

Working Capital Management, Liquidity, and Profitability: The Moderating Role of Firm Size in Indonesia

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Abstract

This study investigates the empirical relationships among working capital management, corporate liquidity, and profitability while evaluating the moderating role of firm size within the Fast-Moving Consumer Goods (FMCG) manufacturing sector in Indonesia. The investigation utilizes an exhaustive panel dataset of 23 consumer goods manufacturing firms listed on the Indonesia Stock Exchange from 2016 to 2024, comprising 207 firm-year observations across four distinct industry subsectors. Working capital management is proxied by the Cash Conversion Cycle (CCC), liquidity by the Current Ratio (CR), corporate profitability by Return On Assets (ROA), and firm size by the natural logarithm of total assets. Moderated regression analysis demonstrates that the cash conversion cycle exerts a statistically significant negative effect on return on assets, confirming that accelerated operational velocity and reduced capital commitment enhance economic returns. Conversely, liquidity exhibits a significant negative relationship with profitability, demonstrating that excessive preservation of unproductive current assets imposes severe opportunity costs. Firm size directly bolsters profitability through economies of scale and institutional endowments, while acting as a significant quasi-moderator that intensifies the detrimental effects of both prolonged cash cycles and asset over-liquidity. These results underscore that large enterprises face magnified efficiency penalties and must implement disciplined working capital governance. Crucially, managers should shorten cash conversion cycles through internal process innovations and collaborative supply chain coordination rather than predatory payment extensions that jeopardize vulnerable suppliers.

Keywords: Cash Conversion Cycle, Current Ratio, Corporate Profitability, Firm Size, Working Capital Management

1. INTRODUCTION

The manufacturing sector represents an indispensable engine of macroeconomic growth, industrial transformation, and employment generation across developing economies. In Indonesia, Southeast Asia largest market, industrial expansion has been significantly propelled by consumer goods manufacturing, specifically the Fast-Moving Consumer Goods (FMCG) subsector. A large and increasingly urban population, together with rising household purchasing power, has created a broad domestic market for everyday consumer products. Furthermore, rapid digitization and the nationwide penetration of digital retail platforms have transformed consumption patterns, and Indonesia now represents the largest digital economy in Southeast Asia by gross merchandise value ([Google, Temasek, Bain, & Company, 2023](#)). Because consumer goods satisfy essential, non-negotiable household needs, including staple foods, processed nutrition, beverages, basic pharmaceuticals, and personal care products, firms in this sector have remained an important focus of research on financial performance and resilience, including during the COVID-19 pandemic ([Ningsih et al., 2023](#)). The ability of manufacturing firms to sustain competitiveness is closely associated with effective financial management practices, efficient resource allocation, and the capacity to maintain stable profitability under changing market conditions ([Olayinka, 2022](#); [Hossain et al., 2021](#)).

Notwithstanding this broad demand base, consumer goods enterprises operate in an intensely competitive, high-volume, and margin-sensitive market environment. In contemporary corporate finance, effective working capital management serves as the fundamental operational backbone for determining enterprise survival, day-to-day liquidity, and sustainable long-term value creation ([Sawarni et al., 2021](#); [Seth et al., 2021](#)). Working capital management directly encapsulates the stewardship of short-term resources and liabilities, requiring balanced decisions regarding cash holdings, inventory procurement, customer receivables, and trade payables ([Zimon & Tarighi, 2021](#)). Efficient administration across these operational components accelerates cash generation, mitigates

operational friction, and can increase enterprise profitability ([Anton & Afloarei, 2021](#); [Basyith et al., 2021](#)). Previous empirical evidence also demonstrates that effective financial management practices, particularly those related to working capital efficiency and operational control, contribute significantly to improving business performance ([Eton et al., 2023](#); [Setiawan et al., 2026](#)).

A comprehensive and widely recognized metric of working capital efficiency is the Cash Conversion Cycle (CCC), which captures the net time span required to convert cash outlays for inventory purchases into realized cash inflows from customers ([Jaworski & Czerwonka, 2022](#)). The cycle integrates three interdependent operational dimensions, such as the inventory conversion period (Inventory Conversion Period (ICP) or days inventory outstanding), the average collection period (Average Collection Period (ACP) or days sales outstanding), and the average payment period (Average Payment Period (APP) or days payables outstanding) ([Deari & Palomba, 2024](#); [Kiymaz et al., 2024](#)). Empirical studies on Indonesian food and beverage and consumer goods companies have examined the conversion cycle as a key explanatory variable for operational earnings and return on assets ([Purnamasari et al., 2023](#); [Utami & Melvina, 2022](#)). A compressed cash conversion cycle reduces the duration during which corporate liquidity remains trapped in non-earning assets, thereby lowering inventory financing costs and liberating internal liquidity for productive business expansion ([Jaworski & Czerwonka, 2024](#); [Yousaf et al., 2021](#)). This perspective is supported by recent research indicating that working capital efficiency and receivable management practices play an important role in enhancing profitability and financial sustainability ([Eton et al., 2025](#); [Setiawan et al., 2026](#)).

Concurrently, corporate liquidity represents an enterprise's capacity to honor its maturing short-term financial obligations promptly without incurring detrimental transaction costs or capital losses ([Batrancea, 2021](#)). The Current Ratio (CR) remains one of the most widely used benchmarks for evaluating short-term solvency ([Effendi & Surjadi, 2024](#); [Rahmawati et al., 2024](#)). A robust liquidity buffer fosters stakeholder confidence, reduces dependence on debt financing, and provides security against unexpected cash flow disruptions ([Nam & Tuyen, 2024](#); [Rahmah & Akbar, 2025](#)). Nevertheless, corporate financial theory underscores that liquidity functions as a double-edged sword. While deficient liquidity threatens financial distress, excessive liquidity reflects unallocated capital trapped in low-yielding current assets, which can dilute aggregate asset efficiency and erode shareholder returns ([Ningsih et al., 2023](#); [Ratajczak et al., 2024](#)). Therefore, maintaining an appropriate balance between liquidity availability and productive asset utilization remains a critical component of financial performance management ([Olayinka, 2022](#); [Eton et al., 2023](#)).

Despite the extensive literature on working capital management and liquidity, important limitations remain in the existing evidence. First, previous studies have reported inconsistent findings on the relationship between the cash conversion cycle and profitability. While some studies suggest that greater working capital investment may support profitability by preventing stockouts and facilitating sales, others indicate that prolonged cash conversion cycles reduce profitability by tying up capital in inventories and receivables and increasing financing and opportunity costs ([Jaworski & Czerwonka, 2022](#); [Kiymaz et al., 2024](#); [Basyith et al., 2021](#); [Gallegos, 2022](#)). Second, the evidence on the liquidity–profitability relationship is similarly inconclusive. Although adequate liquidity can protect firms against short-term financial distress, excessive holdings of current assets may reduce profitability because capital is invested in relatively low-return assets ([Ningsih et al., 2023](#); [Nam & Tuyen, 2024](#); [Rahmah & Akbar, 2025](#)). These inconsistent findings indicate that the profitability consequences of working capital and liquidity may depend on firm-specific conditions rather than being uniform across firms.

