



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

OPTIMIZING WORKING CAPITAL FOR ENHANCED PROFITABILITY: INSIGHTS FROM AN ENGINEERING FIRM

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Abstract: This study assesses the efficiency of working capital management (WCM) and its impact on profitability over a five-year period (2019–2024). Key financial ratios—such as Current Ratio, Quick Ratio, Cash Ratio, Working Capital Turnover, Receivables Turnover, Payables Turnover, Inventory Turnover, Return on Net Working Capital (RONWC), Net Profit Margin (NPM), Return on Assets (ROA), and Return on Equity (ROE)—were analyzed to evaluate liquidity, asset utilization, and profitability trends. Correlation and regression analyses were conducted using SPSS, revealing a strong positive relationship between RONWC and NPM, indicating that efficient working capital deployment boosts profitability. A negative correlation between the Cash Conversion Cycle (CCC) and net profit highlights the need to reduce cash flow delays. Although financial ratios and operational metrics improved over the years, the findings suggest that further enhancement in asset utilization and tighter control of working capital components are necessary. As profitability increasingly depends on operational efficiency, strategic working capital optimization remains a key driver of sustainable financial growth and long-term competitiveness.

Keywords: Working Capital Optimization, Profitability, Financial Ratios, Cash Conversion Cycle, Operational Efficiency, Sustainable Growth

1. INTRODUCTION

Working capital is crucial for the day-to-day operations of any business. It is the difference between current assets and current liabilities and serves as a measure of operational efficiency and financial health. Adequate working capital ensures a company can meet short-term obligations, run smoothly, and avoid disruptions. Inadequate working capital can lead to cash shortages, delayed payments, or even business failure, while excess capital may indicate underutilized resources.

Working capital is classified into Gross Working Capital and Net Working Capital. Gross Working Capital represents total current assets like cash, receivables, and inventory, reflecting a company's liquidity strength. Net Working Capital is the difference between current assets and current liabilities, showing the buffer available after meeting short-term obligations.

Effective working capital management ensures liquidity and operational efficiency. It enhances cash flow, improves supplier and customer relationships, increases profitability, and provides financial flexibility. By managing receivables, payables, and inventory efficiently, businesses can reduce their reliance on external financing, boost profitability, and ensure long-term sustainability.

The Working Capital Cycle (WCC) measures the time taken for a company to convert its current assets and liabilities into cash. A shorter WCC reflects more efficient operations, achieved by optimizing inventory, receivables, and payables. Efficient working capital management directly impacts profitability, enabling faster capital reinvestment, quicker response to market opportunities, and maintaining financial flexibility.

In today's volatile business environment, effective working capital management is critical for navigating economic uncertainties, reducing operating costs, and investing in growth. Digital tools and real-time analytics enhance companies' ability to monitor and optimize working capital, ensuring a sustainable and competitive business model.

KEY FACTORS OF THIS STUDY:

- **Working Capital Optimization:** Managing a company's current assets and liabilities to ensure liquidity for daily operations while minimizing idle capital, boosting efficiency.
- **Profitability:** A company's ability to generate profit, measured by financial metrics like net profit margin, ROA, and ROE. Optimizing working capital enhances profitability by efficiently utilizing funds.
- **Financial Ratios:** Metrics derived from financial statements to assess performance, such as current ratio, quick ratio, and inventory turnover, which help evaluate efficiency, liquidity, and profitability.
- **Cash Conversion Cycle (CCC):** Measures how long it takes to convert investments in inventory and resources into cash flows. A shorter CCC reflects better working capital management and quicker cash realization.
- **Operational Efficiency:** The ability to use resources effectively to maximize output and minimize costs. It relates to how well a company manages inventory, receivables, and payables.

2. OBJECTIVES OF THE STUDY

1. To assess the relationship between working capital efficiency and financial performance.
2. To evaluate how the cash conversion cycle affects operational profitability.
3. To examine the influence of working capital metrics on net profit margin.
4. To analyze working capital trends and their effect on profitability.
5. To suggest strategies for effective working capital utilization.

3. NEED FOR THE STUDY

This study analyses balance sheets, Profit & Loss statements, key financial metrics, and working capital turnover over a five-year period to assess their impact on profitability. It also evaluates the effectiveness of current working capital strategies. Based on the findings, actionable recommendations will be provided to optimize liquidity, reduce costs, and enhance overall profitability.

