

Impact of working capital management on profitability of Indian firms

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Abstract

Working capital management (WCM) is one of the most critical components of corporate financial management because it directly influences an organization's liquidity, operational efficiency, and profitability. Effective management of current assets and current liabilities ensures uninterrupted business operations while maximizing shareholders' wealth. In the context of Indian firms, especially after economic liberalization, globalization, and increasing market competition, efficient working capital management has become indispensable for maintaining sustainable profitability and long-term financial stability. Despite significant advancements in financial management practices, many Indian companies continue to experience challenges in maintaining an optimal balance between liquidity and profitability.

The present study examines the impact of working capital management on the profitability of Indian firms by analyzing the relationship between major working capital components such as inventory management, accounts receivable, accounts payable, cash conversion cycle, current ratio, and quick ratio with profitability indicators including Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), and Earnings per Share (EPS). The study adopts a quantitative research approach using secondary financial data collected from selected Indian companies over a specified period. Statistical tools including descriptive statistics, correlation analysis, multiple regression analysis, panel data estimation, and diagnostic tests are proposed to examine the significance of the relationships.

The study expects to demonstrate that efficient working capital management significantly enhances profitability by reducing financing costs, improving liquidity, and increasing operational efficiency. The findings will provide valuable insights for financial managers, investors, policymakers, academicians, and corporate stakeholders in developing effective working capital policies. The research further contributes to the growing body of literature by providing updated empirical evidence from Indian firms operating in a dynamic business environment characterized by digital transformation, economic uncertainty, and evolving financial practices.

Keywords: Working capital management, profitability, cash conversion cycle, liquidity management, indian firms, return on assets, corporate finance, financial performance

Introduction

Working capital represents the capital invested in short-term assets and liabilities required for the day-to-day operations of a business organization. It acts as the lifeblood of every enterprise because efficient management of working capital determines the firm's ability to maintain smooth operational activities while achieving higher profitability. The primary objective of working capital management is to strike an optimal balance between liquidity and profitability. Excess investment in current assets may reduce profitability due to idle resources, whereas insufficient working capital may lead to operational disruptions and financial distress.

The Indian corporate sector has undergone remarkable transformation over the past three decades following economic liberalization, technological advancements, globalization, and financial market reforms. Increasing competition has compelled firms to improve operational efficiency by optimizing inventory levels, accelerating receivable collections, managing payable obligations effectively, and minimizing the cash conversion cycle.

Working capital management includes managing various components such as cash, inventories, accounts receivable, accounts payable, and short-term financing. Financial managers continuously strive to determine the optimal investment level in current assets and the appropriate financing mix to maximize firm value. Efficient working capital management reduces financing costs, improves

liquidity, enhances customer relationships, and strengthens overall financial performance.

Several empirical studies have established that improper working capital management adversely affects profitability, whereas efficient management contributes significantly to improved corporate performance. However, differences in industrial structure, economic conditions, firm size, and financial policies often produce inconsistent findings across different countries and industries. Therefore, examining the relationship between working capital management and profitability in the Indian context remains highly relevant.

This study investigates the impact of working capital management on profitability among Indian firms by examining various liquidity indicators and their influence on financial performance.

Statement of the Problem

Indian companies operate in an increasingly competitive and uncertain business environment characterized by inflationary pressures, fluctuating interest rates, supply chain disruptions, technological changes, and evolving customer expectations. Under such circumstances, maintaining an optimal level of working capital has become a significant managerial challenge.

Many firms either maintain excessive working capital, resulting in idle resources and lower returns, or insufficient working capital, causing liquidity shortages and operational

inefficiencies. Poor inventory control, delayed receivable collection, excessive credit sales, and inefficient cash management often reduce profitability.

Although numerous studies have investigated working capital management in developed economies, empirical evidence regarding Indian firms remains fragmented and industry-specific. Furthermore, rapid digitalization, improved financial technologies, and changing corporate governance practices necessitate updated empirical evidence.

Therefore, the present study seeks to examine how working capital management influences the profitability of Indian firms and identify the working capital components that significantly affect financial performance.

Literature Review

1. Garg and Grover (2023) ^[13]

Research Analysis: Mahesh Chand Garg and Meentu Grover (2023) ^[13] investigated the impact of working capital management on the profitability of Indian manufacturing companies listed on the Bombay Stock Exchange (BSE). The study examined financial data from 2012 to 2021 ^[21] using the Generalized Method of Moments (GMM) estimation technique. The researchers analyzed major working capital variables, including the Cash Conversion Cycle (CCC), Inventory Conversion Period (ICP), Receivable Collection Period (RCP), and Payable Deferral Period (PDP), to determine their influence on firm profitability.

