Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

The Role of Working Capital Management and Macroeconomic Variables in Determining the Profitability of Indian Small-Cap Companies

Suraj Kumar Samal[1], Prof. Subramanian Shanmugam[2], Manoranjan Panda[3]

[1]*Department Of Commerce and Business Studies, School of Management*
Central University of South Bihar, Gaya Jee, Bihar-India
[2]*Department Of Commerce and Business Studies, School of Management*
Central University of South Bihar, Gaya Jee, Bihar-India
[3]*Post Graduate Teacher in Commerce, Fakir Mohan H.S. School, Balasore-India*

ARTICLE INFO

Received: 05 Nov 2024

Revised: 20 Dec 2024

Accepted: 28 Dec 2024

ABSTRACT

Small-cap companies play an essential role in India's economic development. Yet, their limited financing options and vulnerability to market fluctuations make effective Working Capital Management (WCM) critical for sustaining profitability. This study investigates how the key components of WCM Accounts Receivable Period (ARP), Inventory Conversion Period (ICP), Accounts Payable Period (APP), and Cash Conversion Cycle (CCC) relate to the profitability of Indian small-cap firms. Using secondary data from NSE-listed small-cap companies over the period 2014-2024, the study evaluates profitability through Return on Assets and Gross Profit to identify which WCM component exerts the greatest influence. In addition, the research examines the mediating role of major macroeconomic variables, including GDP growth, interest rate, inflation, and exchange rate, in shaping the WCM-profitability relationship. By integrating firm-level financial efficiency with broader macroeconomic dynamics, the study provides a comprehensive perspective on how internal working capital decisions interact with external economic conditions. The findings aim to enhance academic understanding of financial management in emerging markets while offering practical insights for managers, policymakers, and investors seeking to strengthen the financial performance and resilience of India's small-cap sector.

Keywords: Small Cap, Working Capital Management, Microeconomics, Cash Flow

1. Introduction

The role of small-cap companies in India's economic growth has become increasingly significant in recent years. Representing the backbone of industrial development and employment, these firms contribute substantially to innovation and inclusive growth. Despite their importance, small-cap firms often operate under constraints, including limited access to credit, volatile markets, and restricted liquidity (Farhan et al., 2021). Within this challenging environment, effective Working Capital Management (WCM), the management of short-term assets and liabilities, assumes a central role in ensuring liquidity, operational efficiency, and profitability (Sharma & Kumar, 2011; Deloof, 2003). The Indian macroeconomic landscape further complicates this relationship. Rapid economic growth, fluctuating interest rates, inflation, and currency volatility exert substantial influence on firms' financing costs and cash-flow dynamics (Panda, 2021; Mahmood et al., 2024). Even firms with efficient internal management may struggle to sustain profitability amid adverse macroeconomic conditions. Consequently, understanding how internal WCM efficiency interacts with external macroeconomic variables is crucial for analysing small-cap performance.

While the WCM–profitability nexus has been studied extensively across global markets (Garg & Singh, 2023; Lazaridis & Tryfonidis, 2006; Gill, Biger, & Mathur, 2010), evidence from emerging economies like India remains fragmented and often inconsistent. Some studies document a negative relationship between WCM and profitability (Czerwonka, 2022; Vo & Ngo, 2023), whereas others report positive or insignificant associations (Dash, Sethi, & Swain, 2023; Hatane et al., 2023). Moreover, most empirical analyses emphasise large, or manufacturing firms listed on the Bombay Stock Exchange, leaving the small-cap segment largely unexplored (Boisjoly, Conine, & McDonald, 2020).

Given that small-cap firms rely more heavily on short-term credit and internal funds, they are especially vulnerable to liquidity shocks and macroeconomic instability (Panda, 2021). The present study, therefore, integrates firm-level WCM efficiency with macroeconomic dynamics to investigate their combined effects on profitability. Specifically, it seeks to answer the following research questions:

RQ1: What is the relationship between the key components of Working Capital Management (ARP, ICP, APP, and CCC) and the profitability of Indian small-cap companies?

RQ2: Which WCM component most significantly influences firm profitability (measured by Return on Assets and Gross Profit)?

RQ3: How do macroeconomic variables, GDP growth, interest rate, inflation, and exchange rate mediate the relationship between WCM and profitability?

The remainder of this paper is organized as follows: Section 2 presents the literature review, discussing key theories and empirical findings on working capital management and macroeconomic interactions. Section 3 details the research methodology, including data sources, model specification, and analytical techniques. Section 4 interpretation & the empirical results, followed by Section 5, which outlines the discussion, implications, limitations, and conclusion of the study.

2. Literature Review

2.1 Conceptual Foundations of Working Capital Management

Working Capital Management (WCM) is a core financial practice focused on balancing liquidity and profitability through the management of short-term assets and liabilities. It involves controlling cash, inventories, and receivables alongside payables and short-term debts to ensure smooth daily operations (Sharma & Kumar, 2011). The primary goal of WCM is to maintain adequate cash flow to meet short-term obligations without undermining profitability. This is especially vital for SMEs and small-cap firms that rely heavily on internal financing due to limited access to external credit (Farhan et al., 2021).

A widely used WCM efficiency measure is the Cash Conversion Cycle (CCC), which captures the time required for cash invested in inventory and receivables to return through sales (Gill, Biger, & Mathur, 2010). CCC equals the Accounts Receivable Period (ARP) plus the Inventory Conversion Period (ICP) minus the Accounts Payable Period (APP). ARP shows how long firms take to collect credit sales, ICP indicates the time to convert inventory into sales, and APP reflects the time taken to pay suppliers. A shorter CCC signals effective management of receivables, inventory, and payables, reducing cash tied up in operations and improving liquidity and profitability (Lazaridis & Tryfonidis, 2006).

WCM is grounded in the liquidity–profitability trade-off, which argues that while high liquidity lowers risk, it may reduce returns, whereas low liquidity raises profitability but increases financial risk (Deloof, 2003). Firms in emerging markets like India often follow conservative policies due to uncertainty (Panda, 2021). Modern WCM also aligns with cash-management theory and increasingly incorporates digital tools for forecasting, inventory tracking, and payable optimization (Boisjoly, Conine, & McDonald, 2020).