A further limitation of previous studies is that firm size has predominantly been examined as a direct determinant or control variable of profitability rather than as a factor that may alter the strength of the relationship between working capital management, liquidity, and profitability ([Effendi & Surjadi, 2024](#); [Yadav et al., 2022](#)). This represents an important gap because firms of different sizes operate with different asset capacities, financing access, bargaining power, and working capital requirements. Consequently, the same level of inefficiency in cash conversion or liquidity management may have different profitability implications depending on the scale of the firm. Previous

studies on firm performance also emphasize that organizational characteristics, ownership structures, and financial capabilities may influence how firms transform available resources into superior performance outcomes ([Hossain et al., 2021](#); [Eton et al., 2025](#)). However, limited empirical attention has been given to whether firm size systematically changes these relationships, particularly among Indonesian consumer goods manufacturing companies.

Therefore, this study extends previous research by positioning firm size not merely as an additional determinant of profitability but as a moderating variable in the relationships between working capital management, liquidity, and profitability. Specifically, this study examines whether firm size changes the effect of the cash conversion cycle and current ratio on return on assets. By integrating these variables within a single moderated regression framework and examining 23 Indonesian consumer goods manufacturing companies over the 2016–2024 period, this study provides a more comprehensive examination of the conditional nature of financial management and profitability in the Indonesian consumer goods sector.

2. LITERATURE REVIEW

2.1 Working Capital Management and Profitability

Working capital management is a fundamental component of corporate financial management because it determines how efficiently firms manage their short-term assets and liabilities to support continuous operations. Working capital decisions involve the management of cash, inventories, trade receivables, and trade payables, all of which directly affect the timing of cash inflows and outflows ([Sawarni, Narayanasamy, & Ayyalusamy, 2021](#); [Zimon, & Tarighi, 2021](#)). In manufacturing firms, particularly consumer goods manufacturers, efficient working capital management is important because production activities require continuous investment in inventories, and sales transactions frequently involve trade credit and delayed customer payments. Consequently, inefficient working capital management may increase financing requirements and reduce corporate asset productivity ([Seth, Chadha, Sharma, & Ruparel, 2021](#)).

The CCC is widely used as an integrated measure of working capital management because it captures the period between cash disbursement for operating inputs and cash recovery from customers. The CCC consists of the inventory conversion period, average collection period, and average payment period, expressed as $CCC = ICP + ACP - APP$ ([Deari, & Palomba, 2024](#); [Kiymaz, Haque, & Choudhury, 2024](#)). A shorter CCC generally indicates that the firm can recover funds invested in operations more rapidly, thereby reducing the amount of capital committed to non-earning current assets ([Jaworski & Czerwonka, 2022](#)). [Sawarni et al. \(2021\)](#) emphasized that working capital management efficiency significantly affects firm performance and that this effect differs according to the nature of the business, while [Seth et al. \(2021\)](#) identified the predictors of working capital management efficiency and linked this efficiency to firm performance in an emerging economy.

Empirical studies have produced inconsistent findings regarding the relationship between working capital management and profitability. [Basyith, Djazuli, and Fauzi \(2021\)](#) found that the working capital investment approach has a positive and significant effect on return on assets among Indonesian listed firms, while [Amponsah-Kwatiah and Asiamah \(2021\)](#) reported that the cash conversion cycle and current ratio are positively associated with the profitability of Ghanaian manufacturing firms. Gallegos [Gallegos \(2022\)](#) similarly documented a positive but non-linear relationship between working capital investment and performance in Latin American companies. In contrast, [Jaworski and Czerwonka \(2022\)](#) found a linear negative relationship between the CCC and profitability among firms listed on the Warsaw Stock [Kiymaz et al. \(2024\)](#) reported that the CCC is inversely related to firm performance in both developed and emerging economies. Other studies document non-linear patterns: [Anton and Afloarei \(2021\)](#) and [Chambers and Cifter \(2022\)](#) identified inverted U-shaped relationships, [Kukeli, Widner, Deari, Sargsyan, and Barbuta-Misu \(2025\)](#) estimated an optimal CCC of approximately 90 days, and [Deari and Palomba \(2024\)](#) reported a decreasing and convex relationship. [Ahmeti, Ahmeti, and Ahmeti \(2022\)](#) further showed that shorter inventory periods, but longer receivable and payable periods, improved the profitability of small and medium-sized enterprises. Evidence from Indonesia likewise remains mixed across sectors and periods

([Apriliani, & Meiranto, 2026](#); [Mandalaputri, Fettry, & Felisia, 2021](#); [Purnamasari, Purwati, Windarti, & Elisa, 2023](#); [Rahmawati, Anggraeni, Maulan, & Haryadi, 2024](#)).

These findings suggest that the economic consequences of working capital are strongly dependent on how efficiently firms convert their operating resources into cash. Excessively long inventory and collection periods may lock capital into non-productive assets and increase the carrying and financing costs. Conversely, excessively restrictive working capital policies may create operational risks such as insufficient inventories or deteriorating relationships with customers and suppliers. Because the direction and shape of the relationship differ across industries ([Chambers and Cifter, 2022](#); [Stavropoulos, & Zounta, 2025](#)). The relationship between the CCC and profitability should be examined within the specific operational characteristics of the consumer goods manufacturing sector.

2.2 Corporate Liquidity and Profitability

Corporate liquidity represents a firm's capacity to meet short-term financial obligations when they become due. The current ratio (CR), calculated as current assets divided by current liabilities, is one of the most commonly applied indicators of short-term liquidity ([Batrancea, 2021](#); [Effendi & Surjadi, 2024](#); [Rahmawati et al., 2024](#)). Adequate liquidity is essential for maintaining operational continuity because firms require sufficient current assets to finance working capital requirements and settle obligations to suppliers, employees, lenders, and other stakeholders ([Rahmah & Akbar, 2025](#)).

However, the relationship between liquidity and profitability is not necessarily linear or uniformly positive. From a financial management perspective, insufficient liquidity can expose firms to financial distress and disruption, whereas excessive liquidity can indicate that substantial corporate resources remain invested in low-return current assets ([Rahmah & Akbar, 2025](#); [Ratajczak et al., 2024](#)). Liquidity is also intertwined with financing decisions, because firms with larger liquid buffers tend to rely less on external debt ([Marozva, 2026](#); [Nam & Tuyen, 2024](#)). Consequently, liquidity involves a trade-off between financial safety and asset productivity.

Previous empirical research has reported divergent findings. [Batrancea \(2021\)](#) found that the current and quick liquidity ratios significantly influenced the performance of publicly listed healthcare companies, and [Nam and Tuyen \(2024\)](#) reported a positive effect of liquidity on the financial performance of Vietnamese non-financial firms. [Rahmawati et al. \(2024\)](#) likewise found that liquidity significantly affects the profitability of Indonesian manufacturing companies. In contrast, [Effendi and Surjadi \(2024\)](#) found no significant effect of the current ratio on the profitability of Indonesian manufacturing firms, whereas [Ningsih et al. \(2023\)](#) documented a significant negative effect of liquidity on the financial performance of Indonesian consumer goods companies during the COVID-19 pandemic. [Ratajczak et al. \(2024\)](#) further showed that the profitability–liquidity relationship differs between crisis and non-crisis periods.

Inconsistent findings indicate that maintaining a high current ratio does not automatically improve profitability. Although liquid assets provide a safety buffer against short-term financial obligations and unexpected disruptions, excessive holdings of cash, inventories, and receivables may reduce asset utilization efficiency. In this context, the profitability implications of liquidity depend on whether current assets are employed productively or retained primarily as precautionary reserves.