4. SCOPE OF THE STUDY

This study analyses balance sheets, Profit & Loss statements, key financial metrics, and working capital turnover over a five-year period to assess their impact on profitability. It also evaluates the effectiveness of current working capital strategies. Based on the findings, actionable recommendations will be provided to optimize liquidity, reduce costs, and enhance overall profitability.

5. REVIEW OF LITERATURE

- **Kumar and Singh (2025)** examined how manufacturing SMEs can improve profitability through efficient working capital management, particularly by optimizing the cash conversion cycle (CCC). Their case-based analysis demonstrated that reducing receivables and inventory levels while extending payables enhances cash flow and profit margins.
- **Mengstie et al. (2024)** analysed Ethiopian commercial banks using panel data (2011–2020) and found that bank size and loans-to-assets ratios significantly affect profitability. In contrast, current asset and liability ratios showed no major impact, emphasizing selective focus on working capital components.
- **Kiyamaz, Haque, and Choudhury (2024)** studied global firms, showing that longer CCCs are detrimental to firm performance in both developed and emerging economies. However, inventory handling varied, with developed economies benefiting from longer inventory days.
- **Rahman (2023)** analysed Indian automobile firms and concluded that current ratio, liquidity ratio, and inventory turnover significantly affect profitability, except cash turnover ratio. This underscores the need to manage each ratio to improve firm performance.
- **Habib and Mourad (2022)** analysed Croatian SMEs and discovered that inventory turnover, accounts payable, and sales growth positively influence profitability. However, accounts receivable and company size had no significant effect.
- **Sensini and Vazquez (2021)** explored Argentine agro-industrial firms and found a negative relationship between profitability and CCC, days sales in inventory (DSI), and days payables outstanding (DPO), indicating excessive inventory and delayed payments hurt performance.
- **Boisjoly et al. (2020)** assessed U.S. firms (1990–2017), revealing that aggressive working capital practices improved profitability through better receivables and inventory management. Industries like transportation saw the greatest gains from such practices.
- **Bhutto et al. (2015)** used data from 157 Pakistani companies and found that conservative financing and aggressive investment strategies improve profitability. CCC was negatively associated with return on equity and revenue, reinforcing the need for active working capital control.
- **Enqvist, Graham, and Nikkinen (2014)** investigated Finnish firms during the 2007–2008 downturn, showing that the importance of efficient working capital management, especially inventory and receivable periods, intensifies during recessions.
- **Qazi et al. (2011)** analysed the automotive and oil & gas sectors (2004–2009) and found a positive relationship between working capital elements and profitability. Their model explained nearly 50% of the variation in profitability through working capital variables.

6. RESEARCH METHODOLOGY

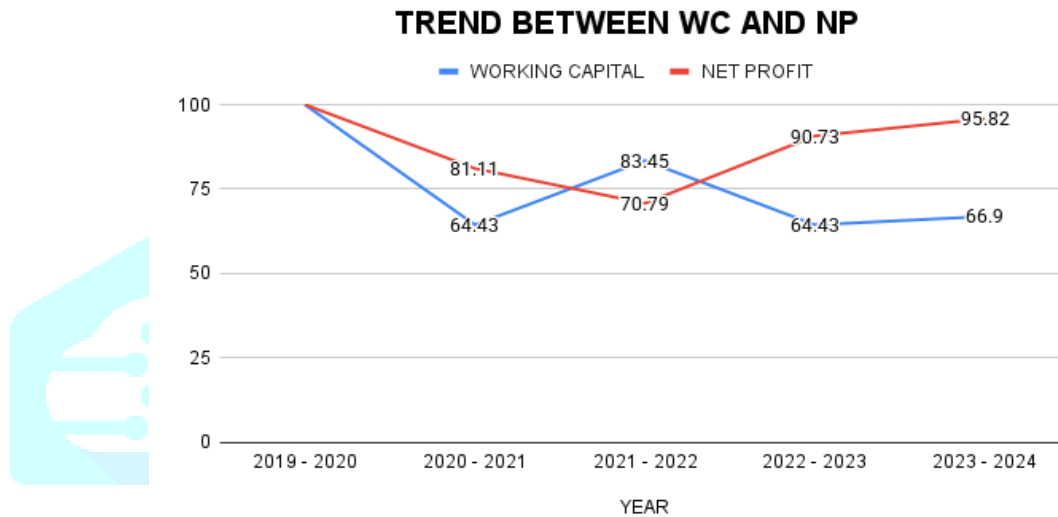
This study adopts an analytical research design, focusing on evaluating the impact of working capital management on profitability using statistical tools and financial ratios. It relies on quantitative data derived from secondary sources, specifically the company's audited financial statements. These include the balance sheet, profit and loss (P&L) statement, and cash flow statement, which provide accurate and comprehensive numerical data required for analysis. The study spans a five-year period from **2019 to 2024**, enabling a detailed assessment of financial trends and performance over time.