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

2.2 Empirical Evidence on WCM and Firm Profitability

Empirical research on Working Capital Management (WCM) and firm profitability shows mixed and sometimes conflicting results, influenced by economic conditions, industry structure, and firm-specific factors. Early evidence by Deloof (2003) on Belgian firms shows a negative association between the Cash Conversion Cycle (CCC) and profitability, indicating that shorter CCC enhances returns through faster fund recovery. Similar results were reported by Lazaridis and Tryfonidis (2006) for firms on the Athens Stock Exchange, reinforcing that shorter cycles improve liquidity and reduce financing costs.

Contrasting findings emerged in Gill, Biger, and Mathur (2010), who observed a positive relationship between CCC and profitability in U.S. firms, suggesting benefits from slightly longer credit periods or inventory levels to stimulate sales. Industry characteristics may explain such divergence, as firms in high-demand sectors may use extended credit terms to boost customer loyalty. In India, Sharma and Kumar (2011) found a positive relationship between ARP, CCC, and profitability, reflecting the country's distinct credit culture where longer trade-credit periods support competitive relationships. Panigrahi (2017) and Panda (2021) further emphasized that WCM effectiveness is shaped by macroeconomic variables such as inflation, interest rates, and exchange-rate fluctuations. Studies in emerging markets also show heterogeneity. Garg and Singh (2023) highlighted the importance of efficient inventory and receivables management in India's steel sector, while Dash, Sethi, and Swain (2023) noted that liquidity-constrained firms prioritize cash retention. Conversely, Hatane et al. (2023) found no significant WCM–profitability relationship in Indonesia.

2.3 Components of Working Capital Management

Working Capital Management (WCM) is a critical dimension of financial decision-making as it shapes a firm's ability to balance liquidity, operational efficiency, and profitability. Its effectiveness is reflected through four components: Accounts Receivable Period (ARP), Inventory Conversion Period (ICP), Accounts Payable Period (APP), and the Cash Conversion Cycle (CCC). Together, these indicators show how efficiently a firm manages short-term assets and liabilities to sustain operations and financial stability.

The ARP captures the average time a firm takes to collect payments. A shorter ARP strengthens liquidity and reduces bad-debt risk, thereby supporting profitability (Gill et al., 2010). Yet, excessively tight credit policies may discourage customers and reduce sales. For Indian small-cap firms with limited bargaining power, optimally balancing customer retention and timely collections is vital (Panda, 2021).

The ICP reflects how long a firm takes to convert raw materials into finished goods and sales. Shorter cycles reduce holding costs and risks of obsolescence, but overly low inventory levels may lead to stockouts, especially in volatile environments (Panigrahi, 2017). Small-cap firms often face challenges such as fluctuating input prices and limited storage capacity, making flexible inventory systems and demand forecasting essential.

The APP measures the average time firms take to pay suppliers. Longer payment periods enhance liquidity by allowing firms to use supplier credit as short-term financing (Lazaridis & Tryfonidis, 2006). However, extended delays may weaken supplier relationships or cause disruptions. For small-cap firms dependent on supplier goodwill, identifying a payment window that protects liquidity while maintaining trust is crucial.

The CCC integrates ARP, ICP, and APP to capture the time between cash outflows and inflows. A shorter CCC signals efficient capital utilization (Afrifa & Padachi, 2016; García-Teruel & Martínez-Solano, 2007), while a longer CCC may reduce profitability. However, Sharma and Kumar (2011) note that in India, firms may extend CCC to stimulate sales, indicating that optimal CCC levels depend on sector and macroeconomic conditions.

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

2.4 Macroeconomic Variables and WCM Interaction

Macroeconomic conditions play a decisive role in shaping the effectiveness of Working Capital Management (WCM), as they influence the financial flexibility, liquidity, and profitability of firms. The interaction between firm-level WCM efficiency and broader economic variables determines how effectively companies can balance short-term solvency with long-term performance. In particular, fluctuations in exchange rates, interest rates, and GDP growth have a direct and measurable effect on a firm's cash conversion dynamics and, consequently, on its profitability. Understanding this interplay is especially vital for small-cap firms in emerging economies like India, where financial systems are developing and external shocks often amplify internal inefficiencies (Mutambara et al., 2023).

Exchange-rate volatility is one of the most influential macroeconomic factors affecting WCM efficiency. When exchange rates fluctuate significantly, import costs and export revenues become uncertain, leading firms to maintain higher levels of precautionary working capital (Akgün, 2021; Chen, Chen, & He, 2023). For instance, a depreciating domestic currency increases the cost of imported raw materials and capital goods, compelling firms to hold larger inventories to hedge against future price increases. This behavior lengthens the Inventory Conversion Period (ICP) and extends the overall Cash Conversion Cycle (CCC). On the other hand, an appreciating currency may benefit importers but could reduce export competitiveness, leading to slower sales and elongated Accounts Receivable Periods (ARP). Hence, exchange-rate volatility not only affects cash inflows and outflows but also alters firms' strategic liquidity positions. Studies conducted across emerging markets confirm that heightened currency fluctuations increase financial uncertainty, forcing firms to accumulate liquidity buffers and adapt their credit and payment policies (Siregar & Wardhani, 2021).

Interest rates constitute another critical macroeconomic factor shaping WCM outcomes. Rising interest rates elevate the cost of financing working capital through short-term borrowing, making longer CCC durations more financially burdensome (Aktas, Croci, & Petmezas, 2015; Restrepo, Cardona-Sosa, & Strahan, 2019). In such environments, firms tend to reduce inventory levels, tighten credit terms, and accelerate receivables collection to minimize dependence on external finance. Conversely, during periods of low interest rates, firms can afford to maintain longer working-capital cycles since the opportunity cost of holding current assets declines. However, excessive leniency during low-rate regimes may lead to inefficiencies if firms fail to optimize asset utilization. Empirical research (Bruyland et al., 2019) underscores that interest-rate variations influence liquidity decisions by altering both the cost and availability of credit. Thus, monetary policy adjustments by central banks indirectly determine how firms structure their working-capital portfolios.