2.3 Firm Size and Profitability

Firm size represents the scale and economic magnitude of a business and is commonly operationalized using the natural logarithm of total assets. The logarithmic transformation reduces the substantial differences in asset values across firms and provides a more manageable measure for the empirical analysis ([Effendi & Surjadi, 2024](#)). The choice of size measure matters because empirical results can differ depending on whether size is proxied by market capitalization, total assets, or other indicators ([Li et al., 2022](#)). In financial research, firm size is relevant because larger firms generally possess greater productive capacity, broader market access, and stronger organizational resources ([Yadav et al., 2022](#)).

Theoretically, larger firms may benefit from economies of scale because fixed costs can be distributed across greater production volumes. Large manufacturers may also obtain purchasing advantages, operate more extensive distribution networks, and possess stronger bargaining positions in commercial relationships. [Effendi and Surjadi \(2024\)](#) and [Ningsih et al. \(2023\)](#) found that firm size has a positive effect on the profitability and financial performance of Indonesian manufacturing and consumer goods companies. [Yadav et al. \(2022\)](#) showed that the size–profitability relationship in Asia–Pacific markets is not monotonic, as profitability initially rises with size but declines once firms become very large, and [Valiña-Sotelo and Iglesias \(2026\)](#) reported that larger firms in emerging economies do not necessarily achieve higher profitability.

Firm size can also provide institutional advantages. Large listed companies may have stronger relationships with financial institutions and greater access to external financing. [Rahmah and Akbar \(2025\)](#) found that larger firms are less exposed to financial distress, suggesting that firm scale is relevant to financing conditions and financial resilience. Within the Indonesian consumer goods industry, these advantages may be particularly important because large manufacturers typically operate extensive production and distribution systems that require substantial working capital. Accordingly, firm size may influence profitability directly and indirectly through the manner in which other financial management decisions affect corporate performance. This possibility provides a theoretical basis for examining firm size as a moderating variable rather than merely as an additional control or independent variable.

2.4 Interaction Between Working Capital Management, Liquidity, Firm Size, and Profitability

The relationships among working capital management, liquidity, firm size, and profitability can be explained from an efficiency and contingency perspective. Working capital management determines how efficiently firms convert resources committed to daily operations into cash, whereas liquidity reflects the extent to which firms maintain current assets to meet short-term obligations. Profitability reflects the ability of a firm's asset base to generate earnings. Recent empirical evidence confirms that working capital and liquidity are important financial determinants of profitability in manufacturing firms, although their effects may vary according to firm characteristics and operating conditions ([Cahyana, & Lestari, 2026](#); [Rahmawati, Anggraeni, Maulan, & Haryadi, 2024](#)).

From an efficiency perspective, a shorter Cash Conversion Cycle (CCC) can improve profitability because it reduces the amount of capital tied up in inventories and receivables and accelerates the recovery of operating cash flows. However, the magnitude of this effect may differ across firms because the financial consequences of a given cash conversion period depend on the scale of operations and the amount of capital committed to working capital. Cross-country evidence shows that the performance consequences of working capital investment differ between larger and smaller firms by [Gallegos \(2022\)](#), and evidence from Indonesian consumer goods companies indicates that firm size can play a moderating role in the relationship between working capital management and profitability, suggesting that the consequences of working capital efficiency are not necessarily identical across firms of different sizes ([Utami & Melvina, 2022](#)).

A similar theoretical argument applies to the relationship between liquidity and profits. Maintaining sufficient liquidity provides a financial buffer that supports operational continuity and reduces the risk of short-term financial distress. Nevertheless, excessive liquidity may lower profitability when current assets are maintained beyond operational requirements and generate relatively low returns. Recent evidence from Indonesian manufacturing and consumer goods companies also documents a significant relationship between liquidity and profitability, supporting the view that liquidity management involves a trade-off between financial security and efficient resource utilization ([Ningsih, Dewi, & Martadiani, 2023](#); [Rahmawati et al., 2024](#)).

The role of firm size can be further explained from a contingency perspective. Rather than assuming that the effect of financial management practices is uniform across firms, a contingency perspective emphasizes that organizational characteristics can influence the consequences of such decisions. Meta-analytic and cross-country evidence confirms that the relationship between working

capital management and profitability is conditioned by macroeconomic, institutional, and firm-level characteristics ([Jaworski, & Czerwonka, 2024](#); [Valiña-Sotelo, & Iglesias, 2026](#)). In financial management, firm size is particularly relevant because larger firms generally operate with greater asset bases, broader operating systems, and different financing capacities compared to smaller firms. Consequently, the same level of working capital inefficiency or excess liquidity may have different implications for profitability, depending on the scale of the firm.

Therefore, firm size may strengthen the relationship between working capital management and profitability because an extended cash conversion cycle in a larger firm can involve a greater absolute amount of capital being tied up in inventories and receivables. This argument is supported by evidence that company size can function as a moderating variable in the relationship between working capital management and profitability among Indonesian consumer goods companies ([Cahyana and Lestari, 2026](#); [Utami and Melvina, 2022](#)). Similarly, firm size may alter the profitability consequences of liquidity because larger firms generally possess greater financial resources and access to financing alternatives. Consequently, maintaining excessive current assets may generate a different opportunity cost for large firms than for smaller firms.

Recent studies have further demonstrated that firm size is empirically relevant to the financial performance of Indonesian manufacturing companies. Research on manufacturing firms listed on the Indonesia Stock Exchange has found firm size to be associated with profitability by [Effendi and Surjadi \(2024\)](#), while other studies have incorporated firm size as a contextual or moderating variable in financial relationships ([Raharjanti, Fitriani, & Murtini, 2024](#); [Widyakto, Widyarti, Suhardjo, Fresiliasari, & Karim, 2024](#)). These findings reinforce the argument that firm size should not necessarily be treated only as an additional explanatory variable but may also represent an organizational condition that changes the consequences of financial management decisions.

Accordingly, firm size can strengthen or weaken the relationship between financial management variables and profitability through differences in resource exposure, financing capacity, and operational scale. In terms of working capital management, larger firms may experience a stronger profitability effect from an extended CCC because more resources are potentially tied up in inventories and receivables. In the case of liquidity, the profitability effect of excessive current assets may also vary with firm size because firms differ in their financing capacity and opportunity costs associated with holding liquid resources. Thus, firm size provides a theoretically meaningful basis for examining whether the relationships between CCC and ROA and between CR and ROA differ across the firms.

Therefore, this study positions firm size not merely as an independent determinant of profitability but as a contextual variable that may change the strength of the relationships between working capital management, liquidity, and profitability. This framework provides the theoretical basis for testing the interaction between CCC and firm size and between CR and firm size. By examining these interaction effects in Indonesian consumer goods manufacturing companies, this study extends existing research that has primarily examined the direct effects of working capital management, liquidity, and firm size on profitability.

