IMPACT OF WORKING CAPITAL MANAGEMENT PRACTICES ON THE FINANCIAL PERFORMANCE OF INDIAN SMALL-CAP PHARMACEUTICAL COMPANIES

Dr. Suman Kolpula
Assistant Professor
Department of Finance and Accounting
ICFAI Business School (IBS),
Hyderabad, Telangana,
Dr. Kallem Sai Sudheer Reddy
Department of Commerce, UCC&BM
Osmania University, Hyderabad.

Abstract
The study investigates the impact of working capital management on the financial performance of Indian pharmaceutical companies listed on the BSE platform. Data from CMIE Prowess IQ was used for 34 listed pharmaceutical companies out of 129 possible due to data availability. Companies were categorized by size (market capitalization) and the analysis covers a 10-year period from 2013-14 to 2022-23. The study uses multiple regression to explore how working capital practices such as raw material turnover, WIP turnover, finished goods turnover, debtor's turnover, Creditors turnover, and Current ratio influence return on assets (ROA) while considering factors like company size, Growth, Sales and debt-to-equity ratio. The results shown that the WIP turnover, finished goods turnover, creditors turnover, sales, and growth do not show significant impacts on ROA. These results suggest that while certain WCM practices like debtor's turnover and debt-to-equity ratio are crucial.

Keywords: Firm Performance, Pharmaceutical sector, Working Capital Management, Current Ratio, return on assets, Profitability of the firm

Introduction
Working capital management is essential for ensuring that a company has sufficient resources for day-to-day operations while using those resources efficiently. The key focus isn't merely on the total current assets but on the net working capital, which also considers current liabilities. This involves balancing the investment in current assets like inventory and receivables, structuring short-term and long-term debt appropriately, and choosing the right sources of short-term financing. There is a delicate balance to maintain: holding more assets increases liquidity but reduces potential returns that could be earned elsewhere. Ultimately, effective working capital management ensures smooth company operations by managing cash, marketable securities, receivables, and inventories to meet short-term obligations and support long-term goals.

India's pharmaceutical industry is a global powerhouse, ranking fifth in volume and fourteenth in value. To maintain this momentum, efficient management of working capital is paramount. But why is working capital management so crucial for Indian pharmaceutical companies? This introduction will delve into the unique challenges and opportunities this industry faces, highlighting how effective working capital strategies can be the difference between success and stagnation.

Review of Literature
Several studies establish a positive correlation between effective working capital management (WCM) and profitability. Abednego Osei et al. (2023) emphasize the importance of efficiently managing inventories, cash, debtors, and creditors to achieve financial goals. Similarly, Fekadu Agmas Wassie (2021) finds a positive association between WCM practices measured by receivables

period, cash conversion cycle, and payables period and profitability metrics such as return on assets and return on investment for Ethiopian export firms. These findings align with Pham et al. (2020), who demonstrate a strong positive influence of WCM on the profitability of Vietnamese steel companies. Furthermore, Ahm Yeaseen Chowdhury (2018) concludes that efficient WCM is critical for the profitability of Bangladeshi pharmaceutical firms.

However, the relationship between WCM and profitability can be more nuanced. Anton and Nucu (2021) and Minhas Akbar et al. (2021) propose an inverted U-shaped relationship, where WCM positively impacts profitability up to a certain level, beyond which it becomes negative. This suggests an optimal working capital level that maximizes profitability. Industry-specific factors may also influence the WCM-profitability relationship. Rey Ares et al. (2021) highlight how WCM policies, such as collection and inventory conversion periods, affect the economic profitability of Spanish fish canning companies. Similarly, Farhan et al. (2021) explore how WCM practices differ in managing working capital among small, medium, and large Indian pharmaceutical firms.

