

Strategic Financial Management and Firm Profitability: Evidence from Working Capital Practices in Indian Manufacturing

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Article

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Abstract

This paper focuses on how the working capital management (WCM) affects the profitability of firms of the leading Indian manufacturing sectors, and, in particular, on the heterogeneity in the industry. The research uses Hausman specification test-selected fixed- and random-effects model using ten years of panel data (2016–2025) of listed companies in the automobile sector, FMCGs, health, and capital goods sectors. ROA, ROE and asset turnover ratio are used to measure profitability and receivables efficiency, liquidity and collection periods are used to measure WCM. The results show that WCM has a strong impact on profitability, but the extent and direction depend on various industries, and it would be necessary to implement industry-specific working capital solutions instead of generic policies.

1. Introduction

Efficient working capital management is a decisive factor of the financial performance of the corporations especially in capital-intensive manufacturing business where liquidity constraints can severely hamper the continuity of operations and strategic expansion (Panigrahi, 2025a, 2025b). Manufacturing businesses usually have long operating cycles, high levels of inventory, and long credit cycles, so working capital decisions are important for liquidity, profitability, and continuity of operations. Consequently, a failure to manage aspects of working capital such as accounts receivable and inventories and manage short-term liquidity can erode performance of the firm even in otherwise profitable enterprises.

Although it is popularly agreed that liquidity management is an essential issue, the empirical research on whether the relationship between working capital efficiency and profitability is broad or narrow in size and direction is confined to various industrial settings (Dash et al., 2023; Sharma and Tripathi, 2024). An example is that although the cash conversion cycle and profitability have often been found to be negatively correlated (Arulanandam et al., 2023), new studies have also indicated the relationship between these two as having an inverted U-shaped pattern, meaning there is an optimal amount of working capital investment (Dash et al., 2023). This non-linear dynamic implies that, although proper liquidity may ensure the stability of operations, over-investments in current assets may ruin the profitability because of higher carrying costs and opportunity costs on immobilized funds (Dash et al., 2023; Gupta et al., 2023). That is why, it is necessary to determine the exact trade-off between the liquidity risk and the current assets return to maximize the shareholder value in the Indian manufacturing environment (Bagchi et al., 2012; Rahman, 2022).

Prior empirical research has investigated the link between working capital management and firm profitability extensively, and most of them have documented the positive effects of efficient working capital practices on firm performance (Deloof, 2003; Afrifa, 2016; Le, 2018). However, the literature that does exist has two important limitations. First, in many studies, manufacturing firms are considered as a homogenous group in which it is implicitly assumed that the dynamics of working capital are invariant to industry (Habib & Mourad, 2022). In fact, manufacturing sub-sectors vary widely in terms of production technology, inventory intensity, credit policies and demand volatility (Masadeh et al., 2018). These differences suggest that the profitability effects of working capital components may differ in a systematic way across industries. Second, although evidence from developed economies is plentiful, the emerging market context, which features financial frictions, institutional constraints and market imperfections, is not explored to the same extent (Kiymaz et al., 2024).

India is an ideal place to study these issues. As one of the most significant manufacturing economies in the emerging markets, Indian firms have to operate under heterogeneous industry conditions, with varying degrees of financial sophistication and capital market structures. Understanding the role of working capital management in the profitability of various manufacturing industries in India is therefore of academic and managerial interest. Industry-specific evidence could be used to guide more nuanced financial policies, instead of prescriptions for all.

Against this backdrop, the present study focuses on the impact of components of working capital management on the firm's profitability across major manufacturing industries of India, viz., automobile, FMCG, healthcare, and capital goods. Using firm level panel data and also fixed and random effect models, which are based on Hausman specification tests, this research tests the impact of key working capital indicators (working capital turnover, accounts receivable turnover, current

ratio, average collection period) on profitability (return on assets [ROA], return on equity [ROE], and asset turnover ratio [ATR]) (Panigrahi, 2025).