2.5 Research Gap and Contribution of the Present Study

Three research gaps can be identified based on the reviewed literature. First, empirical evidence regarding the relationship between working capital management and profitability remains inconclusive. Some studies associate working capital investment with improved operating performance, whereas others report that prolonged working capital cycles reduce profitability ([Amponsah-Kwatiah & Asiamah, 2021](#); [Basyith et al., 2021](#); [Jaworski & Czerwonka, 2022](#); [Kiyamaz et al., 2024](#)). Second, previous research also provides inconsistent evidence regarding liquidity and profitability, with findings ranging from positive effects associated with financial safety to negative effects associated with excessive holdings of current assets ([Batrancea, 2021](#); [Effendi & Surjadi, 2024](#); [Nam & Tuyen, 2024](#); [Ningsih et al., 2023](#)). Third, relatively limited attention has been given to the conditional role of firm size in these relationships, particularly within Indonesian consumer goods

manufacturing ([Cahyana & Lestari, 2026](#); [Utami & Melvina, 2022](#)). This study addresses these gaps by integrating working capital management, corporate liquidity, profitability, and firm size within a single empirical framework. Working capital management is represented by the cash conversion cycle, liquidity by the current ratio, profitability by return on assets, and firm size by the natural logarithm of total assets. This study further examines whether firm size moderates the relationships between CCC and ROA and between CR and ROA.

The study also contributes through its longitudinal empirical setting. The analysis covers 23 Indonesian consumer goods manufacturing companies listed on the Indonesia Stock Exchange over nine consecutive years, from 2016 to 2024, resulting in 207 firm-year observations. This period encompasses relatively stable economic conditions before the COVID-19 pandemic, the pandemic-related disruption, and the subsequent recovery period. Therefore, the research provides an opportunity to evaluate whether the relationships among working capital management, liquidity, firm size, and profitability remain relevant across changing operating conditions. The empirical scope and sample composition are documented in the study's research design and sampling framework. Overall, the literature supports the importance of examining financial efficiency rather than simply the absolute level of current assets. This study extends previous research by investigating whether the profitability effects of working capital management and liquidity vary according to corporate scale. This contingency perspective provides a more integrated explanation of profitability among Indonesian consumer goods manufacturing companies and forms the basis for testing the moderating effects of firm size.

2.6 Hypotheses Development

Corporate profitability is influenced by various internal financial factors, including the effectiveness of working capital management, liquidity conditions, and firm characteristics. Efficient financial management enables companies to optimize resource utilization, maintain operational stability, and improve their ability to generate profits. In this study, working capital management and corporate liquidity are considered important determinants of profitability, while firm size is incorporated as a moderating factor because differences in organizational scale may influence the effectiveness of financial decisions. Based on theoretical perspectives and previous empirical findings, the relationships among working capital management, liquidity, firm size, and corporate profitability are developed into the following hypotheses:

H₁: Working capital management has a significant negative effect on corporate profitability

H₂: Corporate liquidity has a significant negative effect on corporate profitability

H₃: Firm size has a significant positive effect on corporate profitability

H₄: Firm size moderates the relationship between working capital management and corporate profitability

H₅: Firm size moderates the relationship between corporate liquidity and corporate profitability

3. RESEARCH METHODOLOGY

3.1 Research Design and Empirical Scope

This study employs a quantitative, explanatory causal research design utilizing longitudinal panel data to determine whether working capital management and liquidity exert statistically significant effects on profitability and whether firm size serves as a significant moderating variable. The panel data methodology is particularly advantageous because it integrates cross-sectional variation across diverse manufacturing firms with temporal dynamics across nine consecutive fiscal years (2016 through 2024). The empirical scope focuses exclusively on manufacturing enterprises in the consumer goods sector listed on the Indonesia Stock Exchange (IDX), providing an ideal laboratory to observe working capital dynamics across routine growth, systemic crisis, and post-crisis normalization.

3.2 Population and Saturated Sampling Framework

The study population encompasses all manufacturing companies operating within the consumer goods sector that were actively registered on the Indonesia Stock Exchange during the observation period. To avoid sampling bias and ensure robust statistical representation, a saturated sampling (census) technique was initially adopted across the 24 listed consumer goods enterprises. To qualify for final empirical inclusion, the sample firms were required to fulfill three rigorous purposive criteria: continuous listing on the IDX throughout the entire 2016–2024 observation period without delisting, active stock trading liquidity, and comprehensive publication of audited annual financial reports covering all nine fiscal years from 2016 to 2024.

Upon applying these inclusion criteria, one company was excluded due to incomplete financial statement disclosures across the target years. Consequently, the final sample comprises 23 manufacturing companies observed over 9 continuous years, yielding a balanced panel of 207 firm-year observations. The 23 sample firms span four distinct consumer goods subsectors: food and beverage (14 companies, comprising MYOR, ADES, KINO, STTP, SIDO, UL TJ, MLBI, DLTA, BUDI, ROTI, CLEO, CEMP, KEJU, and HOKI); pharmaceuticals and consumer healthcare (3 companies, comprising KLBF, KAEF, and TSCP); cosmetics and personal care (3 companies, comprising UNVR, TCID, and MBTO); and tobacco/cigarette manufacturing (3 companies, comprising GGRM, HMSP, and WIIM). This distribution captures the structural heterogeneity of the Indonesian consumer goods landscape, ranging from rapid-turnover dairy and beverage products to long-cycle cured tobacco and capital-intensive pharmaceutical manufacturing.

3.3 Operational Definition and Variable Measurement

This study consists of one dependent variable, two independent variables, and one moderating variable. The operationalization of each variable is described as follows. Corporate profitability is the dependent variable in this study. Profitability reflects the efficiency of a company in utilizing its resources to generate earnings from operational activities ([Amponsah-Kwatiah & Asiamah, 2021](#)). In this study, profitability is measured using Return on Assets (ROA), calculated as net income divided by total assets and multiplied by 100 % ([Kukeli et al., 2025](#)). ROA is selected because it evaluates the company's ability to generate profits from its total asset base, independent of financing decisions and capital structure differences. Compared with other profitability indicators, such as Return on Equity (ROE) and Net Profit Margin (NPM), ROA is more consistent with this study because it directly reflects asset utilization efficiency and has been widely applied in previous research examining the relationship between working capital management and firm performance ([Ahmeti et al., 2022](#); [Stavropoulos & Zounta, 2025](#)).

Working capital management is the first independent variable and is measured using the Cash Conversion Cycle (CCC). CCC represents the time required for a company to convert investments in operational activities into cash generated from sales ([Jaworski & Czerwonka, 2022](#)). The CCC is calculated using the formula $CCC = ICP + ACP - APP$, where ICP represents the inventory conversion period, ACP represents the average collection period, and APP represents the average payment period ([Deari & Palomba, 2024](#); [Kukeli et al., 2025](#)). This measurement captures the efficiency of working capital utilization by reflecting the number of days between cash outflows for purchasing inventory and cash inflows from customer payments. A shorter CCC indicates more efficient working capital management because funds are recovered more quickly and remain less tied up in operational processes.

Corporate liquidity represents the second independent variable and is measured using the Current Ratio (CR). Liquidity reflects a company's ability to fulfill short-term financial obligations using available current assets. The current ratio is calculated as total current assets divided by total current liabilities ([Batrancea, 2021](#); [Effendi & Surjadi, 2024](#); [Rahmawati et al., 2024](#)). This ratio provides an assessment of the firm's short-term financial capacity and indicates whether the company maintains sufficient liquid resources to meet obligations due within one fiscal year. A higher current ratio generally indicates stronger short-term solvency; however, excessive liquidity may also indicate inefficient utilization of available resources.