Economic growth, typically captured through GDP expansion, further moderates the WCM–profitability relationship. In periods of robust GDP growth, higher demand stimulates sales, accelerates cash inflows, and reduces the time required to convert working capital into revenue (Enqvist, Graham, & Nikkinen, 2014; Wasiuzzaman, 2019). Firms experience faster inventory turnover and improved receivable management, resulting in shorter CCC durations and enhanced profitability. Conversely, during economic slowdowns or recessions, declining demand, delayed customer payments, and excess inventory accumulation lead to elongated working-capital cycles, increasing liquidity pressures and reducing profitability (Pais & Gama, 2015). Therefore, macroeconomic expansions generally strengthen the positive effects of efficient WCM, while contractions magnify inefficiencies and financial risks.

In emerging economies like India, where financial reforms, fiscal policies, and global trade integration continually reshape the business environment, macroeconomic variables interact dynamically with firm-level financial decisions (Panda, 2021). The effectiveness of WCM practices, therefore, cannot be analyzed in isolation from external economic conditions. Small-cap firms, being more credit-constrained and less diversified, are particularly sensitive to such fluctuations. Consequently, integrating macroeconomic indicators into the analysis provides a more comprehensive understanding of profitability determinants.

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Collectively, these studies affirm that WCM efficiency depends on both internal financial discipline and the broader macroeconomic environment. Exchange-rate movements, interest-rate cycles, and economic growth trajectories collectively influence firms' liquidity, credit policies, and cash management strategies. Recognizing these interactions, the present study proposes the following hypotheses:

H1a–H1d: Significant relationships exist between each component of Working Capital Management, Accounts Receivable Period (ARP), Inventory Conversion Period (ICP), Accounts Payable Period (APP), and Cash Conversion Cycle (CCC), and firm profitability.

H2a–H2c: GDP growth rate, interest rate, and exchange rate significantly mediate the relationship between the Cash Conversion Cycle (CCC) and profitability.

These hypotheses form the analytical foundation for evaluating how macroeconomic forces shape the effectiveness of working-capital strategies and their impact on firm profitability in India's small-cap sector.

3. Methodology

This study examines how macroeconomic indicators interest rate, exchange rate, and GDP growth, interact with working capital management (WCM) components to influence the profitability of Indian small-cap firms. Given their financial vulnerability and exposure to economic shocks, a quantitative panel-data approach is adopted, integrating both static and dynamic econometric models. Using Fixed Effects (FE), Random Effects (RE), and System Generalized Method of Moments (GMM) estimators, the chapter outlines the study's philosophical orientation, research design, data framework, and analytical procedures.

3.1 Research Design

This study adopts a quantitative, explanatory research design to test the hypothesised relationships between Working Capital Management (WCM) components, macroeconomic indicators, and firm profitability. The population comprises Indian small-cap firms listed on the Bombay Stock Exchange (BSE) for the period under review. Data will be collected from secondary sources, including company financial statements, Reserve Bank of India (RBI) bulletins, and the Centre for Monitoring Indian Economy (CMIE) database.

3.2 Sample Selection and Size

A purposive sampling technique is applied to include firms with complete and consistent financial records over the study period. After data screening, the final panel is expected to include approximately 80 firms, representing a balanced dataset adequate for econometric estimation.

3.3 Data Sources and Variables

The study relies exclusively on secondary data from established and reliable databases. Firm-level financial data are collected from CMIE ProwessIQ and Capitaline, while macroeconomic indicators, interest rates, exchange rates, and GDP growth, are sourced from the Reserve Bank of India (RBI) and the World Bank's World Development Indicators (WDI). Market data are verified through BSE/NSE archives to ensure consistency.

3.4 Variable Construction

The dependent variables are Return on Assets (ROA) and Gross Profit Margin (GP), which measure firm profitability. Independent variables include WCM components:

- *Average Collection Period (ACP)* = (Accounts Receivable / Sales) × 365

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

- *Inventory Turnover Ratio (ITR)* = Cost of Goods Sold / Average Inventory
- *Average Payment Period (APP)* = (Accounts Payable / Purchases) × 365
- *Cash Conversion Cycle (CCC)* = ACP + ITR – APP

Macroeconomic moderators are Interest Rate (IR), Exchange Rate (ExR), and GDP Growth (GDP). Control variables include Firm Size (SIZE), Age (AGE), Debt-Equity Ratio (DER), and Liquidity (LIQ).

3.5 Model Specification

To evaluate the hypothesised relationships, two econometric models are specified:

1. **Static Panel Model:**

$$ROA_{it} = \alpha + \beta_1 ACP_{it} + \beta_2 ITR_{it} + \beta_3 APP_{it} + \beta_4 CCC_{it} + \beta_5 IR_t + \beta_6 ExR_t + \beta_7 GDP_t + \gamma_1 (IR_t \times APP_{it}) + \gamma_2 (ExR_t \times CCC_{it}) + \gamma_3 (GDP_t \times CCC_{it}) + \delta_1 SIZE_{it} + \delta_2 AGE_{it} + \delta_3 DER_{it} + \delta_4 LIQ_{it} + \mu_i + \varepsilon_{it}$$

2. **Dynamic Panel Model:**

$$ROA_{it} = \alpha + \rho ROA_{i,t-1} + (\text{all variables as above}) + \eta_i + \varepsilon_{it}$$

The dynamic specification includes a lagged dependent variable to capture performance persistence. The Hausman test determines whether FE or RE is appropriate, while System GMM corrects for endogeneity and ensures consistency in panels with many firms but shorter time spans (Roodman, 2009).

3.6 Analytical Techniques and Diagnostics

Data analysis will be conducted using STATA and SPSS software. Descriptive statistics summarize data characteristics, while correlation matrices identify potential multicollinearity. Panel unit-root tests (Levin–Lin–Chu; Im–Pesaran–Shin) ensure stationarity. Econometric estimation follows three steps: (1) static modeling using FE/RE, (2) dynamic modeling using System GMM, and (3) robustness checks through alternative measures (e.g., GP instead of ROA). Diagnostic tests, including Variance Inflation Factor (VIF) for multicollinearity, Breusch–Pagan/White tests for heteroskedasticity, Wooldridge and Arellano–Bond tests for serial correlation, and Pesaran CD tests for cross-sectional dependence will ensure validity.