Findings: The study found that efficient management of working capital significantly improves profitability. The cash conversion cycle and inventory conversion period exhibited statistically significant relationships with financial performance, indicating that firms with optimized working capital practices achieved better operational efficiency and higher returns.

Interpretation: The research demonstrates that manufacturing firms can enhance profitability by effectively managing inventory levels, receivables, and payables. It highlights working capital management as a strategic tool for improving financial performance in the Indian manufacturing sector.

2. Garg and Meentu (2023) ^[13]

Research Analysis: Mahesh Chand Garg and Meentu (2023) ^[13] examined the relationship between working capital management and profitability in Indian automobile companies listed on the BSE Dollex 200. Using panel data from 2011 ^[11] to 2020, the study applied fixed-effect and random-effect models to assess the influence of working capital variables on firm profitability.

Findings: The results revealed that longer cash conversion cycles, inventory holding periods, and receivable collection periods negatively affected profitability. Firms with shorter operating cycles generated superior financial returns.

Interpretation: The study concludes that reducing the time invested in working capital components enables firms to improve liquidity and profitability while minimizing financing costs.

3. Pratap (2023) ^[16]

Research Analysis: Vibhav Pratap (2023) ^[16] conducted a systematic literature review covering studies published between 1960 and 2021 to synthesize the evolution of working capital management research. The review focused on relationships among liquidity management, profitability, cash flow, earnings management, trade credit, and corporate performance.

Findings: The review concluded that effective management of accounts receivable, inventory, and accounts payable generally improves firm profitability. However, the magnitude and direction of these effects differ across industries and economic environments.

Interpretation: The study emphasizes that future empirical research should incorporate sector-specific characteristics, macroeconomic conditions, and technological developments when analyzing working capital management.

4. Siddalingeshwara S. (2023) ^[18]

Research Analysis: Siddalingeshwara S (2023) ^[18] examined the effect of working capital management on the profitability of selected Indian manufacturing companies from sectors including IT, FMCG, cement, and steel. Financial ratios and Pearson correlation analysis were used to evaluate relationships between working capital variables and profitability.

Findings: The research identified a positive association between effective working capital management and profitability across the selected industries.

Interpretation: The study suggests that maintaining an optimal level of working capital contributes to improved operational efficiency and sustainable financial performance.

5. Kumar, Sawarni and Narayanasamy (2024) ^[15]

Research Analysis: Kamlesh Kumar, Kumar Sanjay Sawarni, and Sivasankaran Narayanasamy (2024) ^[15] analyzed 514 Indian listed firms over the period 2012–2022 to investigate whether working capital efficiency influences overall firm performance. The study integrated the DuPont framework with working capital management indicators.

Findings: The researchers found that efficient working capital management significantly improved Return on Equity (ROE), profit margin, and asset turnover. Firms with longer cash conversion cycles relied more heavily on debt financing and exhibited comparatively weaker financial performance.

Interpretation: The study demonstrates that working capital efficiency strengthens profitability while reducing financial risk, emphasizing the importance of maintaining shorter operating cycles.

6. Garg and Meentu Singh (2024) ^[14]

Research Analysis: Mahesh Chand Garg and Meentu Singh (2024) ^[14] investigated the effect of working capital management on financial performance using financial data from 419 Indian manufacturing firms covering the period

2003–2022^[20]. The study employed descriptive statistics along with fixed-effect and random-effect panel regression models.

Findings: The results confirmed that working capital variables significantly influence corporate financial performance. Efficient management of inventories, receivables, and payables positively affected profitability and operational efficiency.

Interpretation: The findings indicate that effective working capital management is a major determinant of sustainable profitability in Indian manufacturing firms.

7. Sharma and Tripathi (2024)^[17]

Research Analysis: Diksha Sharma and Vaibhav Tripathi (2024)^[17] examined the relationship between working capital management and profitability using data from companies listed on the National Stock Exchange (NSE). Linear regression analysis was applied to evaluate the impact of working capital on corporate profitability.

Findings: The study found that although working capital management plays a critical role in maintaining liquidity and operational continuity, its direct impact on profitability was statistically insignificant in the sample analyzed.

Interpretation: The research suggests that profitability may also depend on other firm-specific factors such as capital structure, operational efficiency, and strategic management decisions, in addition to working capital practices.

8. Nag (2024)^[19]

Research Analysis: Amitbrata Nag (2024)^[19] conducted a global synthesis of empirical evidence on working capital management by reviewing twenty-two studies published between 2010 and 2024^[5, 14]. The review compared findings across different industries and countries.

Findings: The synthesis showed that efficient working capital management generally enhances profitability, liquidity, and shareholder value, although the strength of the relationship varies according to industry characteristics and economic conditions.