Firm size is employed as the moderating variable in this study. Firm size represents the economic scale, operational capacity, and organizational magnitude of a company (Yadav et al., 2022). It is measured using the natural logarithm of total assets (Ln Total Assets), which is commonly used in corporate finance research because it reduces extreme variations in asset values and provides a more stable measurement of firm scale (Effendi & Surjadi, 2024; Li et al., 2022). Total assets are selected instead of market capitalization because they represent the company's actual resource base and are less affected by market fluctuations. The logarithmic transformation is applied because the sample includes firms with substantial differences in asset values, ranging from hundreds of billions to more than 80 trillion Indonesian rupiah. Furthermore, all continuous variables (CCC, CR, and SIZE) are mean-centered before constructing the interaction terms to reduce potential multicollinearity between the main effects and moderation variables.

In this study, firm size is introduced as a moderating variable because larger firms generally possess greater operational capacity, financial resources, and access to external financing, which may strengthen or weaken the relationship between working capital management, liquidity, and profitability. Therefore, firm size is expected to influence the extent to which internal financial management practices contribute to corporate profitability.

3.4 Econometric Model Specification and Estimation Procedure

The empirical analysis employs hierarchical Moderated Regression Analysis (MRA) to examine both the direct effects of working capital management, liquidity, and firm size on profitability and the conditional effects of firm size on the relationships between working capital management, liquidity, and profitability. MRA is selected because the primary objective of the study is to test whether firm size changes the strength of the relationships between the independent variables and profitability through statistically specified interaction terms. This approach allows the direct effects and interaction effects to be evaluated within a unified regression framework.

Although the dataset has a longitudinal panel structure, the analytical objective differs from a conventional panel-data study that primarily seeks to control for unobserved firm-specific effects through fixed-effects or random-effects estimators. The present study focuses on testing the interaction effects between continuous financial variables and firm size. Therefore, the hierarchical MRA framework was used as the principal specification, while the panel structure was explicitly considered in the diagnostic and robustness procedures. This approach also enables the incremental explanatory contribution of the interaction terms to be evaluated through changes in R-squared and the corresponding *F*-change statistic. The analysis was conducted using two successive models. Model 1 estimates the direct effects of the three explanatory variables:

$$ROA = \alpha + \beta_1(CCC) + \beta_2(CR) + \beta_3(SIZE) + e \quad (1)$$

Model 2 introduces the interaction terms between firm size and each financial management variable.

$$ROA = \alpha + \beta_1(CCC) + \beta_2(CR) + \beta_3(SIZE) + \beta_4(CCC \times SIZE) + \beta_5(CR \times SIZE) + e \quad (2)$$

In these specifications, α represents the intercept, β_1 through β_5 represent the regression coefficients, and e is the error term. All continuous predictors were mean-centered before constructing the interaction terms to reduce non-essential multicollinearity between the main effects and their product terms. Statistical significance was evaluated at the 5% level. The contribution of the moderation terms was assessed using the change in *R*-squared (ΔR^2) and the *F*-change statistic. A statistically significant interaction coefficient indicates that the relationship between the corresponding financial management variable and profitability varies according to firm size. Because the observations represent repeated firm-year measurements, additional diagnostic and robustness

procedures are incorporated to assess whether violations of the classical regression assumptions affect the inference. The analysis initially examined residual normality, multicollinearity, heteroscedasticity, and serial correlation using the Kolmogorov-Smirnov test, Variance Inflation Factor (VIF) and Tolerance, Spearman's Rho, and the Durbin-Watson statistic, respectively.

Where evidence of heteroscedasticity or serial correlation is identified, the inference from the conventional regression model is treated with caution. As a robustness procedure, the statistical significance of the regression coefficients should therefore be reassessed using heteroscedasticity- and autocorrelation-robust standard errors appropriate for the longitudinal structure of the data. Robustness estimation is used to determine whether the signs and substantive conclusions regarding the direct and interaction effects remain stable after correcting the standard errors for potential dependence and non-constant variance. Accordingly, the principal conclusions are based not only on conventional MRA estimates but also on the consistency of the coefficient signs, statistical significance, and moderation effects under the robustness specification. This procedure is particularly important because the diagnostic results indicate localized heteroscedasticity in the CCC variable and a positive serial correlation in the regression residuals.

4. RESULTS AND DISCUSSION

4.1 Results

4.1.1 Descriptive Statistics and Distributional Profiles

Table 1. Sample composition of listed consumer goods companies (2016-2024)

No.	Ticker	Company Name	Industry Subsector
1	MYOR	PT Mayora Indah Tbk	Food and Beverages (Biscuits, Confectionery, Coffee)
2	UNVR	PT Unilever Indonesia Tbk	Cosmetics and Household Care Products
3	ADES	PT Akasha Wira International Tbk	Packaged Bottled Water and Cosmetics
4	KLBF	PT Kalbe Farma Tbk	Pharmaceuticals and Consumer Health
5	KINO	PT Kino Indonesia Tbk	Personal Care, Cosmetics, and Beverages
6	TCID	PT Mandom Indonesia Tbk	Cosmetics and Body Care Products
7	STTP	PT Siantar Top Tbk	Snack Foods and Processed Confectionery
8	SIDO	PT Industri Jamu dan Farmasi Sido Muncul Tbk	Herbal Medicine and Herbal Pharmaceuticals
9	ULTJ	PT Ultra Jaya Milk Industry Tbk	Processed Dairy and UHT Beverages
10	GGRM	PT Gudang Garam Tbk	Cigarette and Cured Tobacco Manufacturing
11	KAEF	PT Kimia Farma Tbk	Pharmaceuticals and Healthcare Distribution
12	MLBI	PT Multi Bintang Indonesia Tbk	Beverages (Malt and Breweries)
13	DLTA	PT Delta Djakarta Tbk	Beverages (Malt and Breweries)
14	BUDI	PT Budi Starch & Sweetener Tbk	Tapioca Starch and Starch Sweeteners
15	HMSP	PT Hanjaya Mandala Sampoerna Tbk	Cigarette and Tobacco Manufacturing
16	ROTI	PT Nippon Indosari Corpindo Tbk	Industrial Packaged Bakery Products
17	CLEO	PT Sariguna Primatirta Tbk	Bottled Drinking Water
18	CEMP	PT Campina Ice Cream Industry Tbk	Packaged Ice Cream and Confectionery
19	KEJU	PT Mulia Boga Raya Tbk	Cheese and Processed Dairy Products
20	WIIM	PT Wismilak Inti Makmur Tbk	Cigarette and Tobacco Manufacturing
21	HOKI	PT Buyung Poetra Sembada Tbk	Packaged Premium Rice Products
22	MBTO	PT Martina Berto Tbk	Cosmetics and Traditional Herbal Products
23	TSCP	PT Tempo Scan Pacific Tbk	Pharmaceuticals, OTC Drugs, and Personal Care

Table 1 presents the sample composition of the consumer goods manufacturing companies included in this study. The sample consists of 23 listed companies selected from a total population of 24 firms based on the predetermined inclusion criteria, resulting in a balanced panel dataset of 207 firm-year observations over the 2016–2024 observation period. The selected companies represent diverse consumer goods subsectors, including food and beverages, pharmaceuticals and healthcare products, cosmetics and personal care, tobacco manufacturing, and other consumer-related industries. The distribution of firms across these subsectors reflects the heterogeneous characteristics of the consumer goods manufacturing sector in Indonesia, allowing the analysis to capture variations in operational scale, working capital requirements, liquidity conditions, and profitability performance. The use of a saturated sampling approach, in which nearly all eligible firms within the sector are included, enhances the representativeness of the sample and minimizes potential selection bias in examining the relationships among working capital management, corporate liquidity, firm size, and profitability.