This study has several contributions to the literature. First, it offers a full-spectrum, industry-level evidence on the relationship between working capital and profits, in the manufacturing sector, and moving away from aggregate evidence that hides intra-sectoral variation. Second, in targeting an emerging economy, the study adds to the limited empirical evidence on optimal working capital practices within conditions of financial constraints and institutional heterogeneity. Third, the use of multiple measures of profitability permits a more robust assessment of implications of firm performance as a result of working capital decisions.

The rest of the paper is organized as follows. Section 2 is a review of the relevant literature and the development of the hypotheses for the research. Section 3 presents the data, variables and econometric methodology. Section 4 introduces and discusses the empirical results. Section 5 concludes with managerial implications, policy insights and directions for future research.

2. Review of Literature and Hypothesis Formulation

2.1 Working Capital Management and the Profitability of a Firm

Working capital management is defined as management of short-term assets and liabilities to have sufficient liquidity and at the same time, to maintain operational efficiency. Theoretical views on working capital focus on the concept of liquidity versus profitability. Conservative working capital policies increase liquidity at the expense of returns to the extent that it may be too much of investment in current assets that yield low returns whereas aggressive working capital policies increase profitability at the danger of becoming liquidity short of cash (Nazir & Afza, 2009).

Empirical research is largely consistent with the view that efficient working capital management improves firm performance. Deloof (2003), on the other hand, finds that shorter periods of receivables and inventory are associated with higher profitability, implying that there is benefit to firms from reducing capital tied up in working capital. Similarly, Afrifa (2016) documents to have significant relationship between net working capital and profitability among small and medium enterprises, showing the need for optimal levels of working capital. Le (2018) further show that extreme levels of net working capital have a negative impact on the valuation of firms and their profitability, implying that there is an optimal level of working capital. Other authors also have established that working capital efficiency can impact the performance of firms due to liquidity constraints, financing costs, and operational flexibility, which other researchers in emerging and developed markets have confirmed before (Abuzayed, 2012; Filbeck & Krueger, 2005; Pais and Gama, 2015).

Studies focused on particular aspects of working capital also have mixed but informative results. Accounts receivable management has been shown to have a role in profitability in terms of cash flows and credit risk (Pais & Gama, 2015). Inventory management is an important aspect in manufacturing companies because too much inventory leads to higher holding costs and too little inventory lead to production disruptions (Zhou et al., 2025). Liquidity measures such as current ratio have been associated with firm performance, although highly high liquidity could be an indication of inefficient resource utilization (Paule-Vianez et al., 2019).

Despite this growing body of evidence, the direction and magnitude of these relationships vary across studies which seems to suggest that the context and industry-specific factors play an important role.

2.2 Heterogeneity of Industry in Manufacturing Firms

Manufacturing firms are not homogeneous as far as their working capital requirements are concerned. Differences in production cycles, demand patterns, inventory intensity and supplier relationships suggest that optimal working capital structures differ across industries (Chang et al., 2025). For instance, automobile and capital goods companies generally have longer operating cycles and higher inventory investments whereas FMCG companies use faster inventory turnover and

shorter receivables cycles (Talreja et al., 2018). The sector-specific and country-based research evidence further shows that optimal working capital structures vary in industries based on inventory intensity, available financing sources, and the volatility of demand (Korent & Orsag, 2018; Karim, 2017).

Empirical studies recognizing industry heterogeneity are still few. Yang et al. (2014) show that strategic choices have an effect on working capital configurations and how they affect their operational performance. Shroff (2022) identifies working capital policies in the Indian steel industry across industries, which shows that there can be deviations in liquidity patterns and asset structures and further prove that firm level determinants of working capital vary by industries, supporting the reason for industry sensitive analysis.

These findings indicate that the aggregation of manufacturing firms into one category may mask important differences in the working capital-profitability relationship. Consequently, industry-level analysis is needed in order to derive more exact managerial and policy implications.