Macroeconomic factors like inflation and GDP can also influence the WCM-profitability dynamic. Iman and Mehdi (2019) demonstrate that while both inflation and GDP are positively related to a firm's return on assets (ROA), only inflation significantly impacts refined economic value added (REVA). This suggests that macroeconomic conditions might influence how WCM practices translate into profitability metrics. It's worth noting that some studies have not found a statistically significant impact of WCM on profitability. For instance, Yousaf and Bris (2021) analyze Czech firms and report a negative impact of working capital on firm performance,

Research Gap

Despite evidence linking effective working capital management (WCM) to profitability, gaps in our understanding remain. The studies primarily focus on correlations, highlighting the need for research that explores causal relationships between specific WCM practices and profitability metrics. Additionally, while some studies acknowledge an inverted U-shaped relationship or industry-specific effects, more research is required to identify optimal WCM strategies for different industries and firm sizes. Motivated by these gaps, the present study has been undertaken.

Objectives

1.   To examine the working capital management practices adopted by higher mid-cap pharmaceutical companies in India.
2.   To assess the impact of key components of working capital—such as inventory turnover, receivables period, payables period, and cash conversion cycle—on financial performance indicators like return on assets (ROA)

Research Methodology

The study examines the impact of working capital management (WCM) on the financial performance of Indian pharmaceutical companies listed on the BSE platform. Data was sourced from CMIE Prowess IQ for 34 out of 129 possible listed pharmaceutical companies, limited by data availability. These companies were categorized as small capitalized companies by size according to market capitalization, and the analysis covers a 10-year period from 2013-14 to 2022-23. The companies capitalization has been classified as "Small-Cap" based on its market capitalization of Rs.10 crore or below, as per the BSE Stock Exchange criteria as at 06/10/2023. Multiple regression analysis is utilized to investigate how WCM practices such as raw material turnover, work-in-progress (WIP) turnover, finished goods turnover, debtor's turnover, creditor's turnover, and current ratio influence return on assets (ROA). The study also takes into account additional factors like company size, growth, sales, and debt-to-equity ratio to offer a detailed understanding of the financial performance determinants in the pharmaceutical sector.

2392

Data Analysis and Findings

To study the impact of working capital management practices on the performance of Indian small-cap pharmaceutical companies, multiple regression has been used. As a part of multiple regression analysis is conducted with the help of model summary, Anova results and coefficient results. The statistical results of multiple regression are as follows.

Table 1: Descriptive Statistics of Small-Cap Pharmaceutical Companies

	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
Raw material turnover	0	119	9.54	9.976	6.240	58.697
WIP turnover	0	2366	59.68	155.742	10.414	143.835
Finished goods turnover	0	1018	50.42	123.547	5.213	30.182
Debtors turnover	0	138	5.19	8.062	13.433	218.496
Creditors turnover	0	92	4.57	5.865	10.562	148.538
Current ratio	0	40	2.09	3.339	8.584	89.444
Debt-to-equity ratio	0	38	.99	2.695	8.986	109.845
Sales	0	5779	554.21	731.692	3.305	14.259
Growth	-100	19800	100.49	1167.156	15.324	248.196
Return on Assets	-111	26	1.51	10.260	-4.869	47.373

Source: Compiled from CMIE Prowess IQ

The descriptive statistics of small-cap pharmaceutical companies, based on data compiled from CMIE Prowess IQ, reveal significant variability and extreme values across key financial and operational indicators. The raw material turnover exhibits a wide range (0 to 119) with a moderate mean of 9.54 and a standard deviation close to the mean (9.976), indicating variability among firms. A high positive skewness (6.240) and extremely high kurtosis (58.697) suggest a strong right-tail distribution with significant outliers. Similar trends are more pronounced in work-in-progress (WIP) turnover, where the mean is 59.68 but with a maximum of 2366 and a massive standard deviation of 155.742. The skewness (10.414) and kurtosis (143.835) are alarmingly high, indicating a highly non-normal distribution with extreme outliers.

Finished goods turnover, debtors turnover, and creditors turnover also display high dispersion and non-normality. Notably, the debtors turnover (mean 5.19, max 138) and creditors turnover (mean 4.57, max 92) show very high skewness (13.433 and 10.562 respectively) and kurtosis (218.496 and 148.538 respectively), indicating significant heterogeneity in receivables and payables management across the companies.

Liquidity and solvency indicators such as the current ratio (mean 2.09, max 40) and debt-to-equity ratio (mean 0.99, max 38) also reflect extreme values, with high skewness (8.584 and 8.986) and kurtosis (89.444 and 109.845), implying that while some firms maintain healthy financial positions, others may be highly leveraged or under-liquified.