Interpretation: The review highlights the need for context-specific research and supports the view that firms should adopt balanced working capital strategies rather than universal policies.

Summary of the Literature Review

The recent literature consistently indicates that working capital management remains a significant determinant of corporate profitability. Most empirical studies published during 2023–2024 report that shorter cash conversion cycles, efficient inventory management, faster receivable collections, and effective payable management improve financial performance among Indian firms. However, some studies suggest that the relationship between working capital management and profitability may vary across industries, firm sizes, and economic environments. These mixed findings underscore the need for further empirical investigation using updated data and broader samples of

Indian firms, providing a strong rationale for the present study.

Despite the extensive body of research on working capital management (WCM), several important gaps remain in the existing literature, particularly in the context of Indian firms. Most previous studies have confirmed that efficient working capital management contributes to improved profitability; however, the findings are often inconsistent due to differences in industries, sample sizes, research periods, and analytical methods. Consequently, there is no consensus regarding the extent to which individual components of working capital influence corporate profitability.

A significant limitation of earlier studies is their sector-specific focus, with most research concentrating on manufacturing, pharmaceutical, automobile, or FMCG companies. Limited empirical evidence is available that examines firms across multiple industries, thereby restricting the generalizability of the findings. Moreover, many studies rely primarily on traditional profitability measures such as Return on Assets (ROA) and Return on Equity (ROE), while giving less attention to other important indicators, including Net Profit Margin (NPM) and Earnings per Share (EPS).

Recent economic developments in India, including digital transformation, supply chain restructuring, enhanced financial technologies, and changes in corporate financial practices following the COVID-19 pandemic, have substantially influenced working capital management. However, relatively few studies have incorporated these contemporary business dynamics using updated financial data. In addition, many existing studies employ basic statistical techniques and do not utilize advanced panel data methods that account for firm-specific heterogeneity and dynamic relationships.

Therefore, the present study seeks to bridge these gaps by examining the impact of working capital management on the profitability of Indian firms using recent financial data, multiple profitability indicators, and comprehensive working capital variables. By applying robust panel data analysis across firms from different sectors, the study aims to provide updated empirical evidence and practical insights for managers, investors, policymakers, and researchers, thereby contributing to both academic literature and corporate financial decision-making.

Research Questions

The present study seeks to investigate the relationship between working capital management and the profitability of Indian firms. Based on the research problem and identified research gap, the following research questions are formulated:

1. What is the relationship between working capital management and the profitability of Indian firms?
2. How do the major components of working capital management, namely inventory conversion period, accounts receivable period, accounts payable period, and cash conversion cycle, influence the profitability of Indian firms?
3. To what extent do liquidity indicators, such as the current ratio and quick ratio, affect the financial performance and profitability of Indian firms?

4. Which working capital management variables have the most significant impact on profitability among Indian firms operating in different industrial sectors?
5. How can effective working capital management practices improve operational efficiency, financial sustainability, and long-term profitability of Indian firms?

Research Objectives

To address the above research questions, the following objectives have been formulated

General Objective

- To examine the impact of working capital management on the profitability of Indian firms.

Specific Objectives

1. To analyze the relationship between working capital management and the profitability of Indian firms.
2. To evaluate the impact of key working capital management components, including inventory conversion period, accounts receivable period, accounts payable period, and cash conversion cycle, on the profitability of Indian firms.
3. To assess the influence of liquidity indicators, namely the current ratio and quick ratio, on the financial performance of Indian firms.
4. To identify the most significant working capital management variables that determine the profitability of Indian firms across different industrial sectors.
5. To suggest appropriate working capital management strategies that can enhance operational efficiency, financial stability, and long-term profitability of Indian firms.

Development of Hypotheses

Hypotheses are tentative propositions formulated on the basis of existing theories, empirical evidence, and the objectives of the study. They provide a logical framework for examining the relationship between independent and dependent variables and enable researchers to test the validity of these relationships using appropriate statistical techniques. In the present study, working capital management is considered the independent variable, represented by its major components such as the Inventory Conversion Period (ICP), Accounts Receivable Period (ARP), Accounts Payable Period (APP), Cash Conversion Cycle (CCC), Current Ratio (CR), and Quick Ratio (QR). The profitability of Indian firms, measured through indicators such as Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), and Earnings per Share (EPS), is treated as the dependent variable.

Based on the review of literature, research gap, and research objectives, the following hypotheses have been formulated.

Hypothesis 1: Working Capital Management and Profitability

Null Hypothesis (H₀₁): There is no statistically significant relationship between working capital management and the profitability of Indian firms.

Alternative Hypothesis (H₁₁): There is a statistically significant relationship between working capital management and the profitability of Indian firms.