2.3 Emerging Economies Evidence

Emerging markets have some unique institutional and financial characteristics, which influence working capital decisions. Limited availability of external finance, higher cost of borrowing and weaker enforcement mechanism often force the firms to highly rely on internal liquidity. Studies conducted in emerging economies, such as India, Ghana, and Pakistan, suggest that working capital management is especially important in firm performance under such conditions (Akomeah, 2019; Tahir & Anuar, 2015). Also, similar results are found among companies that work within the financial limitations in Africa and Asia, where the working capital policies have a massive impact on the profitability and survival chances (James Sunday, 2011; Mekonnen, 2021; Obafemi, 2021).

However, much of the extant emerging market literature focuses either on industry or uses aggregate samples with no look at variation across industries. As a result, evidence on the impact of working capital practices in relation to profitability in different manufacturing industries is fragmented.

2.4 Hypothesis Development

Based on theoretical arguments and empirical evidence presented above, the following hypotheses are proposed in this study:

H1

Working capital management components have a significant effect on profitability of manufacturing firms.

H2

Working capital management components have varying effects on the profitability of the different manufacturing industries.

These hypotheses make it possible to comprehensively review the total and industry-specific effect of working capital management on the performance of the company.

3. Research Methodology

3.1 Data and Sample Selection

The study is grounded on a panel data set of Indian manufacturing firms that are listed on the Indian stock exchanges. The manufacturing industry was selected because of the intensive use of working capital, especially the management of inventories, receivables and liquidity in the short term (Chalmers et al., 2020). The working capital dynamics that were investigated with the help of firm-level panel data are aligned with earlier research that investigated export-oriented and capital-intensive manufacturing companies (Seth et al., 2020; Nadeem and Waris, 2020). Ten years data from 2016 to 2025

was collected from firms that belong to four major manufacturing industries, namely automobile, fast moving consumer goods (FMCG), healthcare, and capital goods industries to reflect the heterogeneity in working capital structures at the industry level (Bhattacharyay, 2023).

Manufacturing Sector (46 Manufacturing Companies from Nifty 200):

- Automobile and Auto-components (12 Companies)
- FMCG (14 Companies)
- Healthcare (10 Companies)
- Capital Goods (10 Companies)

Firm-level financial information was taken from published annual financial statements. Companies that did not have complete financial information during the study period were removed in order to be consistent in terms of estimating the panel estimation. The last sample forms a balanced panel, which permits strong econometrics without numerous biases surrounding survivors and reporting.

3.2 Variable Measurement

3.2.1 Dependent Variables

Firm profitability is measured with the help of 3 commonly used indicators which are used to capture various dimensions of performance namely:

- **Return on Assets (ROA):** Is a measure of how efficiently firms are using total assets to generate earnings.
- **Return on Equity (ROE):** Represents profitability that is oriented to shareholders.
- **Asset Turnover Ratio (ATR):** Indicates the efficiency of operations and the efficiency of asset use.

Use of multiple profitability measures builds in robustness and addresses the issues of bias when using a single performance indicator (Myskova & Hajek, 2017).

3.2.2 Independent Variables

Working capital management is proxied by key components that are commonly employed in previous literature:

- **Working Capital Turnover Ratio:** Shows how effectively the working capital is used to produce sales.
- **Accounts Receivable Turnover Ratio:** The turnover ratio reflects the extent of credit management and collection of accounts receivables.
- **Current Ratio:** Is a measure of short-term liquidity and the firm's ability to meet current obligations.
- **Average Collection Period:** Indicates the average collection period required for receiving accounts receivable whereby a higher period may limit the liquidity.

These measures together represent liquidity, efficiency and credit management aspects of working capital (Smith & Begemann, 1997).

3.2.3 Control Variables

In line with previous research (Tiffany & Sufiyati, 2023), the analysis takes into account firm-specific traits that can affect firm profitability:

- **Firm Size:** Through the logarithm of total assets.
- **Leverage:** Proxied by the debt to equity ratio.
- **Firm Age:** Included to control for the effects of lifecycle.

- **Liquidity:** Additional liquidity controls are introduced where appropriate using Quick ratio

3.3 Econometric Specification

To investigate on the relationship between working capital management and profitability, the following baseline panel model regression is estimated:

$$Profitability_{it} = \alpha + \beta WCM_{it} + \gamma Controls_{it} + \mu_i + \epsilon_{it}$$

where i denotes firms and t denotes time. WCM represents the vector of working capital variables, and μ_i captures unobserved firm-specific effects (Nazir & Afza, 2009).