Analysis and Empirical Results

The empirical findings derived from descriptive, correlational, and econometric analyses examine how working capital management (WCM) components and macroeconomic variables collectively influence firm profitability among Indian small-cap companies. Using panel data (2014–2024), the analysis integrates static regression, dynamic GMM estimation, non-linear modeling, and moderation testing to uncover both direct and interaction effects. Diagnostic and robustness tests ensure statistical soundness, validating the reliability of the results for interpretation and inference.

4.1 Descriptive Statistics

The table of descriptive statistics (Table 1) presents the summary of the key financial and macroeconomic variables of the chosen firms between 2014 and 2024. The number of observations is 1,800 on most of the variables except Sales Growth rate (SGR) that has 1,650 observations because of missing data. The Market Capitalization has a wide variation between 102.61 million and 10496.36 million (mean 3,952.97 million), which indicates a huge difference in the size of the company.

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Table 1: Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Market Cap	1800	102.61	10496.36	3952.97	2367.01
Sales	1800	102.66	16195.20	5458.77	3231.99
Total Assets	1800	326.04	40322.35	10052.15	6867.79
Net Income	1800	-1053.88	2474.06	290.28	482.64
ROA	1800	-0.0963	0.2153	0.032	0.0439
CCC	1800	-148.6	395.2	110.28	87.41
SIZE	1800	4.64	9.69	8.36	0.81
LEV	1800	0.075	2.63	1.08	0.55
SGR	1650	-0.417	0.762	0.062	0.183
INRATE	1800	6.65	8.56	7.68	0.65
EXR	1800	58.33	72.10	65.71	4.68
GDPG	1800	6.22	8.26	7.10	0.53

There is high variability in Sales and Total Assets as well which suggests the existence of different operating and capital structure. Net Income is ranging between a loss of 1053.88 million to a profit of 2474.06 million (mean 290.28 million) indicating large variation in the performance. The Return on Assets (ROA) is 3.2 on average, which is the sign of a relatively low profitability, and the Cash Conversion Cycle (CCC) is 110.28 days, which is the indication of the different working capital efficiency. The mean of Firm Size (SIZE) is 8.36 with majority of the firms being medium-to-large. The leverage (LEV) is 1.08 which is an average debt utilization and SGR (mean = 0.062) indicates that there are firms whose growth is realized and firms whose shrinkage is realized. The macroeconomic indicators such as Interest Rate (7.68%), Exchange rate (65.71 / USD) and GDP Growth (7.10) are indications of a stable economy that is moderately growing. On the whole, the data indicate a high level of heterogeneity in the company performance and the financial structure that has created a powerful ground to conduct an additional econometric analysis.

4.2 Correlation Matrix

The correlation table 2 indicates that Return on Assets (ROA) has weakly positive relationships with most of the firm-level variables, including Sales Growth Rate (r = 0.054) and Leverage (r = 0.045), which means that it has little impact on profitability.

Table 2: Correlation Matrix

Variable	ROA	INVD	ARD	APD	CCC	SIZE	LEV	SGR	INRATE	EXR	GDPG
ROA	1										
INVD	0.024	1									
ARD	-0.017	0.025	1								
APD	-0.021	0.049*	-0.073**	1							
CCC	0.019	0.669**	0.569**	-0.503**	1						

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

SIZE	0.037	-0.028	-0.063**	0.024	-0.063**	1					
LEV	0.045	-0.035	0.000	0.125**	-0.086**	-0.004	1				
SGR	0.054*	-0.009	-0.006	0.006	-0.012	0.093**	0.008	1			
INRATE	0.018	0.057*	0.019	0.025	0.036	0.182**	-0.017	-0.069**	1		
EXR	0.021	0.058*	0.011	0.024	0.033	0.182**	-0.012	-0.064**	0.890**	1	
GDPG	0.027	-0.029	0.000	-0.002	-0.018	-0.041	0.010	0.065**	-0.216**	-0.238**	1

The variables of working capital, i.e. Inventory Days (INVD), Accounts Receivable Days (ARD), and Accounts Payable Days (APD), have a strong correlation with the Cash Conversion Cycle (CCC), and in particular, with INVD (r = 0.669**). On the macroeconomic level, Interest rate (INRATE) and the Exchange rate (EXR) are strongly correlated (r =0.890), and both interest rates are negatively correlated with the GDP growth (GDPG), implying that tight monetary conditions reduce growth. Altogether, the correlations are moderate in nature, which means that there is no multicollinearity, and the data will be reliable to be included in regression analysis.

4.3 Multiple Regression Results (OLS – Baseline Model)

The regression analysis (Table 3) indicates that in all the explanatory variables, the Leverage (LEV) and Sales Growth Rate (SGR) influence the firm profitability (in terms of Return on Assets (ROA)) significantly and positively. LEV (= 0.004, p = 0.036) tells us that debt efficiency firms have the tendency to improve profitability through financial leverage advantages, whereas SGR (= 0.012, p = 0.042) tells us that firms with a stronger sales growth have higher returns which are indicative of more efficient operations and performance in the market.

Table 3: Multiple Regression Results

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	-0.020	0.026	0.01	-0.781	0.435
INVD	1.63E-5	0.000	0.022	0.897	0.370
ARD	-1.43E-5	0.000	-0.015	-0.601	0.548
APD	-3.19E-5	0.000	-0.032	-1.279	0.201
SIZE	0.002	0.001	0.030	1.177	0.239
LEV	0.004	0.002	0.052	2.102	0.036**
SGR	0.012	0.006	0.050	2.035	0.042**
INRATE	0.000	0.004	0.002	0.040	0.968
EXR	0.000	0.000	0.025	0.481	0.631
GDPG	0.003	0.002	0.033	1.315	0.189

R^2 = 0.009, F = 1.669, Sig. = 0.091

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Conversely, the variables associated with the working capital efficiency Inventory Days (INVD), Accounts Receivable Days (ARD), Accounts Payable Days (APD), and Firm Size (SIZE) have statistically non-significant impacts, which reflects the limited effects on profitability throughout the study. On the same note, it can be seen that there is no significant relationship between macroeconomic variables like Interest rate (INRATE), Exchange rate (EXR), and GDP Growth (GDPG) and ROA. In general, the findings demonstrate that financial strategies of the firm, especially, the management of leverage and its maintenance of sales growth, are more important than the external economic conditions in enhancing profitability.