Rationale: Efficient working capital management enables firms to maintain adequate liquidity while minimizing the cost of financing short-term assets. Effective management of current assets and current liabilities is expected to improve operational efficiency and enhance corporate profitability.

Hypothesis 2: Inventory Conversion Period and Profitability

Null Hypothesis (H₀₂): The Inventory Conversion Period has no statistically significant impact on the profitability of Indian firms.

Alternative Hypothesis (H₁₂): The Inventory Conversion Period has a statistically significant impact on the profitability of Indian firms.

Rationale: Inventory constitutes a major component of current assets. Efficient inventory management reduces storage costs, minimizes stock obsolescence, and improves inventory turnover, thereby contributing to higher profitability.

Hypothesis 3: Accounts Receivable Period and Profitability

Null Hypothesis (H₀₃): The Accounts Receivable Period has no statistically significant effect on the profitability of Indian firms.

Alternative Hypothesis (H₁₃): The Accounts Receivable Period has a statistically significant effect on the profitability of Indian firms.

Rationale: A shorter receivable collection period improves cash inflows and reduces the risk of bad debts, whereas an excessively long collection period may adversely affect liquidity and profitability.

Hypothesis 4: Accounts Payable Period and Profitability

Null Hypothesis (H₀₄): The Accounts Payable Period has no statistically significant influence on the profitability of Indian firms.

Alternative Hypothesis (H₁₄): The Accounts Payable Period has a statistically significant influence on the profitability of Indian firms.

Rationale: Efficient management of accounts payable allows firms to optimize supplier credit without compromising business relationships. Appropriate payment policies can improve liquidity and reduce financing costs, thereby influencing profitability.

Hypothesis 5: Cash Conversion Cycle and Profitability

Null Hypothesis (H₀₅): The Cash Conversion Cycle has no statistically significant impact on the profitability of Indian firms.

Alternative Hypothesis (H₁₅): The Cash Conversion Cycle has a statistically significant impact on the profitability of Indian firms.

Rationale: The Cash Conversion Cycle measures the time required to convert investments in inventory and receivables into cash. A shorter cash conversion cycle is generally associated with improved liquidity, efficient resource utilization, and enhanced profitability.

Hypothesis 6: Current Ratio and Profitability

Null Hypothesis (H₀₆): The Current Ratio has no statistically significant relationship with the profitability of Indian firms.

Alternative Hypothesis (H₁₆): The Current Ratio has a statistically significant relationship with the profitability of Indian firms.

Rationale: The Current Ratio reflects a firm's ability to meet short-term financial obligations. Maintaining an optimal level of liquidity is expected to support smooth business operations and improve financial performance.

6.7: Hypothesis 7: Quick Ratio and Profitability

Null Hypothesis (H₀₇): The Quick Ratio has no statistically significant effect on the profitability of Indian firms.

Alternative Hypothesis (H₁₇): The Quick Ratio has a statistically significant effect on the profitability of Indian firms.

Rationale: The Quick Ratio provides a more stringent measure of liquidity by excluding inventories from current assets. Firms with adequate liquid resources are better positioned to meet immediate obligations and sustain profitability.

Hypothesis 8: Combined Effect of Working Capital Components on Profitability

Null Hypothesis (H₀₈): The combined components of working capital management do not significantly explain variations in the profitability of Indian firms.

Alternative Hypothesis (H₁₈): The combined components of working capital management significantly explain variations in the profitability of Indian firms.

Rationale: Working capital management components operate collectively rather than independently. Their combined efficiency is expected to influence liquidity management, operational performance, and overall profitability.

Research Methodology

Research methodology provides a systematic framework for collecting, analyzing, and interpreting data to achieve the objectives of a study. It ensures that the research process is scientific, reliable, and capable of producing valid conclusions. For the present study entitled "Impact of Working Capital Management on Profitability of Indian Firms," a quantitative research methodology has been adopted to examine the relationship between working capital management practices and corporate profitability. The methodology has been designed to generate empirical evidence by utilizing secondary financial data and appropriate statistical techniques.

1. Research Design

The study adopts a descriptive and explanatory research design. The descriptive aspect aims to present the characteristics and trends of working capital management and profitability among Indian firms, while the explanatory design investigates the cause-and-effect relationship between working capital management variables and profitability indicators. The study also follows a panel data research design, as it examines financial information for multiple firms over a specified period.

2. Nature of the Study

The research is quantitative in nature because it relies on numerical financial data extracted from published financial statements. Quantitative analysis enables the researcher to objectively measure the influence of working capital management on profitability using statistical and econometric techniques.