In terms of operational performance, sales show a considerable mean (₹554.21 crore) but with a wide range up to ₹5779 crore, accompanied by skewness (3.305) and kurtosis (14.259), indicating few firms dominate in revenue size. The growth rate displays extreme variability (ranging from -100% to 19800%) with an extremely high mean (100.49%) and standard deviation (1167.156), alongside very high skewness (15.324) and kurtosis (248.196), indicating the presence of outliers and exponential growth in some firms.

Finally, return on assets (ROA) ranges from -111% to 26%, with a low average (1.51%) and high variability (std. dev. 10.260). The negative skewness (-4.869) suggests a left-tailed distribution,

indicating that more firms are experiencing negative returns, and the high kurtosis (47.373) implies occasional extreme losses.

Table 2: Coefficient of Variation of Small-Cap Pharmaceutical Companies

	Mean	Std. Deviation	Coefficient of Variation
Return on Assets	1.51	10.260	6.814
Raw material turnover	9.54	9.976	1.046
WIP turnover	59.68	155.742	2.610
Finished goods turnover	50.42	123.547	2.450
Debtors turnover	5.19	8.062	1.554
Creditors turnover	4.57	5.865	1.284
Current ratio	2.09	3.339	1.599
Debt-to-equity ratio	.99	2.695	2.727
Sales	554.21	731.692	1.320
Growth	100.49	1167.156	11.614

Source: Compiled from CMIE Prowess IQ

The coefficient of variation (CV) provides a standardized measure of relative variability in key financial indicators of small-cap pharmaceutical companies, as compiled from CMIE Prowess IQ. A higher CV indicates greater dispersion relative to the mean, reflecting inconsistency or volatility. Among the variables analyzed, growth exhibits the highest CV (11.614), revealing extreme variability in growth performance across firms. This suggests that while some companies have experienced explosive growth, others may have seen declines, reinforcing the previously noted volatility in the sector.

Return on Assets (ROA) also demonstrates significant instability with a CV of 6.814, indicating that profitability is highly inconsistent among firms, likely due to uneven cost structures, operational inefficiencies, or industry-specific risks. Similarly, the debt-to-equity ratio shows a high CV of 2.727, reflecting large disparities in capital structures, with some firms operating with high leverage while others are nearly debt-free.

Inventory management indicators such as WIP turnover (CV 2.610) and finished goods turnover (CV 2.450) further emphasize operational disparities, possibly pointing to differences in production cycles or demand fulfillment efficiency. The raw material turnover, though lower in relative variation (CV 1.046), still indicates some inconsistency, albeit to a lesser extent.

In the realm of liquidity and credit, current ratio (CV 1.599), creditors turnover (CV 1.284), and debtors turnover (CV 1.554) all reflect moderate to high relative variability, suggesting differing approaches or capabilities in managing short-term obligations and receivables. Sales, despite a high absolute dispersion, has a comparatively lower CV (1.320), indicating more consistency in revenue generation than in profitability or growth.

In summary, the CV analysis underscores substantial heterogeneity among small-cap pharmaceutical companies, especially in profitability, growth, and leverage, while revenue generation and raw material turnover are relatively more stable. This wide dispersion highlights the diverse strategic positions, operational efficiencies, and financial structures within the sector.

Table 3: Model Summary results of Small -cap pharmaceutical companies

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.259[a]	.067	.042	10.045
a. Predictors: (Constant), Growth, Sales, Raw material turnover, Finished goods turnover, Debt to equity ratio, WIP turnover, Creditors turnover, Debtors turnover, Current ratio				

Source: Compiled from CMIE Prowess IQ

The regression model evaluating small-cap pharmaceutical companies indicates a moderately weak overall fit, with an R Square of 0.067, signifying that approximately 6.7% of the variability in the dependent variable is explained by the included predictors. The adjusted R Square of 0.042 suggests a marginal improvement, considering the number of predictors involved in the model. The model's coefficient of determination indicates that the independent variables—such as Growth, Sales, Raw material turnover, Finished goods turnover, Debt to equity ratio, WIP turnover, Creditors turnover, Debtors turnover, and Current ratio—jointly have a limited impact on the variability observed in the dependent variable. The standard error of the estimate stands at 10.045, indicating the average distance that the observed values fall from the regression line. While the model suggests a relationship between the predictors and the dependent variable, it is important to note that this relationship is relatively weak.