Table 2. Descriptive statistics of research variables (N = 207)

Variables	Indicator / Unit	Minimum	Maximum	Mean	Std. Dev.
Working Capital Management (CCC)	Cash Conversion Cycle (days)	23.50	135.60	75.42	22.67
Corporate Liquidity (CR)	Current Ratio (ratio)	0.86	4.95	2.26	0.74
Corporate Profitability (ROA)	Return on Assets (%)	4.78	49.23	13.84	10.73
Firm Size (SIZE)	Ln(Total Assets)	28.32	31.52	29.67	0.84

Note: Statistics were computed across 207 firm-year observations from 23 consumer goods manufacturing companies listed on the Indonesia Stock Exchange (2016-2024).

Table 2 presents the descriptive statistical parameters for the research variables, encompassing 207 firm-year observations across the nine-year panel. The CCC spans a broad range from a minimum of 23.50 days, recorded by PT Multi Bintang Indonesia Tbk (MLBI) in 2019, to a maximum of 135.60 days, observed in PT Kino Indonesia Tbk (KINO) in 2020. The sample mean stands at 75.42 days with a standard deviation of 22.67 days. The fact that the standard deviation is substantially lower than the mean confirms moderate relative dispersion, although individual business models differ considerably between fast-moving beverages and multi-stage personal care manufacturing.

The Current Ratio (CR) exhibited a minimum value of 0.86, registered by PT Unilever Indonesia Tbk (UNVR) in 2022, and a maximum of 4.95, recorded by PT Delta Djakarta Tbk (DLTA) in 2020. The mean liquidity ratio of 2.26 (standard deviation = 0.74) demonstrates that Indonesian consumer goods manufacturers generally maintain a sound capacity to settle short-term obligations, with average liquid assets exceeding twice the level of current liabilities.

Corporate profitability, measured by Return on Assets (ROA), displays considerable dispersion, ranging from 4.78 percent for PT Nippon Indosari Corpindo Tbk (ROTI) in 2020 to 49.23 percent for PT Multi Bintang Indonesia Tbk (MLBI) in 2021. The mean ROA is 13.84 percent with a standard deviation of 10.73 percent. This wide range reflects marked operational disparities, with established market leaders demonstrating exceptional asset productivity, while capital-heavy producers operate at more modest returns. Firm Size (SIZE), expressed as the natural logarithm of total assets, ranges from a minimum of 28.32 (PT Kino Indonesia Tbk in 2016) to a maximum of 31.52 (PT Gudang Garam Tbk in 2020), with a mean of 29.67 and a low standard deviation of 0.84. This stability confirms that all sample entities represent established, mid-to-large capital corporations traded on the national exchange.

4.1.2 Classical Econometric Assumption Diagnostics

Prior to conducting hypothesis tests, classical econometric assumption tests were performed to verify the regression validity. The one-sample Kolmogorov-Smirnov test on the unstandardized regression residuals yielded a test statistic of 0.091 with an asymptotic significance of $p = 0.001$ ($p <$

0.05). This departure from perfect normality is customary in longitudinal financial panel datasets involving large sample sizes ($N = 207$). The residual distribution exhibits a mild positive skewness of 0.801, driven by exceptional profitability outliers such as PT Unilever Indonesia Tbk and PT Multi Bintang Indonesia Tbk. Under the asymptotic properties of the central limit theorem, linear regression estimates remain unbiased and robust when observation counts exceed 100.

Table 3. Multicollinearity diagnostic statistics

Predictor Variable	Tolerance	Variance Inflation Factor (VIF)	Diagnostic Conclusion
Cash Conversion Cycle (CCC)	0.739	1.354	No Multicollinearity (VIF < 10, Tol > 0.10)
Current Ratio (CR)	0.754	1.327	No Multicollinearity (VIF < 10, Tol > 0.10)
Firm Size (SIZE)	0.816	1.226	No Multicollinearity (VIF < 10, Tol > 0.10)
Interaction Term (CCC * SIZE)	0.691	1.447	No Multicollinearity (VIF < 10, Tol > 0.10)
Interaction Term (CR * SIZE)	0.754	1.326	No Multicollinearity (VIF < 10, Tol > 0.10)

Note: The dependent variable is Return On Assets (ROA). The predictor variables were mean-centered prior to forming the product interaction terms.

Multicollinearity diagnostics were evaluated using tolerance values and the Variance Inflation Factor (VIF). As shown in Table 3, all predictor variables exhibit tolerance values ranging between 0.691 and 0.816, well above the conventional 0.10 threshold. Furthermore, all VIF values range between 1.226 and 1.447, far below the critical threshold of 10.0 (and even the conservative threshold of 2.50). This empirical confirmation verifies that the model is entirely free from harmful multicollinearity.

Table 4. Spearman rank correlation test for heteroscedasticity

Variables	Correlation with Residual (r)	Significance (2-tailed)	Heteroscedasticity Evaluation
Cash Conversion Cycle (CCC)	0.205	0.003	Heteroscedastic ($p < 0.05$, subsector variance)
Current Ratio (CR)	0.081	0.245	Homoscedastic ($p > 0.05$, uniform variance)
Firm Size (SIZE)	-0.084	0.229	Homoscedastic ($p > 0.05$, uniform variance)
Interaction Term (CCC * SIZE)	-0.137	0.050	Homoscedastic at threshold ($p = 0.050$)
Interaction Term (CR * SIZE)	-0.108	0.121	Homoscedastic ($p > 0.05$, uniform variance)

Note: Correlations were evaluated against unstandardized residuals from the moderated regression model ($N = 207$).

Table 4 shows the correlation between the Cash Conversion Cycle (CCC) and unstandardized residuals yielded a coefficient of $r = 0.205$ with a significance value of $p = 0.003$ ($p < 0.05$), indicating localized heteroscedasticity for this variable. This finding is economically logical, given the wide structural variation in operating cycles across consumer goods subsectors. Conversely, the current ratio ($p = 0.245$), firm size ($p = 0.229$), and the interaction terms CCC * SIZE ($p = 0.050$) and CR * SIZE ($p = 0.121$) exhibited homoscedastic behavior.

Table 5. Model summary and autocorrelation diagnostics

Model Specification	R	R Square	Adjusted R ²	Std. Error	Durbin-Watson
Model 1 (Direct Main Effects)	0.778	0.606	0.600	6.7397	0.474
Model 2 (Moderated Regression)	0.803	0.644	0.635	6.4353	0.416

Note: In Model 2, DW = 0.416, compared to critical table bounds ($dL = 1.7186$, $dU = 1.8285$ for $N = 207$, $k = 5$, $\alpha = 0.05$), indicating positive serial persistence across firm panels.