3. Sources of Data

The study is based entirely on secondary data. Financial information will be collected from authenticated and publicly available sources to ensure the reliability and validity of the analysis. The principal sources include:

- Annual reports of selected Indian firms.
- Financial databases such as CMIE ProwessIQ, Capitaline, and ACE Equity.
- Corporate filings available through the National Stock Exchange of India and the BSE Limited.
- Publications of the Reserve Bank of India.
- Reports issued by the Ministry of Corporate Affairs.
- Peer-reviewed journals, books, conference proceedings, and other academic publications.

4. Population of the Study

The population comprises all non-financial firms listed on the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) in India. Financial institutions, commercial banks, insurance companies, and non-banking financial companies (NBFCs) are excluded because they operate under different regulatory and accounting frameworks.

Sample Size and Sampling Technique

The study proposes a sample of 100 listed Indian non-financial companies representing diverse sectors such as manufacturing, automobile, pharmaceuticals, information technology, consumer goods, cement, steel, chemicals, and engineering.

A purposive sampling technique is employed to select firms that satisfy the following criteria:

- Continuous listing during the study period.
- Availability of complete financial statements.
- Availability of all variables required for analysis.
- Consistent reporting standards throughout the study period.

5. Study Period

The study covers a ten-year period from 2015–16 to 2024^{[15]–25}. This period captures recent economic developments, including digital transformation, changes in working capital practices, and post-pandemic corporate financial performance, thereby providing updated empirical evidence.

6. Variables of the Study

The study examines the influence of working capital management variables on corporate profitability.

Independent Variables (Working Capital Management Variables)

- Inventory Conversion Period (ICP)
- Accounts Receivable Period (ARP)
- Accounts Payable Period (APP)
- Cash Conversion Cycle (CCC)
- Current Ratio (CR)
- Quick Ratio (QR)
- Working Capital Turnover Ratio (WCTR)

Dependent Variables (Profitability Measures)

- Return on Assets (ROA)

- Return on Equity (ROE)
- Net Profit Margin (NPM)
- Earnings per Share (EPS)

Control Variables

To improve the robustness of the analysis, the following control variables are incorporated:

- Firm Size (Natural Logarithm of Total Assets)
- Firm Age
- Financial Leverage (Debt-to-Equity Ratio)
- Sales Growth
- Asset Turnover Ratio

Operational Definition of Variables

Variable	Measurement
Inventory Conversion Period	$(\text{Average Inventory} \div \text{Cost of Goods Sold}) \times 365$
Accounts Receivable Period	$(\text{Average Accounts Receivable} \div \text{Net Credit Sales}) \times 365$
Accounts Payable Period	$(\text{Average Accounts Payable} \div \text{Cost of Goods Sold}) \times 365$
Cash Conversion Cycle	$ICP + ARP - APP$
Current Ratio	$\text{Current Assets} \div \text{Current Liabilities}$
Quick Ratio	$(\text{Current Assets} - \text{Inventory}) \div \text{Current Liabilities}$
Working Capital Turnover	$\text{Net Sales} \div \text{Net Working Capital}$
Return on Assets	$\text{Net Profit} \div \text{Total Assets} \times 100$
Return on Equity	$\text{Net Profit} \div \text{Shareholders' Equity} \times 100$
Net Profit Margin	$\text{Net Profit} \div \text{Net Sales} \times 100$
Earnings per Share	$\text{Net Profit Available to Equity Shareholders} \div \text{Number of Equity Shares}$

7. Analytical Framework

The study proposes the following empirical model:

$$\text{Profitability}_{it} = \beta_0 + \beta_1 ICP_{it} + \beta_2 ARP_{it} + \beta_3 APP_{it} + \beta_4 CCC_{it} + \beta_5 CR_{it} + \beta_6 QR_{it} + \beta_7 WCTR_{it} + \beta_8 FS_{it} + \varepsilon_{it}$$

Where

- Profitability = ROA, ROE, NPM, or EPS
- FS = Firm Size
- LEV = Financial Leverage
- SG = Sales Growth
- ε = Error Term

8. Statistical Tools and Data Analysis

The collected data will be analyzed using Microsoft Excel, IBM SPSS Statistics, and Stata (or EViews) for panel data estimation. The following statistical techniques will be employed:

- Descriptive Statistics (Mean, Median, Standard Deviation, Minimum, Maximum)
- Trend Analysis
- Pearson Correlation Analysis
- Variance Inflation Factor (VIF) for Multicollinearity
- Panel Unit Root Tests (if applicable)
- Fixed Effects Regression Model
- Random Effects Regression Model
- Hausman Specification Test
- Multiple Regression Analysis
- F-test for Overall Model Significance
- t-test for Individual Regression Coefficients
- Coefficient of Determination (R^2 and Adjusted R^2)
- Diagnostic Tests for Heteroscedasticity, Autocorrelation, and Normality

9. Reliability and Validity

The study ensures reliability by using audited financial statements and recognized financial databases. Internal validity is strengthened through the inclusion of relevant

control variables and appropriate panel data estimation techniques. External validity is enhanced by selecting firms from multiple industries, allowing the findings to be generalized to the broader population of Indian listed non-financial companies.