The regression analysis of small-cap pharmaceutical companies unveils a nuanced picture of their performance drivers. Despite including multiple predictors—such as Growth, Sales, various turnover ratios, and financial metrics—the model exhibits a limited ability to explain the variability observed in the dependent variable. With an R Square of 0.067, it's clear that only about 6.7% of the fluctuations in the dependent variable can be attributed to the factors included in the model. This suggests that while these predictors might play a role, a substantial portion of the companies' performance remains unaccounted for by the variables analyzed.

Table 4: ANOVA results of Small -cap pharmaceutical companies

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2394.609	9	266.068	2.637	.006[b]
	Residual	33294.379	330	100.892		
	Total	35688.988	339			
a. Dependent Variable: Return on Assets						
b. Predictors: (Constant), Growth, Sales, Raw material turnover, Finished goods turnover, Debt to equity ratio, WIP turnover, Creditors turnover, Debtors turnover, Current ratio						

Source: Compiled from CMIE Prowess IQ

The analysis conducted using an Analysis of Variance (ANOVA) for small-cap pharmaceutical companies suggests a statistically significant relationship between the predictors (Growth, Sales, Raw material turnover, Finished goods turnover, Debt to equity ratio, WIP turnover, Creditors turnover, Debtors turnover, Current ratio) and the dependent variable, Return on Assets (ROA). The regression model, as indicated by a significant F-value (F = 2.637, p = .006), explains a portion of the variance in ROA. The model's overall fit was tested against the null hypothesis (no relationship between predictors and ROA), and with a p-value less than .05, we reject the null hypothesis. The regression

model accounts for a significant amount of variability in ROA, with a total explained sum of squares of 2394.609.

The ANOVA results for small-cap pharmaceutical companies' Return on Assets (ROA) offer valuable insights into the drivers of financial performance within this sector. The significant regression model indicates that collectively, the variables including Growth, Sales, Raw material turnover, finished goods turnover, Debt to equity ratio, WIP turnover, Creditors turnover, Debtors turnover, and Current ratio have a combined influence on ROA. While the model demonstrates statistical significance, it's essential to delve deeper into the individual predictor variables to understand their precise impact on ROA. This analysis lays a foundation for identifying critical areas that may significantly affect the profitability and efficiency of these companies.

Table 5: Coefficients results of Small -cap pharmaceutical companies

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.343	1.125		-.305	.761
	Raw material turnover	.103	.056	.100	1.852	.065
	WIP turnover	.004	.004	.055	1.017	.310
	Finished goods turnover	-.006	.005	-.071	-1.313	.190
	Debtors turnover	.149	.070	.117	2.122	.035
	Creditors turnover	.044	.097	.025	.457	.648
	Current ratio	.281	.171	.091	1.637	.103
	Debt to equity ratio	-.646	.210	-.170	-3.077	.002
	Sales	4.689	.001	.003	.061	.951
	Growth	-3.574	.000	-.004	-.076	.939
a. Dependent Variable: Return on Assets						

Source: Compiled from CMIE Prowess IQ

The regression analysis explores the relationship between various financial metrics and the return on assets (ROA) for small-cap pharmaceutical companies. Each independent variable's coefficient indicates its impact on ROA when other variables remain constant. Among these factors, a few stand out significantly. Debt to equity ratio shows a notable impact, with a coefficient of -0.646 and a significant p-value of 0.002, suggesting that as the debt to equity ratio increases, ROA tends to decrease. Debtors' turnover also exhibits significance, with a coefficient of 0.149 and a p-value of 0.035, implying that a higher turnover of debtors positively influences ROA. Conversely, the coefficients for raw material turnover, WIP turnover, finished goods turnover, creditors turnover, current ratio, sales, and growth are relatively small and lack statistical significance (p-values > 0.05), suggesting a weaker or non-existent direct linear relationship with ROA for these variables within this model. This analysis implies that managing the debt structure and optimizing the turnover of debtors could be crucial factors affecting the return on assets for small-cap pharmaceutical companies, while the other variables in this model might have less direct impact or could be influenced by additional unaccounted factors.