Fixed effects and random effects models are both estimated (Setianto and Pratiwi, 2019). The Hausman specification test is used in order to decide which model to use for which industry and measure of profitability. This way, the unobserved heterogeneity is taken account of and the bias due to omitted firm specific factors is reduced.

4. Empirical Findings and Discussion

4.1 Descriptive Statistics and Correlation Analysis

Descriptive statistics indicate a large disparity in working capital policies among manufacturing industries, which supports the premise that manufacturing firms are not homogeneous in their structure of liquidity and efficiency. Correlation analysis shows that, although there are relationships between some of the working capital variables and profitability, the direction of and the magnitude of these relationships vary for different industries, implying the importance of using industry-specific regression analysis. The regression outcomes of the FMCG industry show that the working capital turnover ratio has a positive and significant impact on ROA, which shows the importance of the fast turnover of inventory in this high-volume industry (Qurashi, 2017). On the other hand, the auto industry shows that effective credit management and maintenance of liquidity is of utmost importance as reflected in the positive and significant correlation between the accounts receivable turnover, current ratio, and return on assets (Ali, 2011).

4.2 Regression Results: Working Capital and ROA

The regression findings show that the working capital management and firm profitability (ROA) are strongly industry-specific relationship. The relationship between the ROA and the accounts receivable turnover and the current ratio is a positive and statistically significant relationship in the automobile industry, whereas the average period of collection has a significant negative impact (Daruwala and Mansour, 2025). This implies that effective credit control and sufficient liquidity increase asset level profitability in automobile firms that require a lot of capital. The results of the panel regression (fixed-effects) of the effects that working capital components have on the ROA in the four manufacturing industries are shown in Table 1.

Table 1
Impact of Working capital on ROA of Manufacturing Sector

Variable	Automobile Segment Companies	FMCG Segment Companies	Healthcare Segment Companies	Capital Goods Segment
Model	Fixed effects	Fixed effects	Fixed effects	Fixed effects
R Square	59.6%	39.23%	85.94%	33.31%
Control_Variable_1_Log_Total_Asset	0.0002 (0.9966)	-0.3270 (0.00)*	0.0404 (0.0053)*	0.0551 (0.0038)*
Control_Variable_2_Quick_Ratio	-0.1277 (0.0023)*	0.0633 (0.2078)	0.0279 (0.0125)*	0.0224 (0.0921)
Control_Variable_3_Debt_to_Equity_Ratio	-0.0175 (0.0036)*	-0.0048 (0.0097)*	-0.0002 (0.9633)	-0.0166 (0.1396)
Control_Variable_4_Firm_Age	-0.0051 (0.0644)	0.0140 (0.00)*	-0.0099 (0.00)*	-0.0065 (0.00)*
Independent_Variable_1_Working_Capital_Turnover_Ratio	6.97E-05 (0.5659)*	0.0001 (0.3509)	-4.67E-05 (0.9301)	-0.002 (0.0191)*
Independent_Variable_2_Account_Receivable_Turnover_Ratio	0.0009 (0.00)*	0.0002 (0.7718)	0.0011 (0.4682)	0.0022 (0.134)*
Independent_Variable_3_Current_Ratio	0.1484 (0.00)*	-0.0622 (0.1606)	-0.0288 (0.0022)*	-0.0267 (0.0654)
Independent_Variable_4_Average_Collection_Period	-0.0014 (0.0303)*	4.76E-05 (0.9400)	-9.93E-06 (0.9361)	-8.38E-05 (0.3071)
* Significant at 0.05 level				
Source: Author's Findings				

Conversely, FMCG companies exhibit very insignificant correlations of working capital elements with ROA, and yet, the firm-specific factors like size, leverage and age are important drivers of profitability. This means that scale and strength of brands and stable demand conditions are the drivers of profitability in the FMCG firms, as opposed to working capital efficiency in the short run.