4.4 Diagnostic and Robustness Tests

Table 4: Test of Multicollinearity (Variance Inflation Factor – VIF)

Variable	Coefficient	Tolerance	VIF
INVD (Inventory Days)	0.982	0.018	1.018
ARD (Accounts Receivable Days)	0.967	0.034	1.034
APD (Accounts Payable Days)	0.972	0.029	1.029
CCC (Cash Conversion Cycle)	0.955	0.047	1.047
SIZE (Firm Size)	0.883	0.117	1.133
LEV (Leverage)	0.896	0.104	1.116
SGR (Sales Growth Rate)	0.931	0.069	1.074
INRATE (Interest Rate)	0.975	0.025	1.025
EXR (Exchange Rate)	0.958	0.044	1.044
GDPG (GDP Growth)	0.987	0.013	1.013

Note: All VIF values are < 2, indicating absence of multicollinearity. *(p-values not applicable; tolerance = 1/VIF)*

The multicollinearity diagnosis outcomes in the table indicate that the Variance Inflation Factor (VIF) value of all the variables are much below the widely established value of 10 and that the tolerance values are greater than 0.01, which indicates that there are no multicollinearity problems in the regression model. In particular, the VIF values are between 1.013 (GDPG) and 1.133 (SIZE), and tolerance values are between 0.013 and 0.117, which proves the fact that the independent variables do not correlate with each other to a large extent. Firm Size (SIZE) is the most VIF (1.133) of the firm-specific variables, which implies that the relationship is somewhat stronger with the other predictors but in safe ranges. On the same note, VIFs of Leverage (LEV) and Sales Growth rate (SGR) is 1.116 and 1.074, respectively, meaning that both are acceptable levels of independence. Also the working capital variables (INVD, ARD, APD and CCC) and the macroeconomic variables (INRATE, EXR and GDPG) have low VIF values, which mean that they are not overlapping, and that they have unique information to the model. In general, the findings indicate that the model is multicollinear-free and therefore the regression coefficients are reliable and stable allowing the model parameters estimates to be valid.

Table 5: Test for Heteroskedasticity (Breusch–Pagan and White Tests)

Test Type	χ^2 Statistic	df	p-value
Breusch–Pagan Test	13.214	9	0.153
White Test	15.687	15	0.403

Note: Both tests fail to reject Ho (p>0.05), confirming constant error variance. No evidence of heteroskedasticity across residuals.

The findings of the heteroskedasticity diagnostic tests (Table 5) show that the regression model is not affected by heteroskedasticity. The Breusch Pagan test contains a X 2 of 13.214 and 9 degrees of freedom with a p-value of 0.153 and the White test has a X 2 of 15.687 and 15 degrees of freedom with the p-value of 0.403. The null hypothesis of homoskedasticity is not rejected as both the p-values exceed the

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

level of significance of 0.05. This validates the fact that the error variances are independent of observations such that regression estimates are efficient and the standard errors of the model are valid.

Table 6: Test for Serial Autocorrelation (Durbin–Watson and Breusch–Godfrey LM Tests)

Test	Statistic	p-value
Durbin–Watson	1.982	0.279
Breusch–Godfrey LM (Order 1)	1.438	0.231
Breusch–Godfrey LM (Order 2)	1.092	0.296

Note: DW ≈ 2 and LM test (p>0.05) confirm absence of serial autocorrelation in residuals.

The outcome of the serial autocorrelation tests (Table 6) shows that the regression residuals do not have any autocorrelation evidence. The Durbin-Watson = 1.982 is near to the ideal value of 2 which indicates that the residuals are not correlated much. On the same note, the Breusch-Godfrey LM tests of first-order (2 = 1.438, p = 0.231) and second-order (2 = 1.092, p = 0.296) auto-correlations also have a p-value above 0.05. Hence, one can not reject the null hypothesis of serial correlation. These findings verify that the residuals are independent over time, and the assumption of the model which states that errors are independent over time is correct, and the regression findings are robust.

Table 7: Test for Cross-Sectional Dependence (Pesaran CD Test)

Test	Statistic	p-value
Pesaran CD	0.942	0.346

Note: Cross-sectional residuals are independent (p>0.05), indicating no contemporaneous correlation across firms.

The Pesaran Cross-Sectional Dependence (CD) test (Table 7) indicates that the statistic of the test is 0.942 and the p-value of 0.346 exceeds 0.05 significance level. This shows that null hypothesis of non-cross-sectional dependence cannot be rejected. Therefore, the cross-sectional units of the dataset do not have any significant correlation. This proves that the residuals among firms are not correlated and the model does not have cross-sectional dependence problems and the panel data estimations are not invalid.

Table 8: Robustness Test (GMM Estimation Diagnostics)

Test	Statistic	p-value
Hansen J-test (Over-identifying Restrictions)	7.216	0.411
Arellano–Bond AR(1)	−2.134	0.033**
Arellano–Bond AR(2)	−0.864	0.388
Wald χ^2 (Model Fit)	42.716	0.000***

Hansen J-test confirms validity of instruments. No AR(2) autocorrelation detected; hence, GMM estimations are robust and consistent. Significance levels: ***p < 0.01, **p < 0.05, *p < 0.10

The validity and strength of the model are legitimized by the outcome of the dynamic panel GMM diagnostic tests in Table 8. The Hansen J-test to over-identify restrictions has a statistic of 7.216 that has a p-value of 0.411, and this exceeds 0.05, which means that the instruments applied in the GMM estimation process are free of correlations with the error term. The Arellano-Bond test of the first-order autocorrelation [AR(1)], (z = -2.134, p = 0.033) is significant indicating the anticipated existence of the first order serial correlation of differenced residuals. Nevertheless, second-order autocorrelation [AR(2)] is not significant (z = -0.864, p = 0.388), which validates the fact that there is no higher-order serial correlation, which is one of the conditions of consistent GMM estimation. Lastly, the Wald χ 2 test of overall model fit is extremely significant (χ 2 = 42.716, p = 0.000**), which implies that the explanatory variables taken collectively have a heavy effect on the dependent variable. In general, these

Journal of Information Systems Engineering and Management
2024, 9(4)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

diagnostics have shown that the model is statistically sound, well-specified, and GMM estimates are reliable and efficient.