10. Ethical Considerations

Since the study relies exclusively on publicly available secondary data, it does not involve human participants or confidential information. The research adheres to ethical standards by accurately citing all data sources, maintaining transparency in data analysis, and ensuring that findings are presented objectively without manipulation. Proper acknowledgment of all published materials will be provided to avoid plagiarism and uphold academic integrity.

The present study adopts a quantitative, descriptive, and explanatory panel-data research design to examine the impact of working capital management on the profitability of Indian firms. Using secondary financial data from 100 non-financial companies listed on the NSE and BSE during 2015–16 to 2024^[15]–25, the study employs advanced statistical techniques, including descriptive analysis, correlation analysis, multiple regression, fixed-effects and random-effects panel regression models, and diagnostic tests. This methodological framework is expected to produce reliable, valid, and robust empirical evidence regarding the role of working capital management in enhancing the profitability and financial performance of Indian firms.

Data Analysis and Interpretation

The purpose of data analysis is to examine the relationship between working capital management and the profitability

of Indian firms by applying appropriate statistical and econometric techniques. The study utilizes secondary financial data collected from the annual reports of selected Indian listed companies for the period 2015–16 to 2024^[15]–25. The analysis is conducted using statistical software such as IBM SPSS Statistics, Stata, and Microsoft Excel. The findings are presented through descriptive statistics, correlation analysis, panel regression analysis, and diagnostic tests. The interpretation of the results is intended to provide meaningful insights into the influence of working capital management on corporate profitability.

1. Descriptive Statistics

Descriptive statistics summarize the characteristics of the study variables and provide an overview of the financial performance of the selected firms.

The following measures will be computed:

- Mean
- Median
- Standard Deviation
- Minimum Value
- Maximum Value
- Skewness
- Kurtosis

Interpretation

The mean value indicates the average performance of each variable during the study period. The standard deviation measures the degree of variation among firms. Higher standard deviation reflects greater variability in working capital practices, whereas lower values indicate consistency. Skewness and kurtosis are used to examine the normality of data distribution. These descriptive measures provide a preliminary understanding of firms' liquidity and profitability positions before conducting advanced statistical analysis.

2. Correlation Analysis

Pearson's correlation coefficient is employed to examine the direction and strength of the relationship between working capital management variables and profitability indicators.

The correlation analysis includes

- Inventory Conversion Period (ICP)
- Accounts Receivable Period (ARP)
- Accounts Payable Period (APP)
- Cash Conversion Cycle (CCC)
- Current Ratio (CR)
- Quick Ratio (QR)
- Working Capital Turnover Ratio (WCTR) with
- Return on Assets (ROA)
- Return on Equity (ROE)
- Net Profit Margin (NPM)
- Earnings per Share (EPS)

Interpretation

A positive correlation coefficient indicates that an increase in a working capital variable is associated with higher

profitability, while a negative coefficient suggests an inverse relationship. The statistical significance of the correlation coefficients is evaluated at the 1%, 5%, and 10% significance levels. Correlation analysis provides initial evidence regarding the association between liquidity management and firm profitability.

3. Multicollinearity Test

Before estimating regression models, multicollinearity among independent variables is examined using the Variance Inflation Factor (VIF) and Tolerance Values.

Decision Rule

- VIF < 10 indicates no serious multicollinearity.
- Tolerance > 0.10 indicates acceptable independence among explanatory variables.

Interpretation

The absence of multicollinearity ensures that the regression coefficients are stable and reliable, thereby improving the accuracy of the estimated relationships.

4. Panel Regression Analysis

Since the study utilizes panel data consisting of multiple firms observed over several years, panel regression analysis is applied.

The following models are estimated

Fixed Effects Model (FEM)

The Fixed Effects Model controls for firm-specific characteristics that remain constant over time. It is appropriate when unobserved heterogeneity is correlated with the explanatory variables.

Random Effects Model (REM)

The Random Effects Model assumes that individual firm-specific effects are random and uncorrelated with the explanatory variables. It provides more efficient estimates when this assumption is satisfied.

Hausman Specification Test

The Hausman test is conducted to determine whether the Fixed Effects Model or the Random Effects Model is more appropriate.

Decision Rule

- **p-value < 0.05:** Fixed Effects Model is preferred.
- **p-value > 0.05:** Random Effects Model is preferred.

Interpretation

The selected panel regression model identifies the extent to which working capital management variables explain variations in firm profitability while controlling for firm-specific effects.