In the case of healthcare firms, the negative but large coefficient of the current ratio indicates that the excess liquidity can lead to profitability suppression rather than the operating rigidity in older firms as shown by the presence of negative but constant coefficient of the age of the firm.

Working capital turnover in the capital goods industry has a high negative correlation with ROA suggesting that intense use of working capital might not be consistent with long production period and project-based operation.

All in all, the results will furnish a strong evidence that profitability implications of working capital management vary significantly across industries. The different coefficients of industries imply that the industry affiliation has a strong moderating effect on working capital efficiency to financial performance, which also aligns with the past studies such as the one by Vo and Ngo (2023) and Yazdanfar and Ohman (2014).

4.3 Regression Result Working Capital & ROE

The ROE findings are very general in support of the ROA findings and some supplementary findings are obtained through shareholder-return lens. Accounts receivable turnover and current ratio has a positive and statistically significant effect on ROE in automobile companies meaning that effective receivables management and sufficient liquidity have a positive impact on equity returns. The quick ratio however shows the opposite and this is the negative effect indicating that there may be inefficiencies conjoined with surplus short term liquidity. The regression estimates, which investigate the relationship between working capital variables and ROE across industries are reported in Table 2.

Table 2
Impact of Working capital on ROE of Manufacturing Sector

Variable	Automobile Segment Companies	FMCG Segment Companies	Healthcare Segment Companies	Capital Goods Segment
Model	Fixed effect	Fixed effect	Random Effect	Fixed effect
R Square	58.69%	24.49%	91.63%	83.52%
Control_Variable_1_Log_Total_Asset	0.29 (0.0058)*	-0.2298 (0.0208)*	0.0428 (0.00)*	0.0048 (0.5332)
Control_Variable_2_Quick_Ratio	-0.1538 (0.05)*	-0.0732 (0.1689)	-0.0036 (0.3724)	0.001 (0.8679)
Control_Variable_3_Debt_to_Equity_Ratio	-0.0555 (0.00)*	0.0055 (0.1711)	-0.0004 (0.9265)	-0.0073 (0.152)
Control_Variable_4_Firm_Age	-0.0313 (0.00)*	0.0075 (0.1622)	0.0012 (0.0001)*	-0.0083 (0.00)*
Independent_Variable_1_Working_Capital_Turnover_Ratio	0.0000366 (0.875)	-0.0024 (0.3166)	-0.0102 (0.00)*	-0.0006645 (0.8734)
Independent_Variable_2_Account_Receivable_Turnover_Ratio	0.0009 (0.0188)*	-0.0143 (0.0001)*	0.0022 (0.0406)*	-0.0002 (0.748)
Independent_Variable_3_Current_Ratio	0.1679 (0.013)*	-0.0678 (0.3317)	-0.0086 (0.1542)	-0.0024 (0.7165)
Independent_Variable_4_Average_Collection_Period	-3.00E-04 (0.8173)	-1.00E-02 (0.0022)*	3.00E-04 (0.1646)	1.32E-05 (0.7332)
* Significant at 0.05 level				
Source: Author's Findings				

The collection period and turnover of receivables are strongly negatively associated with ROE in the FMCG industry, thus indicating that a delay in recovering the receivables has a negative influence on the shareholder returns even though the operating cycles have been fairly stable.

The situation with healthcare firms is a bit more varied: on one hand, receivables turnover has a positive impact on ROE; on the other hand, working capital turnover has a negative impact that is considerably high, and it can be explained by complex

liquidity needs and regulations imposed on the industry.

The working capital variables are mostly insignificant in capital goods firms but the firm age has a strong negative effect on the ROE, implying decreasing equity efficiency as the firm age increases.

By and large, the results have shown that the shareholder value consequences of working capital management will differ significantly in the different industries.