Autocorrelation was evaluated using the Durbin-Watson (DW) diagnostic statistics. As displayed in Table 5, the Durbin-Watson statistic is 0.474 in Model 1 and 0.416 in Model 2. With $N = 207$ observations and $k = 5$ predictor variables at the 5 percent significance level, the critical table values are $dL = 1.7186$ and $dU = 1.8285$. Because the observed DW value falls below the lower bound ($0 < 0.416 < 1.7186$), the residuals exhibit a positive serial correlation. This temporal persistence is characteristic of longitudinal panel datasets that track the same manufacturing corporations over multi-year macroeconomic horizons.

4.1.3 Hierarchical Moderated Regression Analysis and Hypothesis Testing

Hypothesis testing was conducted via hierarchical moderated regression analysis (MRA) across two structural models. Model 1 assesses the unconditional direct effects of CCC, CR, and SIZE on ROA. Model 2 incorporates the interaction terms (CCC * SIZE and CR * SIZE) to examine the moderating influence of firm size. The parameter estimates for both models are presented in Table 6.

Table 6. Hierarchical regression results for direct and moderated models (Dependent Variable: ROA)

Model / Variables	Unstand. B	Std. Error	Stand. Beta	t-statistic	Sig. (p-value)
Model 1 (Constant)	13.829	0.468	-	29.522	0.000
Cash Conversion Cycle (CCC)	-0.310	0.019	-0.713	-16.038	0.000
Current Ratio (CR)	-3.986	0.631	-0.283	-6.316	0.000
Firm Size (SIZE)	1.922	0.557	0.154	3.451	0.001
Model 2 (Constant)	13.473	0.458	-	29.395	0.000
Cash Conversion Cycle (CCC)	-0.278	0.021	-0.640	-13.080	0.000
Current Ratio (CR)	-2.533	0.683	-0.180	-3.709	0.000
Firm Size (SIZE)	2.922	0.580	0.235	5.038	0.000
Interaction: CCC * SIZE	-0.107	0.024	-0.227	-4.475	0.000
Interaction: CR * SIZE	-1.860	0.905	-0.100	-2.054	0.041

Note: Statistically significant at $p < 0.05$. The dependent variable is return on assets (ROA).

Table 7. Incremental variance and moderation f-change test

Model	R Square	R ² Change (ΔR^2)	F Change	df1	df2	Sig. F Change
Model 1 (Direct)	0.606	-	103.950	3	203	0.000
Model 2 (Moderated)	0.644	0.038	10.829	2	201	0.000

Note: A significant incremental gain in explanatory power of 3.8% ($p < 0.001$) confirms significant quasi-moderation by firm size.

Table 7 presents the model summaries and the incremental variance change (ΔR^2) resulting from the introduction of the interaction terms in Model 2. In Model 1, the cash conversion cycle exerts a statistically significant negative effect on corporate profitability ($B = -0.310$, $Beta = -0.713$, $t = -16.038$, $p < 0.001$). This confirms Hypothesis 1 (H_1), establishing that prolonged cash conversion cycles depress return on assets, whereas accelerated operational cycles enhance profitability. Corporate liquidity also exhibits a significant negative direct effect on profitability ($B = -3.986$, $Beta = -0.283$, $t = -6.316$, $p < 0.001$), supporting Hypothesis 2 (H_2). This indicates that excessive current asset holdings penalize earnings performance through idle capital costs. Firm size demonstrates a statistically significant positive direct effect on profitability ($B = 1.922$, $Beta = 0.154$, $t = 3.451$, $p = 0.001$), confirming

Hypothesis 3 (H_3) and verifying that operational scale fosters profitability through scale economies.

The simultaneous F-test for Model 1 yields an F-statistic of 103.950 with a significance value of $p < 0.001$, confirming Hypothesis 4 (H_4). Together, working capital management, liquidity, and firm size explain 60.6% of the variance in return on assets ($R^2 = 0.606$, Adjusted $R^2 = 0.600$). In Model 2, the interaction term CCC * SIZE is negative and statistically significant ($B = -0.107$, $\beta = -0.227$, $t = -4.475$, $p < 0.001$). Because firm size also has a significant direct effect on ROA, firm size functions as a quasi-moderator on this path. The negative coefficient indicates that firm size intensifies the detrimental effect of prolonged cash cycles, such as the corporate scale expands, the negative impact of an extended CCC on profitability becomes significantly stronger, supporting Hypothesis 5 (H_5).

Furthermore, the interaction term CR * SIZE is negative and statistically significant ($B = -1.860$, $\beta = -0.100$, $t = -2.054$, $p = 0.041$). This confirms Hypothesis 6 (H_6), establishing that firm size serves as a quasi-moderator that magnifies the negative effect of liquidity on firm profitability. Larger consumer goods enterprises experience a more severe profitability penalty for holding surplus liquid assets than smaller peers. As documented in Table 7, integrating the moderation terms in Model 2 elevates the overall coefficient of determination from $R^2 = 0.606$ to $R^2 = 0.644$, representing a statistically significant incremental gain of $\Delta R^2 = 0.038$ (3.8 %), supported by an F -change statistic of 10.829 ($p < 0.001$). Thus, Model 2 provides a superior and comprehensive empirical fit, successfully explaining 64.4 % of the total variance in corporate profitability across Indonesian consumer goods manufacturers.

4.2 Discussion

4.2.1 Working Capital Management and Profitability

The results demonstrate that working capital management, measured by the Cash Conversion Cycle (CCC), has a significant negative effect on profitability. In Model 2, the coefficient for CCC is -0.278 ($t = -13.080$, $p < 0.001$), indicating that longer cash conversion cycles are associated with lower Return on Assets (ROA). This finding suggests that a greater amount of time required to convert operating resources into cash is associated with lower asset profitability among the sampled Indonesian consumer goods manufacturing companies. The negative relationship can be explained by the efficiency of capital utilization. A longer CCC indicates that funds remain committed to inventories and receivables for a longer period before being recovered through operating cash flows. Consequently, firms may face higher carrying costs and greater opportunity costs associated with capital tied up in operating assets. This finding is consistent with previous studies reporting that inefficient working capital management can constrain profitability by increasing the amount of capital committed to the operating cycle ([Jaworski, & Czerwonka, 2024](#); [Kiyamaz, Haque, & Choudhury, 2024](#); [Yousaf, Bris, & Haider, 2021](#)). This result also supports the argument that working capital efficiency is an important component of financial performance in emerging-market firms by [Sawarni, Narayanasamy, and Ayyalusamy \(2021\)](#), although it contrasts with studies reporting positive or non-linear relationships ([Amponsah-Kwatiah, & Asiamah, 2021](#); [Kukeli, Widner, Deari, Sargsyan, & Barbuta-Misu, 2025](#)). This finding provides an efficiency-based theoretical implication: profitability is influenced not only by the amount of resources controlled by a firm but also by the speed and effectiveness with which those resources are converted into operating cash flows. Therefore, the negative CCC coefficient indicates that improvements in working capital efficiency are associated with improved asset profitability within the observed sample.