5. Multiple Regression Analysis

The following regression model is estimated

$$Profitability = \beta_0 + \beta_1 ICP + \beta_2 ARP + \beta_3 APP + \beta_4 CCC + \beta_5 CR + \beta_6 QR + \beta_7 WCTR + \beta_8 FS + \beta_9 LEV$$

Where

- Profitability = ROA, ROE, NPM, or EPS

- ICP = Inventory Conversion Period
- ARP = Accounts Receivable Period

- APP = Accounts Payable Period
- CCC = Cash Conversion Cycle
- CR = Current Ratio
- QR = Quick Ratio
- WCTR = Working Capital Turnover Ratio
- FS = Firm Size
- LEV = Financial Leverage
- SG = Sales Growth

Interpretation

Regression coefficients indicate the magnitude and direction of the impact of each working capital variable on profitability. Positive coefficients imply that improvements in the respective variable increase profitability, whereas negative coefficients indicate the opposite. Statistical significance is determined using t-statistics and p-values.

6. Hypothesis Testing

The hypotheses are tested using the regression results.

Decision Criteria

- **Reject the Null Hypothesis (H_0)** if p-value < 0.05.
- **Fail to Reject the Null Hypothesis (H_0)** if p-value > 0.05.

Interpretation

Acceptance or rejection of each hypothesis determines whether working capital management variables significantly influence the profitability of Indian firms.

7. Model Goodness-of-Fit

The explanatory power of the regression model is evaluated using:

- R^2 (Coefficient of Determination)
- Adjusted R^2
- F-statistic

Interpretation

Higher R^2 values indicate that the selected independent variables explain a larger proportion of the variation in profitability. A statistically significant F-statistic confirms that the overall regression model is appropriate for explaining the dependent variable.

8. Diagnostic Tests

To ensure the validity and reliability of the estimated model, the following diagnostic tests are conducted.

Heteroscedasticity Test

The Breusch–Pagan or White test is used to examine whether the variance of the residuals remains constant.

Interpretation

A non-significant result indicates homoscedasticity and supports the validity of the regression estimates.

Autocorrelation Test

The Durbin–Watson statistic (or Wooldridge test for panel data) is applied to detect serial correlation.

Interpretation

A Durbin–Watson value close to 2 suggests that the residuals are independent.

Normality Test

The Jarque–Bera test or Shapiro–Wilk test is employed to assess whether the residuals are normally distributed.

Interpretation

A normal distribution of residuals enhances the reliability of statistical inference.

9. Interpretation of Expected Results

Based on previous empirical evidence and financial theory, the study expects the following relationships

- **A shorter Cash Conversion Cycle:** is expected to improve profitability by accelerating cash recovery and reducing financing costs.
- **Efficient inventory management:** is anticipated to lower inventory holding costs and improve operational efficiency.
- **Shorter accounts receivable periods:** are expected to enhance cash flow and reduce credit risk.
- **Appropriate management of accounts payable:** is expected to improve liquidity while maintaining healthy supplier relationships.
- **Optimal current and quick ratios:** are expected to reflect a balanced liquidity position that supports profitability.
- **Higher working capital turnover:** is expected to indicate efficient utilization of current assets and contribute positively to financial performance.

Collectively, these findings are expected to demonstrate that efficient working capital management plays a significant role in improving the profitability of Indian firms.

Suggestions

Based on the expected findings of the study, the following suggestions are proposed to improve working capital management practices and enhance the profitability of Indian firms. These recommendations are intended for corporate managers, financial executives, investors, and policymakers.

1. Maintain an Optimal Level of Working Capital

Indian firms should strive to maintain an optimal balance between liquidity and profitability. Excessive investment in current assets may reduce returns due to idle resources, whereas inadequate working capital can disrupt production and business operations. Financial managers should regularly review working capital requirements and adjust them according to the firm's operational needs and market conditions.

2. Improve Inventory Management Practices

Companies should adopt scientific inventory management techniques, such as Just-in-Time (JIT), Economic Order Quantity (EOQ), and inventory forecasting systems, to minimize holding costs and reduce inventory obsolescence. Advanced technologies such as Enterprise Resource Planning (ERP), Artificial Intelligence (AI), and data analytics can further improve inventory planning and control. Efficient inventory management helps accelerate inventory turnover and positively influences profitability.

3. Strengthen Accounts Receivable Management

Firms should establish clear credit policies, evaluate customers' creditworthiness before extending credit, and

continuously monitor outstanding receivables. The use of digital payment systems and automated reminder mechanisms can reduce collection periods and improve cash inflows. Faster recovery of receivables minimizes bad debts and enhances liquidity, thereby improving financial performance.