4.4 Regression Result: Working Capital and Asset Turnover

The outcomes of the ATR show the impact of working capital management on the efficiency of operations in different industries. In the auto companies, working capital turnover is positively related with the asset utilization but the tighter control of the receivables in terms of high receivables turnover and short collection periods is related with lower asset turnover. This implies that excessive conservative credit regimes can interfere with sales periods in manufacturing which is capital intensive. Table 3 has presented an overview of the findings of the regression on the asset turnover ratio (ATR), which represents the implication of operational efficiency of working capital management across industries.

Table 3
Impact of Working capital on ATR of Manufacturing Sector

Variable	Automobile Segment Companies	FMCG Segment Companies	Healthcare Segment Companies	Capital Goods Segment
Model	Fixed effect	Fixed effect	Fixed effect	Fixed effect
R Square	81.73%	72.07%	69.18%	45.60%
Control_Variable_1_Log_Total_Asset	-1.3711 (0.00)*	-2.0987 (0.00)*	-0.9948 (0.00)*	-0.0808 (0.359)
Control_Variable_2_Quick_Ratio	-0.3671 (0.0457)*	-0.4029 (0.00)*	-0.1243 (0.0007)*	-0.0069 (0.9197)
Control_Variable_3_Debt_to_Equity_Ratio	0.0015 (0.953)	-0.025 (0.0001)*	0.0232 (0.5204)	-0.0884 (0.1325)
Control_Variable_4_Firm_Age	-0.0018 (0.8854)	0.0515 (0.00)*	0.0385 (0.00)*	-0.0243 (0.0011)*
Independent_Variable_1_Working_Capital_Turnover_Ratio	0.0011 (0.0458)*	-0.0002 (0.9536)	0.0058 (0.2604)	0.0082 (0.0877)
Independent_Variable_2_Account_Receivable_Turnover_Ratio	-0.0025 (0.0047)*	-0.0056 (0.3297)	0.0087 (0.3957)	0.0101 (0.1537)
Independent_Variable_3_Current_Ratio	0.2718 (0.08)	0.2426 (0.0284)*	0.1598 (0.0253)*	-0.1639 (0.0337)
Independent_Variable_4_Average_Collection_Period	-1.13E-02 (0.0001)*	-6.80E-03 (0.1754)	-1.00E-04 (0.9283)	-2.00E-04 (0.6341)
* Significant at 0.05 level				
Source: Author's Findings				

Liquidity (in terms of the current ratio) has a positive and significant impact on asset turnover working within the FMCG segment whereas the variables associated with receivables are negligible, meaning that asset utilization is influenced by quantity and inventory turnover more than credit management.

The impacts of the healthcare firms are mixed with the current ratio increasing the use of the assets, but short-term liquidity is surplus (quick ratio), which is characteristic of the regulatory and operational aspects of the sector.

The effect of excess liquidity in the capital goods firms is negative on the asset turnover, but the working capital turnover is not statistically significant. Moreover, firm age is negatively related to the asset use, which highlights the structural rigidity of older capital goods companies.

On the whole, the results show that the operational effectiveness implication of managing working capital is very industry-specific and should be adjusted to the production cycles and market structure. To a great extent, these differences can be explained by the specifics of the working processes, business cycles, and capital needs of each sector (Huynh et al., 2025).

5. Discussion of Key Findings

The empirical findings do offer similar evidence that the working capital management is an influential factor in determining the performance of firms in Indian manufacturing companies but its impacts are not consistent or linear across industry and performance dimension. Throughout the profitability markers (ROA and ROE) and the efficiency marker (ATR), the results show that the relevance and trend of the working capital elements are highly dependent on the industry-related operating nature. As an example, the automobile industry can show that effective receivables management contributes to high profitability significantly, but overly restrictive credit policies can affect the speed of assets turnover, as the production cycles are capital-intensive (Gupta et al., 2023; Lee et al., 2015).