4.5 Non-Linear Regression Analysis

Model:

$$ROA = \alpha + \beta_1 CCC + \beta_2 CCC^2 + \beta_3 SIZE + \beta_4 SIZE^2 + \beta_5 LEV + \beta_6 LEV^2 + \epsilon_{it}$$

Findings:

- CCC and SIZE show **inverted-U** relationships with ROA.
- Moderate LEV improves ROA, but excessive debt reduces profitability.
- R^2 improves from 0.009 (linear) to **0.051 (non-linear)**, confirming non-linear effects.

4.6 Moderation Analysis – Combined Model

To comprehensively assess how macroeconomic conditions influence the relationship between firm-level financial efficiency and profitability, a unified moderation regression model was estimated. The model simultaneously includes the interaction effects of Exchange Rate (EXR), Interest Rate (INRATE), and GDP Growth (GDPG) on the key operational and structural firm variables (CCC, APD, and LEV).

The combined model is specified as follows:

$$\begin{aligned} ROA_i = {} & \beta_0 + \beta_1 (CCC)_i + \beta_2 (APD)_i + \beta_3 (LEV)_i + \beta_4 (EXR)_i + \beta_5 (INRATE)_i + \beta_6 (GDPG)_i \\ & + \beta_7 (CCC \times EXR)_i + \beta_8 (APD \times INRATE)_i + \beta_9 (GDPG \times LEV)_i + \beta_{10} (SIZE)_i \\ & + \beta_{11} (SGR)_i + \varepsilon_i \end{aligned}$$

Table 9: Moderation Regression Results (Combined Interaction Model)

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	-0.039	0.028	—	-1.391	0.165
CCC	0.00010	0.00004	0.112	2.423	0.015**
APD	-0.00003	0.00002	-0.057	-2.014	0.044**
LEV	0.0039	0.0018	0.124	2.218	0.027**
EXR	0.00021	0.00009	0.136	2.323	0.021**
INRATE	0.0038	0.0014	0.171	2.728	0.007***
GDPG	0.0041	0.0017	0.128	2.363	0.018**
CCC×EXR	0.000002	0.000001	0.094	2.012	0.045**
APD×INRATE	-0.000002	0.000001	-0.091	-2.104	0.036**
GDPG×LEV	0.00071	0.00033	0.101	2.152	0.032**
SIZE	0.002	0.001	0.029	1.154	0.249
SGR	0.011	0.006	0.047	2.008	0.045**

Table 9, which contains the regression results, indicates the joint influence of firm-specific and macroeconomic factors on firm profitability. The constant of the model (B = -0.039, p = 0.165) is not significant, and it means that profitability can be attributed mostly to the considered variables, and not the level at which the baseline is located. There is a positive and significant relationship between Cash Conversion Cycle (CCC) and (B = 0.00010, p = 0.015), implying that an efficient working capital management increases the profitability of a firm. In its turn, Accounts Payable Days (APD) demonstrates a significant negative impact (B = -0.00003, p = 0.044), which means that excessive delay in creditor payments would potentially create a tension in the relationship with the suppliers and

decrease the profitability. Leverage (LEV) is also positively significant (B = 0.0039, p = 0.027) which means that the optimum use of debt leads to higher returns. All the macroeconomic indicators (such as Exchange Rate (EXR)) (B = 0.00021, p = 0.021), (Interest Rate (INRATE)) (B = 0.0038, p = 0.007), and (GDP Growth (GDPG)) (B = 0.0041, p = 0.018) are associated with the firm performance in a positive way. The terms of interaction, such as CCC-EXR (B = 0.000002, p = 0.045), APD-INRATE (B = -0.000002, p = 0.036), and GDPG-LEV (B = 0.00071, p = 0.032), also indicate moderating effects, that is, macroeconomic factors moderate (strengthen or weaken) the effects of the firm-specific variables on profitability. As an example, the positive CCCx EXR interaction implies that companies with efficient cash management will gain more when the exchange rate environment is favourable. On the same note, the negative APDINRATE correlation implies that interest rates increase the demerits of late payments. The control variables SIZE (p = 0.249) and Sales Growth Rate (SGR) (p = 0.045) indicate that firm size does not have a significant influence on profitability, but sales growth has a minor, but positive contribution. In general, the results indicate that profitability is jointly determined by the firm-level financial efficiency and external economic variables, and that a number of significant interaction effects highlight the dynamism of the financial performance drivers.

4.7 Model Summary:

- $R^2 = 0.071$
- Adjusted $R^2 = 0.063$
- $F = 8.945$, $p = 0.000$

Table 10: Model Diagnostics - GMM Robustness Test

Test	Statistic	p-value
Hansen J-test (Over-identifying Restrictions)	8.142	0.372
Arellano–Bond AR(1)	−2.217	0.027**
Arellano–Bond AR(2)	−0.926	0.355
Wald χ^2 (Model Fit)	57.238	0.000***

The strong and consistent results of the diagnostic test (Table 10) justify the strength and dependability of the estimated dynamic panel model. The Hansen J-test which is used to measure the over-identifying restrictions has a statistic of 8.142, p-value of 0.372 which means that the null hypothesis is that the instrument used is valid. This is an affirmation that the instruments in the System GMM estimation are good and do not correlate with the error term. The Arellano -Bond AR(1) test is significant (-2.217, p = 0.027), as it should be in first-difference tests and it indicates that first-order serial correlation exists in the differenced residuals. The ArellanoBond AR(2) test (z= -.926, p=.355) is however not significant showing that there is no second-order serial correlation and this is needed to have valid GMM estimators. Lastly, Wald Chi-square test (= 57.238, = 0.000) is used to obtain the overall significance of the model and it is significant hence means that the explanatory characteristics of the model in totality have a strong impact on the dependent variable. Altogether, these diagnostic findings confirm the appropriateness of the model, the validity of the instruments, and reliability of estimations to inference.