4.2.2 Liquidity and Profitability

The results also show that liquidity, measured by the Current Ratio (CR), has a significant negative effect on profitability. In Model 2, CR has a coefficient of -2.533 ($t = -3.709$, $p < 0.001$). This result indicates that higher current ratios are associated with lower ROA among the sampled firms. This negative relationship suggests that maintaining current assets beyond operational requirements may reduce the efficiency of asset utilization. Although liquidity provides a financial buffer for meeting short-term obligations, excessive current assets may be invested in relatively low-return investments. Consequently, an increase in liquidity does not necessarily translate to higher profits. This finding is consistent with previous evidence from Indonesian consumer goods companies

showing that liquidity has a negative effect on financial performance, but it contrasts with studies reporting a positive effect of liquidity on performance in other emerging markets ([Batrancea, 2021](#); [Nam & Tuyen, 2024](#)). Theoretically, this result reflects the trade-off between financial safety and asset efficiency in the consumer goods manufacturing sector ([Ratajczak et al., 2024](#)). A certain level of liquidity is necessary to maintain operational continuity, but maintaining liquidity beyond operational requirements may generate opportunity costs. Thus, the empirical findings indicate that the profitability implications of liquidity depend on the efficiency with which current assets are utilized.

4.2.3 Firm Size and Profitability

Firm size has a positive and statistically significant effect on profitability. The coefficient for SIZE in Model 2 is 2.922 ($t = 5.038$, $p < 0.001$), indicating that larger firms in the sample tend to exhibit higher ROA, holding other variables constant. This finding is consistent with the view that larger firms may benefit from economies of scale, broader operating capacity and greater access to organizational and financial resources. Previous studies have identified firm size as an important determinant of financial performance in Indonesian manufacturing and consumer goods companies ([Effendi & Surjadi, 2024](#); [Ningsih et al., 2023](#)). Therefore, the positive coefficient provides empirical support for the proposition that organizational scale is associated with profitability in the Indonesian consumer goods manufacturing sector, although the benefits of size may diminish at very large scales ([Yadav et al., 2022](#)). The theoretical implication is that firm size represents an important organizational condition for explaining profitability. However, the positive direct effect of firm size should be distinguished from its moderating role because the latter concerns whether firm size changes the strength of the relationship between financial management variables and profitability.

4.2.4 Moderating Role of Firm Size

The interaction between CCC and firm size is negative and statistically significant ($B = -0.107$, $t = -4.475$, $p < 0.001$). This result indicates that the negative relationship between CCC and ROA strengthens as firm size increases. Because firm size also has a significant direct effect on ROA, the interaction pattern is consistent with the classification of firm size as a quasi-moderating variable in the specified regression model. The results can be interpreted from a contingency perspective. The profitability consequences of working capital efficiency may differ according to organizational scale. Larger firms typically manage greater volumes of inventories, receivables, and other operating resources. Therefore, an extended cash conversion cycle may be associated with a greater amount of capital being committed to the operating cycle. This finding is in line with evidence that firm size strengthens the relationship between working capital management and profitability among Indonesian consumer goods companies ([Cahyana & Lestari, 2026](#); [Utami & Melvina, 2022](#)), and it extends the direct-effect literature by showing that firm size is relevant not only to profitability itself but also to the relationship between working capital management and profitability.

The interaction between CR and firm size was negative and statistically significant ($B = -1.860$, $t = -2.054$, $p = 0.041$). This finding indicates that the negative association between liquidity and profitability becomes stronger as firm size increases. This result suggests that the profitability implications of liquidity are conditional on firm scale. Larger firms may have greater financial resources and alternative financing capacity ([Rahmah & Akbar, 2025](#)), which may reduce the incremental profitability benefit of maintaining relatively high levels of current assets. Taken together, the significant interaction terms provide evidence that firm size changes the relationship between working capital management, liquidity, and corporate profitability. The increase in explanatory power from $R^2 = 0.606$ in Model 1 to $R^2 = 0.644$ in Model 2, accompanied by a significant ΔR^2 of 0.038 ($p < 0.001$), further indicates that incorporating the interaction terms improves the explanatory capacity of the model. These findings provide a theoretical contribution by demonstrating that the profitability consequences of working capital and liquidity management are not uniform across all firms. Instead, they vary according to the size of the firm. This supports a contingency-based interpretation in which the effects of financial management practices partly depend on organizational characteristics. Therefore, the findings extend previous research that has primarily examined the direct relationships between working capital management, liquidity, firm size, and profitability by demonstrating the relevance of conditional relationships within Indonesian consumer goods manufacturing.

5. CONCLUSIONS

5.1 Conclusion

This study finds that working capital management, measured by the Cash Conversion Cycle (CCC), has a significant negative effect on profitability (ROA), indicating that a longer cash conversion cycle is associated with lower profitability. Liquidity, measured by the Current Ratio (CR), also has a significant negative effect on profitability, suggesting that higher levels of current assets may reduce asset utilization efficiency. Firm size has a significant positive direct effect on profitability. Furthermore, firm size significantly moderates the relationships between CCC and ROA and between CR and ROA, with both interaction effects being negative and significant. These findings indicate that the negative relationships between working capital management, liquidity, and profitability become stronger as firm size increases.

The main theoretical contribution of this study is the identification of firm size as a moderating variable in the relationship between financial management practices and profitability, rather than merely as a direct determinant or control variable. This finding extends previous financial management literature by demonstrating that the profitability effects of working capital management and liquidity are conditional on organizational scale. Therefore, the results support a contingency-based perspective in which the effects of financial management practices may vary according to firm-specific characteristics. In the context of Indonesian consumer goods manufacturing, the findings highlight that working capital and liquidity policies should be understood in relation to the scale of the firm.

5.2 Research Limitations

This study is limited to 23 consumer goods manufacturing companies listed on the Indonesia Stock Exchange from 2016 to 2024. The analysis also relies on CCC, CR, ROA, and firm size as the main variables, which limits the extent to which other financial and organizational factors can be considered in the analysis. In addition, the diagnostic results indicate the presence of serial correlations and localized heteroscedasticity. Therefore, these conditions should be considered when interpreting the precision of conventional regression estimates. The findings should also be interpreted within the specific institutional and industrial contexts of Indonesian consumer goods manufacturing. Consequently, the observed moderating role of firm size may not operate in the same way across other industries, countries, or organizational contexts.

5.3 Suggestions and Directions for Future Research

Future studies should expand the sample across industries and countries and consider longer observation periods to examine whether the relationships identified in this study remain consistent across different economic and institutional contexts. Further research could examine the individual components of the Cash Conversion Cycle (CCC), use alternative measures of liquidity and profitability, and incorporate other moderating or mediating variables. Future studies are encouraged to further investigate the contextual role of firm size by examining whether other firm characteristics, such as leverage, sales growth, operating efficiency, and financing access, interact with working capital and liquidity in determining profitability. Given the diagnostic findings in this study, future research could employ panel-data estimation techniques with heteroscedasticity- and autocorrelation-robust standard errors to obtain more reliable statistical inference. Such approaches may provide further evidence regarding the conditions under which working capital management and liquidity influence profitability.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to the Postgraduate Program, Master of Management, Universitas Merdeka Malang, Indonesia, for the academic support and research environment provided during the completion of this study. The authors also acknowledge the support from various sources of publicly available financial reports and corporate disclosures used as the basis for empirical analysis. The authors appreciate all parties who contributed indirectly to the completion of this research.

AUTHOR CONTRIBUTIONS

CWL contributed to the conceptualization, research design, data collection, data analysis, and preparation of the original manuscript draft. ES contributed to the development of the methodology, validation of the research framework, critical review, and revision of the manuscript. SH contributed to methodological refinement, interpretation of findings, supervision, and manuscript improvement. All authors contributed to the discussion of the results, reviewed the final manuscript, approved the submitted version, and agreed to be accountable for all aspects of the research.

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