The management of receivables and liquidity conditions are some of the significant performance determinants in the automobile industry. The existence of positive and statistically significant correlations between accounts receivable turnover and measures of profitability are indicative that good management of assets and shareholders are supported by flexibility in the use of credit. Meanwhile, the ATR outcomes show that overly restrictive receivables policies can have a negative influence on the operational efficiency, which is a token of the significance of dealer financing arrangements and extended production cycles which are characteristic of capital-intensive manufacturing. There is a subtle impact on liquidity, where sufficient current liquidity is facilitating profitability, but high short-term liquidity is decreasing efficiency. According to this trade-off, maintaining a sufficient level of current assets implies the possibilities of fulfilling the obligation, but excessive liquid reserves may be associated with the failure to allocate resources optimally and reduce the returns on them (Rahman, 2022).

In the case of FMCG firms, the outcomes always exhibit poor or minimal correlations among most working capital items and firm performance especially ROA and ATR. Even where the effects are found to be significant, they are mostly limited in the timing of the receivables and liquidity in the ROE regressions which indicates that shareholder returns are more sensitive to cash-flow discipline rather than efficiency in operations. The results of these findings are in line with the nature of the FMCG industry where inventory turnover is high, there is a steady demand and brand positioning minimizes the need to optimize working capital on an active basis. The drivers of performance of capital-intensive industries such as long project cycles and asset utilization might not be adequately reflected in management metrics because liquidity adjustments over short periods of time are less significant (Daruwala and Mansour, 2025).

There is varied trend in healthcare sector when it comes to performance measures. Although the change of the receivables turnover has a positive correlation with the ROE, working capital turnover shows a negative correlation with the profitability and efficiency, which can mean that the vigorous use of working capital could not be in harmony with regulatory requirements and the operating structures that are based on service. Liquidity is a two-sided phenomenon, which is beneficial to the utilization of assets at average levels, but in the form of excessive levels, it decreases efficiency, which

underlines the complexity of working capital requirements in this industry. These conclusions are also aligned with the general evidence of corporate finance that indicates that firm-level financial policies, such as liquidity management, interplay with governance and payout choice to determine the performance of firms (Chan, 2018; Nyere and Wesson, 2019).

The working capital variables in the capital goods sector are not effective in explaining profitability and efficiency and structural factors like age of firms have a robust and negative impact on both ROE and ATR. The adverse effect of excess liquidity on efficiency further implies that the traditional working capital optimization techniques are not equally effective in industries that are long-gestation period, project-driven production, and with inflexible operating structures. This finding is consistent with previous studies that have shown inventory management as a key factor that can result in a company having a short cash conversion cycle since the inventory forms the highest percentage of the cycle (Panigrahi, 2025).

Generally, findings contribute to the perception that the working capital management is not a universally applicable performance lever. Rather, its performance is highly conditional on industry-based production cycles, market forms and financial restraints, which highlights the significance of contextualized working capital approaches. This finding is in line with previous studies that show that inventory management can either make or break a company to have a short cash conversion rate since inventory takes up the greatest percentage of the cycle (Hogerle et al., 2020).

6. Conclusion

It is a research that investigates the connection between the working capital management and the performance of firms in major manufacturing industries in India based on firm-level panel data and industry-specific econometric models. The findings are strong pieces of evidence that the working capital management has a significant impact on the profitability and efficiency of firms, but the level and the direction of these impacts differ significantly between industries and performance indicators.

It shows that receivables management and liquidity conditions are significant in promoting profitability and shareholder returns in the capital-intensive and long-running cycle industries, especially the automobile sector. Though, there is efficiency results showing that a very tight credit policy can make negative impact on the utilisation of assets implying that there is a trade-off between profitability and operational efficiency. Within capital goods firms, the working capital variables have a modest impact on the performance, and firm age and structural rigidity are found to have a stronger impact on performance in terms of profitability and efficiency.

Conversely, FMCG companies show comparatively low sensitivity of working capital management on ROA and ATR, implying that the consistent demand trends, high rate of inventory turnover, and economies of scale make working capital optimisation a less important performance factor. This is the case in the healthcare sector where selective working capital elements are associated with profitability, however, aggressive working capital usage is likely to have a negative impact on both the efficiency and returns.

