustain profitability. None of the CCC subcomponents register a statistically significant relationship with Tobin's Q. This pattern implies that accounting-oriented profitability exhibits greater sensitivity to inventory and payable management decisions than to receivable collection durations. In contrast, market-based performance does not exhibit a direct response to short-term variations in working capital efficiency.

The System GMM estimation yields a contrasting interpretation: DIO and DPO cease to exhibit statistically significant effects on ROA, ROE, or Tobin's Q. This implies that their immediate statistical influence weakens once firm-specific dynamics and profitability persistence are integrated into the specification. At the same time, DSO registers a positive and statistically significant association with ROA within the System GMM estimation framework. Consequently, the System GMM results suggest that static panel estimation may capture strong associations, whereas dynamic specifications yield more conservative and prudent interpretations.

These findings carry several practical implications for property and real estate managers in Indonesia. First, given the statistically significant and adverse impact of DIO on profitability, firms should prioritize accelerating project completion timelines and improving inventory turnover through presales strategies, faster construction cycles, and targeted marketing campaigns for completed but unsold units. Second, the negative DPO coefficient suggests that firms should avoid excessive dependence on extended payable periods as a financing strategy, as this may signal liquidity stress to counterparties and undermine supplier relationships. Instead, firms should develop structured working capital credit lines with financial institutions. Third, the insignificant DSO finding suggests that flexible receivable policies (e.g., mortgage-facilitated installment payments) may not significantly harm profitability and can serve as a tool to stimulate sales volume during demand downturns. Fourth, given the attenuation of effects under System GMM, managers should not over-rely on CCC optimization alone but should integrate it within a broader strategic financial planning framework that accounts for profitability persistence, macroeconomic cycles, and project-specific cash flow dynamics.

CONCLUSION

The empirical findings substantiate that working capital management maintains a statistically significant connection to corporate financial outcomes among Indonesian property and real estate enterprises, with this relationship being most pronounced in relation to accounting-based profitability indicators. Under the Random Effects estimation framework, an extended Cash Conversion Cycle is associated with diminished ROA and ROE, while its connection to Tobin's Q does not attain statistical significance. At the subcomponent level, DIO and DPO demonstrate negative and statistically significant relationships with ROA and ROE, while DSO fails to generate a statistically meaningful effect. These outcomes indicate that inventory and payable management are more closely tied to accounting profitability than receivable duration. Nonetheless, the two-step System GMM estimation reveals that the influences of CCC, DIO, and DPO become statistically insignificant once dynamic effects and potential endogeneity are accounted for, whereas DSO emerges with a positive and statistically significant effect on ROA. Accordingly, the findings suggest that the relationships identified under the static model warrant cautious interpretation, given that these associations attenuate substantially under a dynamic panel specification.

This research enriches the working capital management literature by contributing quarterly empirical evidence drawn from Indonesian property and real estate enterprises across pre-, during-, and post-COVID-19 periods, and by concurrently analyzing both the aggregate CCC and its individual subindicators. From a managerial standpoint, firms should concentrate on enhancing inventory turnover, maintaining disciplined payable management, and monitoring receivables without relying exclusively on mechanical CCC shortening. Working capital decisions should instead be embedded within project planning and broader cash flow management frameworks, as the effects of working capital metrics may shift considerably once firm-specific dynamics and potential endogeneity are addressed. Future research may consider the integration of macroeconomic determinants, encompassing interest rate movements, inflationary pressures, and GDP growth trajectories, alongside mortgage rates, property price indices, and construction cost variables, and may further examine sector-specific differences to generate a more thorough and nuanced understanding of the dynamic interplay between working capital efficiency and sustained long-term financial performance.

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AUTHOR CONTRIBUTION STATEMENT

The author bore complete accountability for all facets of this research undertaking, including the development of the research concept, formulation of the methodological

framework, collection of empirical data, analytical examination, interpretation of findings, preparation of the manuscript text, rigorous editorial revision, and approval of the definitive version for formal submission.

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