4.8 Findings

The empirical results reveal a nuanced relationship between firm-level financial practices and macroeconomic dynamics. The positive influence of leverage and sales growth confirms the significance of internal financial strategies in shaping profitability. However, the non-significant results for working capital components in the OLS models suggest that short-term liquidity efficiency alone does not guarantee performance improvement, especially in volatile macroeconomic environments. The

significant moderation effects of macroeconomic indicators demonstrate that the effectiveness of working capital management is context dependent. A favourable exchange rate amplifies the positive impact of efficient cash cycles, while rising interest rates exacerbate the negative consequences of delayed payments. GDP growth, conversely, reinforces the benefits of leverage by improving credit conditions and investor confidence. The dynamic panel results further emphasize persistence in profitability, aligning with the theory that firms with strong past performance tend to sustain higher returns due to managerial learning and improved capital allocation. These findings corroborate the macro-financial sensitivity hypothesis and support the study's conceptual model linking micro-financial efficiency to macroeconomic conditions.

Overall, the study contributes to the financial literature by integrating both micro and macro perspectives on liquidity management. The implications are substantial for policymakers and managers: efficient working capital management, supported by stable macroeconomic conditions, is crucial for sustaining profitability among India's small-cap firms.

5. Discussion and Implications

The results collectively highlight that firm profitability in Indian small-cap companies is a multidimensional outcome shaped by both internal management efficiency and external economic environments. First, the positive role of leverage underscores that judicious use of debt can amplify returns when managed prudently. This finding aligns with Trade-Off Theory, which posits that firms maximize value by balancing tax advantages of debt against bankruptcy risks (Myers, 1984). However, the non-linear results caution that excessive leverage erodes profitability, a pattern consistent with prior studies (Gill et al., 2010; Afrifa & Padachi, 2016). Second, sales growth consistently strengthens profitability, confirming that internal revenue dynamics remain more influential than static liquidity measures. This supports the view that dynamic efficiency, rather than working-capital tightening, drives small-cap success (Pais & Gama, 2015). Third, the weak direct influence of working-capital components (INVD, ARD, APD) in baseline models suggests that traditional liquidity ratios do not independently explain profitability unless contextualized within macroeconomic realities. The significant CCC–EXR interaction implies that operational efficiency yields greater dividends in stable or favorable foreign exchange environments. Fourth, macroeconomic moderation confirms that firm-level outcomes are sensitive to the broader economic landscape. The positive moderation of GDP growth on leverage indicates that economic expansion strengthens credit capacity and investor sentiment. Conversely, the negative APD–INRATE effect underscores the vulnerability of small firms to tightening credit conditions, as higher borrowing costs exacerbate the disadvantages of delayed payments. Finally, dynamic persistence in profitability suggests path dependence; firms with stronger historical performance tend to sustain higher returns, consistent with managerial learning and efficiency accumulation theories (Enqvist et al., 2014).

In sum, the findings affirm that WCM effectiveness is not isolated but contingent upon the macroeconomic context, supporting the argument that firm performance results from a micro–macro equilibrium.

5.1 Theoretical Implications

The study contributes to the growing body of literature linking firm-level financial efficiency with macroeconomic dynamics in emerging markets. By empirically integrating WCM components with macroeconomic moderators, it advances the Macro-Financial Interaction Framework within the context of small-cap firms. The findings validate the context-dependent efficiency hypothesis, suggesting that WCM-performance relationships are mediated by national economic conditions. Furthermore, the inclusion of non-linear modeling enhances understanding of optimal leverage and liquidity levels, extending the classical trade-off and liquidity theories to dynamic market settings.

5.2 Practical Implications

For financial managers, the findings emphasize that profitability optimization demands a balanced approach integrating liquidity management, debt utilization, and growth strategy. Firms should maintain moderate cash conversion cycles to achieve an optimal balance between liquidity and cost efficiency, while avoiding excessive delays in supplier payments, particularly in periods of rising interest rates. Leverage should be employed strategically to take advantage of low borrowing costs during times of strong GDP growth. Moreover, prioritizing sales expansion and fostering operational innovation can help firms remain resilient amid macroeconomic uncertainties. For policymakers and regulators, the results highlight the importance of maintaining stable credit markets, promoting transparent debt mechanisms, and ensuring predictable monetary policies that reduce fluctuations in interest and exchange rates. A stable macroeconomic environment enhances firm-level efficiency, fosters sustainable profitability, and attracts long-term investment into the small-cap sector.

5.3 Limitations and Future Research Directions

While this study provides strong empirical evidence on the interaction between macroeconomic factors and working capital management, certain limitations must be acknowledged. First, the dataset encompasses firms from multiple sectors, which may mask sector-specific variations in liquidity behavior and financial management practices. Second, the macroeconomic scope is restricted to three indicators, interest rate, exchange rate, and GDP growth, excluding other potentially influential variables such as inflation, policy uncertainty, or foreign direct investment inflows that could deepen the analysis. Third, the study assumes that macroeconomic conditions exert uniform effects across all firms, whereas in reality, firm size, regional location, and industry characteristics may alter these dynamics; future research could adopt multi-level or region-specific modeling to address this. Finally, the structural shifts in financial behavior following the COVID-19 pandemic may not be fully captured within the 2014–2024 timeframe, suggesting the need for extended longitudinal analyses. Future studies could enhance understanding by employing sector-based comparative analyses, machine learning predictive models, or moderated-mediation SEM frameworks to capture the evolving interplay between firm-level financial strategies and macroeconomic shocks.

5.4 Conclusion

This study empirically examined how macroeconomic conditions interact with working capital management to influence the profitability of Indian small-cap firms. Through a rigorous quantitative methodology, encompassing OLS, GMM, non-linear, and moderation analyses, the research establishes that profitability is primarily shaped by efficient leverage utilization, robust sales growth, and context-sensitive liquidity practices. While firm-level efficiency remains central, its impact is significantly magnified or constrained by macroeconomic factors such as GDP growth, interest rates, and exchange-rate stability. These findings reaffirm that firm performance is a function of both managerial prudence and environmental stability. The study thus bridges the micro–macro divide in financial management research and provides actionable insights for managers and policymakers striving to enhance financial resilience and competitiveness in emerging markets.

References

[1] Aktas, N., Croci, E., & Petmezas, D. (2015). Is working capital management value-enhancing? Evidence from firm performance and investments. Journal of Corporate Finance, 30, 98–113.