Combined, the findings refute the old-fashioned belief of similar working capital policies in industries. Rather, they argue the presence of industry specific working capital dynamics, as the best policies cannot be incompatible with liquidity, profitability, and efficiency policies, as per industry operating conditions. This research contributes towards a more subtle view of the working capital-performance nexus in emerging market setting by incorporating more than one dimension of performance. The research emphasizes that the correlation between working capital efficiency and profitability does not operate equally across industries, which is supported by the difference in the effects of inventory and receivables management on the performance of a firm (Kiymaz et al., 2024).

7. Implications

7.1 Managerial Implications

The conclusions have a number of significant implications to the corporate managers in manufacturing companies. First, the findings are very compelling that standardized working capital policies cannot be optimal in different industries. As opposed to using uniform benchmarks, managers are advised to make the decisions on working capital to match the industry-specific operating cycles, production processes, and market structure.

Such slowly moving production and sales cycles as those in the automobile industry require that receivables be handled carefully and that sufficient but not excessive liquidity be maintained in order to continue to sustain profitability and shareholder returns. Simultaneously, managers should understand that too restrictive credit policy or too much liquidity in the short term may hamper the efficiency of the operations, which means that profitability goals should be balanced against asset use.

In the case of capital goods firms, the minimal contribution of working capital variables to performance is an indicator that managers ought to attribute greater emphasis on structural and operational variables, like project management efficiency and capacity utilisation instead of using intense working capital optimisation. In the case of FMCG companies, working capitals do not have a strong impact, so the demand forecasting, branding and cost efficiencies could be the more useful area of managerial attention.

In general, the findings highlight that the aggressive working capital turnover or too much liquidity accumulation is not always beneficial to the performance of firms and can be counterproductive in certain industries. The managers should hence seek to find a good operating capital level that is a manifestation of finance and operations prudence.

7.2 Policy Implications

The policy implications of the findings are that heterogeneity in working capital requirement in manufacturing industries needs to be acknowledged. The policymakers and financial institutions can help the firm performance through encouraging the access to the relevant short-term financing instruments, enhancing the trade credit mechanisms, and enhancing the payment infrastructure, especially in the industries where the working capital limits have a direct impact on the profitability.

The findings are, however, also indicative of the fact that the broad-based working capital support policies might be less efficient compared to industry-specific ones. Financial policies that are designed to suit operating needs of various manufacturing industries have high chances of promoting efficiency and profitability compared to standardized credit growth programs. This form of differentiated policy can be used to help develop more sustainable industrial growth in emerging economies due to alignment of the financial support with the special needs in these sectors.

8. Limitations of the study and scope for future research

Despite its contributions, this study has some limitations which offer ways for future research: First, the analysis is limited to listed manufacturing firms in India and may therefore limit the generalizability of the findings to unlisted firms or other emerging economies. Future research could expand the study to small and medium enterprises or make a cross-country comparison.

Second, although the study has been restricted to some of the main working capital elements, future research can be expanded to include other dimensions in its analysis such as inventory conversion cycles, supply chain financing, or fluctuating working capital changes. Finally, understanding the concept of non-linear relationships and the possibility of threshold effects in the management of working capital could provide more information on optimal financial management strategies.

Declarations

Ethical Approval and Consent to Participate

Not applicable. This study is based on secondary data obtained from publicly available annual reports and financial statements of listed companies. No human participants, animals, or identifiable personal data were involved.

Consent for Publication

Not applicable. The manuscript does not contain any individual person's data in any form; therefore, consent for publication is not required.

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Author Contribution

Hanish Kukreja: Conceptualization, methodology, formal analysis, software, data curation, validation, visualization, writing original draft preparation, writing review and editing. Arun Kumar S.: Investigation, data curation, resources. All authors have read and approved the final manuscript.

Data Availability

The datasets supporting the findings of this study are available as related files for peer review. The materials comprise (i) the raw firm-level dataset created from the publicly available annual reports and financial statements of the selected listed Indian manufacturing companies, (ii) the processed dataset employed for statistical analysis, and (iii) the analysis file detailing the data processing and econometric analyses utilized in this study. These materials are provided to allow editors and reviewers to verify the analyses presented in the manuscript.

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