The analysis explores the impact of financial metrics on return on assets (ROA) for small-cap pharmaceutical firms. Key findings highlight the significance of two factors: the debt to equity ratio,

indicating a negative impact on ROA as debt rises relative to equity, and debtors' turnover, showing a positive influence on ROA with more efficient collection practices. Other variables like turnover rates and financial ratios appear less directly linked to ROA in this model. Managing debt structures and optimizing accounts receivable processes emerge as pivotal for ROA.

Conclusion

The multiple regression analysis examining the impact of various working capital management (WCM) practices on the return on assets (ROA) of Indian pharmaceutical companies yields several key insights. The model shows a weak correlation, with an R value of 0.259, and explains only 6.7% of the variance in ROA (R Square = 0.067). Despite this, the model is statistically significant (F = 2.637, p = 0.006), indicating that the predictors collectively influence ROA. Among the individual predictors, debtor's turnover (B = 0.149, p = 0.035) positively and significantly affects ROA, while the debt-to-equity ratio (B = -0.646, p = 0.002) has a significant negative impact. Other variables, such as raw material turnover (p = 0.065) and current ratio (p = 0.103), approach significance but do not meet the conventional threshold. Factors like WIP turnover, finished goods turnover, creditors turnover, sales, and growth do not show significant impacts on ROA. These results suggest that while certain WCM practices like debtor's turnover and debt-to-equity ratio are crucial, the overall model only moderately predicts financial performance.

Implications of the study

This study underscores the necessity for a nuanced strategy in managing working capital among large-cap pharmaceutical firms in India. Although a robust current ratio demonstrates a notable enhancement in profitability, the impacts of other factors such as inventory turnover and debt levels appear to be marginal or variable. This implies that companies should not rely solely on conventional working capital metrics but rather investigate how these practices interact within their unique financial landscapes to maximize return on assets (ROA).

Scope for further research

This study on enhanced reporting practices among Indian SMEs paves the way for intriguing future research avenues. Firstly, delving deeper into the underlying reasons for this improvement could provide valuable insights. Is it primarily driven by stricter regulatory requirements, or are internal motivations for transparency gaining prominence? Secondly, investigating the impact of improved reporting on various stakeholders could shed light on its broader implications. How has it influenced SMEs' access to credit? Has it bolstered investor confidence? Lastly, considering that Software and Financial Services sectors are leading this transformation, exploring whether this trend extends to other industries and the potential role of industry-specific factors would be worthwhile.

References

1. Abednego Osei, Andrew Osei Agyemang, Joseph wusu Amoah & Inusah Sulemana (2023) Empirical study on the impact of working capital management on going concern of manufacturing firms in Ghana, *Cogent Business & Management*, 10:2, DOI: 10.1080/23311975.2023.2218177
2. Ahm Yeaseen Chowdhury, Mohammad Zahedul Alam, Sabiha Sultana, and Md. Kaysher Hamid, " Impact of Working Capital Management on Profitability: A Case Study onPharmaceutical Companies of Bangladesh," *Journal of Economics, Business and Management vol. 6*, no.1, pp. 27-35, 2018.
3. Akbar, M., Akbar, A., & Draz, M. U. (2021). Global Financial Crisis, Working Capital Management, and Firm Performance: Evidence From an Islamic Market Index. *SAGE Open*. https://doi.org/10.1177/21582440211015705

2397

4. Aldubhani, M.A.Q., Wang, J., Gong, T. and Maudhah, R.A. (2022), "Impact of working capital management on profitability: evidence from listed companies in Qatar", *Journal of Money and Business, Vol. 2* No. 1, pp. 70-81. https://doi.org/10.1108/JMB-08-2021-0032