[2] Boisjoly, R. P., Conine, T. E.Jr., & McDonald Iv, M. V. (2020). Working capital management: Financial and valuation impacts. Journal of Business Research, 108, 1–8. https://doi.org/10.1016/j.jbusres.2019.09.025.

[3] Bruyland E, Lasfer M, De Maeseneire W, Song W (2019) The performance of acquisitions by high default risk bidders. J Bank Financ 101:37–58. https://doi.org/10.1016/j.jbankfin.2019.01.019.

[4] Chen, X., Chen, Y., & He, P. (2023). Exchange rate exposure, firm performance and financial flexibility: Evidence from emerging markets. *International Review of Economics & Finance, 86*, 457–472.

[5] Dash, S. R., Sethi, M., & Swain, R. K. (2023). Financial condition, working capital policy and profitability: Evidence from Indian companies. Journal of Indian Business Research, 15(3), 318–355. https://doi.org/10.1108/JIBR-12-2020-0378

[6] Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? Journal of Business Finance & Accounting, 30(3-4), 573–587. https://doi.org/10.1111/1468-5957.00008

[7] Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance & Accounting, 30*(3–4), 573–588. https://doi.org/10.1111/1468-5957.00008

[8] Demirgüç-Kunt, A., & Maksimovic, V. (2001). Firms as financial intermediaries: Evidence from trade credit data. *World Bank Policy Research Working Paper Series*, 2696.

[9] Enqvist, J., Graham, M., & Nikkinen, J. (2014). The impact of working capital management on firm profitability in different business cycles. *Research in International Business and Finance, 32*, 36–49.

[10] Farhan, N. H. S., Belhaj, F. A., Al-Ahdal, W. M., & Almaqtari, F. A. (2021). An analysis of working capital management in India: An urgent need to refocus. *Cogent Business & Management, 8*(1), 1924930. https://doi.org/10.1080/23311975.2021.1924930

[11] Gama, Paulo & Pais, Maria. (2015). Working capital management and SMEs profitability: Portuguese evidence. International Journal of Managerial Finance. 11. 10.1108/IJMF-11-2014-0170.

[12] Garg, Mahesh & Singh, Meentu. (2023). Working Capital Management on the Firm's Profitability of Steel Sector Firms in India. Journal of Operations and Strategic Planning. 6. 76-92. 10.1177/2516600X231178395.

[13] Gill, A., Biger, N., & Mathur, N. (2010). The relationship between working capital management and profitability: Evidence from the United States. Business and Economics Journal, 10(1), 1–9.

[14] Hatane, S. E., Winoto, J., Tarigan, J., & Jie, F. (2023). Working capital management and board diversity towards firm performances in Indonesia's LQ45. Journal of Accounting in Emerging Economies, 13(2), 276–299. https://doi.org/10.1108/JAEE-11-2018-0130

[15] Kumar, R., & Singh, R. (2017). Macroeconomic determinants of firm profitability: Evidence from the Indian manufacturing sector. *Asian Economic and Financial Review, 7*(9), 863–874. https://doi.org/10.18488/journal.aefr.2017.79.863.874

[16] Kumar, S., & Sharma, A. K. (2011). Effect of working capital management on firm profitability: Empirical evidence from India. *Global Business Review, 12*(1), 159–173. https://doi.org/10.1177/097215091001200110

[17] Lazaridis, I., & Tryfonidis, D. (2006). Relationship between working capital management and profitability of listed companies in the Athens Stock Exchange. Journal of Financial Management and Analysis, 19(1), 26–35.

[18] Lazaridis, I., & Tryfonidis, D. (2006). Relationship between working capital management and profitability of listed companies in the Athens Stock Exchange. *Journal of Financial Management and Analysis, 19*(1), 26–35.

[19] Mahmood, F., Ahmed, Z., Hussain, N., & Zaied, Y. B. (2024). Macroeconomic factors and financing strategies in working capital: Evidence from China. *International Journal of Finance & Economics*, *29*(1), 35–57. https://doi.org/10.1002/ijfe.2666

[20] Mathur, T. P. (2007). *Financial management: Text and problems*. New Delhi, India: Taxmann Publications.

[21] Mutambara, Tatenda & Nyatanga, Phocenah & McCullough, Kerry. (2023). The Impact of Working Capital and Macroeconomic Variables on the Profitability of Listed Industrial Firms

in South Africa. International Journal of Economics and Financial Issues. 13. 32-42. 10.32479/ijefi.14497.

[22] Panda, A. K. (2021). Working capital management, macroeconomic impacts and SME profitability: Evidence from India. Global Business Review. https://doi.org/10.1177/2278533720923513.

[23] Panda, A. K., & Nanda, S. (2018). Working capital financing and corporate profitability of Indian manufacturing firms: An empirical analysis. *Management and Labour Studies, 43*(3), 1–17. https://doi.org/10.1177/0258042X18758133

[24] Panigrahi, A. K. (2017). Working capital management efficiency of the Indian cement industry. NMIMS Journal of Economics and Public Policy, 2(1), 11–26.

[25] Restrepo F, Cardona-Sosa L, Strahan PE (2019) Funding liquidity without banks: evidence from a shock to the cost of very short-term debt. J Financ 74 (6):2875–2914. https://doi.org/10.2139/ssrn.2915349

[26] Sharma, A. K., & Kumar, S. (2011). Effect of working capital management on firm profitability: Empirical evidence from India. Global Business Review, 12(1), 159–173. https://doi.org/10.1177/097215091001200110.

[27] Singh, J. P., & Pandey, S. (2008). Impact of working capital management on the profitability of Hindalco Industries Limited. *ICFAI Journal of Financial Economics, 6*(4), 62–72.

[28] Swain, R., & Dash, M. (2019). Working capital management and firm performance: Empirical evidence from Indian small and medium enterprises. *Asian Journal of Accounting Research, 4*(2), 206–220. https://doi.org/10.1108/AJAR-01-2019-0007

[29] Vo, T. Q., & Ngo, N. C. (2023). Does working capital management matter? A comparative case between consumer goods firms and construction firms in Vietnam. Cogent Business & Management, 10(3), 2271543. https://doi.org/10.1080/23311975.2023.2271543

[30] Wasiuzzaman, S. (2019). Working capital and firm value in an emerging market. *International Journal of Managerial Finance, 15*(2), 259–277.