Tools used for analysis:

- Financial Ratios
- Cash Conversion Cycle (CCC) Analysis
- Trend Analysis
- Descriptive statistics
- Correlation
- Regression

7. DATA ANALYSIS AND INTERPRETATION

Chart: Trend Analysis of Net Working Capital vs Net Profit (2019–2024)



Inference: Net profit showed a rising trend despite fluctuations in working capital, indicating improved financial efficiency.

Table 1: Descriptive statistics of CCC, RTR, PTR and NPM

	N	Range	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
CCC	5	97.28	100.12	197.4	147.108	16.46239	36.81103
RTR	5	0.78	2.82	3.6	3.272	0.12765	0.28543
PTR	5	1.69	2.93	4.62	3.794	0.31014	0.69349
NPM	5	0.7	2.38	3.08	2.772	0.13128	0.29355
Valid N (list wise)	5						

Table 2: Correlation between RONWC and NPM

Correlations			
		RONWC	NPM
RONWC	Pearson Correlation	1	.767
	Sig. (2-tailed)		.130
	N	5	5
NPM	Pearson Correlation	.767	1
	Sig. (2-tailed)	.130	
	N	5	5

Inference There is a strong positive correlation ($r = 0.767$) between Return on Net Working Capital (RONWC) and Net Profit Margin (NPM)

Table 3: Regression between CCC and NP

Coefficients					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	9.311	2.172		.023
	CCC	-.012	.014	-.429	.471
a. Dependent Variable: NP					

Inference: The regression analysis shows a negative but statistically insignificant relationship between Cash Conversion Cycle (CCC) and Net Profit ($p = 0.471$).

7.SUMMARY OF FINDINGS

1. The company maintained a stable current ratio and improved its cash ratio, but declining quick ratios suggest dependency on inventory. Working capital turnover rose, reflecting better efficiency in revenue generation.
2. Receivables turnover improved slightly, payables turnover showed recovery after a drop, and inventory turnover rebounded in 2023, indicating stronger operational management.
3. Net profit margin, ROE, and RONWC all improved by 2023, demonstrating enhanced profitability and better returns from working capital usage despite fluctuations in asset efficiency (ROA).
4. CCC increased until 2022 but improved significantly in 2023, indicating more effective management of the cash flow cycle through better control of receivables, payables, and inventory.
5. Correlation showed a strong positive link between RONWC and Net Profit Margin, while regression indicated that shorter CCC improves profitability though results lacked statistical significance due to limited data.

8.SUGGESTION

- Improve the quick ratio by increasing liquid assets and reducing reliance on inventory.
- Strengthen credit policies and accelerate collections to improve cash flow and profitability.
- Negotiate longer payment terms with suppliers to enhance liquidity and manage outflows.
- Enforce stricter working capital controls to stabilize and boost profitability.
- Reduce the Cash Conversion Cycle (CCC) through faster receivables, optimized inventory, and delayed payables.

9.CONCLUSION

The study highlights that effective working capital management directly contributes to enhanced profitability. While liquidity ratios remained stable, the low quick ratio indicates a need to improve liquid asset handling. Improvements in profitability metrics and a reduced Cash Conversion Cycle reflect better utilization of resources. Correlation and regression analyses suggest that shorter cash cycles and efficient control over receivables, payables, and inventory can lead to stronger financial outcomes. Overall, optimizing working capital is essential not just for maintaining liquidity but also for driving sustainable profitability and financial efficiency.

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