5. Anton, Sorin Gabriel, and Anca Elena Afloarei Nucu. 2021. The Impact of WorkingCapital Management on Firm Profitability: Empirical Evidence from the Polish Listed Firms. *Journal of Risk and Financial Management 14*: 9. https://dx.doi.org/10.3390/jrfm14010009

6. Braimah, A., Mu, Y., Quaye, I., & Ibrahim, A. A. (2021). Working Capital Management and SMEs Profitability in Emerging Economies: The Ghanaian Case. *SAGE Open*. https://doi.org/10.1177/2158244021989317

7. Dancan O. Othuon, Karambu Kiende Gatimbu, Collins M. Musafiri, Felix K. Ngetich. (2021).Working capital management impacts on small-scale coffee wet mills' financial performance in eastern Kenya, *Heliyon, Volume 7,* Issue 9, e07887, ISSN 2405-8440, https://doi.org/10.1016/j.heliyon.2021.e07887.

8. Fekadu Agmas Wassie, "Working Capital Management and Its Impact on Firms' Performance: An Empirical Analysis on Ethiopian Exporters", *Education Research International, vol. 2021,* Article ID 6681572, 10 pages, 2021.https://doi.org/10.1155/2021/6681572

9. Iman Soukhakian & Mehdi Khodakarami (2019) Working capital management, firmperformance and macroeconomic factors: Evidence from Iran, *Cogent Business & Management, 6:1,* 1684227, DOI: 10.1080/23311975.2019.1684227

10. Lucía Rey-Ares, Sara Fernández-López, David Rodeiro-Pazos. (2021).Impact of working capital management on profitability for Spanish fish canning companies, *Marine Policy, Volume 130*, 104583, ISSN 0308-597X, https://doi.org/10.1016/j.marpol.2021.104583.

11. Lyngstadaas, H. Packages or systems? Working capital management and financial performance among listed U.S. manufacturing firms. *J Manag Control 31,* 403–450 (2020). https://doi.org/10.1007/s00187-020-00306-z.

12. Morshed, A. (2020), "Role of working capital management in profitability considering the connection between accounting and finance", *Asian Journal of Accounting Research, Vol.5* No. 2, pp. 257-267. https://doi.org/10.1108/AJAR-04-2020-0023

13. Muhammad Yousaf & Petr Bris (2021) Effects of working capital management on firm performance: Evidence from the EFQM certified firms, *Cogent Economics & Finance, 9:1,* 1958504, DOI: 10.1080/23322039.2021.1958504

14. Nkambule, T.P., Matsongoni, H., & Mutambara, E. (2022). Re-thinking the working capital management and financial performance practices for bigbend planters group grower firms, Eswatini. *Accounting and Financial Studies Journal, 26(S2),* 1- 17.

15. Najib H.S. Farhan, Fozi Ali Belhaj, Waleed M. Al-ahdal & Faozi A. Almaqtari (2021) An analysis of working capital management in India: An urgent need to refocus, *Cogent Business & Management, 8:1*, 1924930, DOI: 10.1080/23311975.2021.1924930

16. Period Parban Dutta, Rajashik Sen, Sarbani Mitra (2023) , " Working Capital Management of Selected Company During Pre and Post Pandemic Period ", *International Journal of Financial Management Vol. 13* (2) https://doi.org/10.1108/JAOC-01-2023-0005

17. Prabhpreet Kaur. (2021). Impact of Working Capital Investment Strategies on Efficiency of Working Capital in the Pharmaceutical Industry. *Indian Journal of finance, Volume 15,* Issue 12, December 2021.

18. PHAM, K. X., NGUYEN, Q. N., & NGUYEN, C. V. (2020). Effect of Working Capital Management on the Profitability of Steel Companies on Vietnam Stock Exchanges. *The Journal of Asian Finance, Economics and Business, 7(10),* 741–750. https://doi.org/10.13106/JAFEB.2020.VOL7.N10.741

19. <u>Vlismas, O.</u> (2023), "The moderating effects of strategy on the relation of working capital management with profitability", *Journal of Accounting & Organizational Change, Vol*. ahead-of-print No. ahead-of-print. <u>https://doi.org/10.1108/JAOC-01-2023-0005</u>