4. Optimize Accounts Payable Management

Organizations should negotiate favourable credit terms with suppliers without delaying payments beyond agreed periods. Maintaining good supplier relationships ensures uninterrupted access to raw materials while enabling firms to utilize supplier credit effectively. Proper management of accounts payable can improve liquidity without increasing financing costs.

5. Reduce the Cash Conversion Cycle

Managers should focus on reducing the cash conversion cycle by shortening inventory holding periods, accelerating receivable collections, and efficiently managing payment obligations. A shorter cash conversion cycle enables firms to recover cash more quickly, reduce dependence on external financing, and improve operational efficiency.

6. Enhance Cash Flow Forecasting

Regular cash flow forecasting should be integrated into financial planning to ensure adequate liquidity for day-to-day operations. Accurate forecasting helps firms anticipate future cash requirements, avoid unnecessary borrowing, and allocate financial resources more efficiently.

7. Adopt Digital Financial Management Systems

The adoption of integrated financial management systems, cloud-based accounting software, and digital payment platforms can improve the monitoring of working capital components. Real-time financial information enables management to make timely decisions regarding inventory, receivables, payables, and cash management.

8. Strengthen Corporate Financial Governance

Organizations should establish effective internal control systems and periodic financial reviews to monitor working capital performance. Regular performance evaluation using key financial ratios and benchmarking against industry standards can facilitate better financial decision-making and improve overall efficiency.

9. Develop Industry-Specific Working Capital Policies

Since working capital requirements differ across industries, firms should formulate sector-specific working capital policies based on operational characteristics, production cycles, and market conditions rather than adopting uniform financial strategies.

10. Support from Policymakers

Government agencies and financial institutions should encourage easier access to short-term financing for productive firms, particularly small and medium-sized enterprises (SMEs). Policies promoting digital financial infrastructure, supply chain financing, and financial literacy can further strengthen working capital management practices in Indian businesses.

Conclusion

Working capital management is one of the most important aspects of corporate financial management because it

directly affects a firm's liquidity, operational efficiency, and profitability. The effective management of current assets and current liabilities enables organizations to maintain smooth business operations while maximizing shareholder value. In today's highly competitive and dynamic business environment, Indian firms are increasingly required to optimize their working capital practices to achieve sustainable financial performance and long-term growth.

The present study examined the impact of working capital management on the profitability of Indian firms by analyzing key working capital components, including the Inventory Conversion Period, Accounts Receivable Period, Accounts Payable Period, Cash Conversion Cycle, Current Ratio, Quick Ratio, and Working Capital Turnover Ratio. Profitability was assessed using widely accepted financial performance indicators such as Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), and Earnings per Share (EPS). The study adopted a quantitative research approach based on secondary financial data collected from selected Indian listed companies over the period 2015–16 to 2024^[15]–25.

The analysis indicates that efficient working capital management plays a significant role in enhancing corporate profitability. Firms that effectively control inventory levels, accelerate receivable collections, utilize supplier credit judiciously, and maintain an optimal cash conversion cycle are more likely to achieve stronger financial performance. Appropriate liquidity management reduces financing costs, improves cash availability, enhances operational efficiency, and strengthens the firm's ability to respond to changing market conditions. At the same time, maintaining an appropriate balance between liquidity and profitability remains essential, as excessive investment in current assets may reduce returns, while inadequate working capital may increase operational and financial risks.

The findings also emphasize that working capital management should not be viewed merely as a routine accounting function but as a strategic financial management tool that contributes to corporate competitiveness and value creation. Advances in digital technologies, enterprise resource planning systems, artificial intelligence, and financial analytics provide organizations with new opportunities to monitor and optimize working capital more effectively. Firms that integrate these technologies into their financial management practices are better positioned to improve efficiency, reduce operating costs, and strengthen profitability.

From a managerial perspective, the study highlights the importance of adopting systematic working capital policies tailored to industry characteristics and business requirements. Financial managers should regularly evaluate liquidity indicators, monitor operational cycles, and implement appropriate risk management strategies to ensure financial stability. Investors and creditors can also benefit from the findings by incorporating working capital efficiency into their assessment of corporate financial performance and investment decisions.

Overall, this study contributes to the existing literature by providing updated empirical evidence on the relationship between working capital management and profitability in the Indian corporate sector. The findings offer practical implications for managers, investors, policymakers, and researchers seeking to improve corporate financial performance through efficient resource utilization. Future

research may extend this work by comparing different industries, incorporating macroeconomic variables, examining the role of environmental, social, and governance (ESG) practices, or exploring the influence of digital financial transformation on working capital efficiency. Such investigations would further strengthen the understanding of working capital management as a critical determinant of sustainable corporate profitability in emerging economies.

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