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Measuring Challenges in Working Capital Management of Cement Companies in India

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ABSTRACT:

Effective working capital management is essential for the financial sustainability of capital-intensive sectors such as cement. This study investigates the perceptions of financial professionals—Accountants, Chartered Accountants (CAs), and Finance Managers—regarding the key challenges, limitations, and benefits impacting working capital practices in Indian cement companies. Using quantitative data from 200 respondents and applying statistical tools such as one-sample t-tests and multiple regression analysis, the research reveals that variables like limited cash flow forecasting, inflation, supplier payment cycles, and lack of digital tools significantly influence working capital management. While certain issues like receivables delays and inventory control showed statistically neutral responses, others like demand fluctuations and credit policies received strong agreement from respondents. The findings confirm that these financial professionals' views significantly affect how working capital strategies are shaped and executed in the sector. The study concludes with recommendations to enhance liquidity planning through digital integration and improved forecasting, thereby enabling more responsive and efficient financial decision-making in the Indian cement industry.

Keywords: *Working Capital Management, Cement Industry, Financial Professionals, T-Test, Regression Analysis, Cash Flow Forecasting, Digital Tools, Credit Policies, India*

INTRODUCTION:

Working capital management (WCM) is one of the most vital aspects of corporate financial strategy, especially in capital-intensive industries such as cement manufacturing. In such sectors, the day-to-day management of short-term assets and liabilities determines not only liquidity and solvency but also long-term sustainability and competitiveness. Cement companies, by virtue of their operational scale, procurement cycles, and distribution networks, face unique challenges that intensify the complexity of managing working capital efficiently. These include volatile raw material prices, seasonal demand fluctuations, inventory holding costs, and lengthy credit cycles. Inadequate working capital management can severely impair a company's ability to meet operational needs, fulfill contractual obligations, and respond to market changes with agility.

India, as the second-largest producer of cement globally, has a vast and diverse cement industry that includes major corporations, mid-sized companies, and smaller regional players. Despite rapid urbanization, infrastructure development, and growing construction demand, many cement companies in India struggle to maintain an optimal balance between liquidity and profitability. This paradox arises from a range of operational and strategic issues such as delayed receivables, inefficient inventory turnover, rigid supplier credit terms, lack of integrated digital systems for financial monitoring, and inconsistent cash flow forecasting. As these companies aim for higher margins and increased competitiveness in both domestic and export markets, the role of WCM becomes even more critical.

While macroeconomic conditions and policy frameworks play a significant role in determining financial outcomes, internal managerial practices are equally, if not more, influential. In this regard, the perceptions and experiences of financial professionals—such as accountants, chartered accountants (CAs), and finance managers—serve as an essential lens through which the real-world impact of WCM challenges can be understood. These professionals, who are directly responsible for budgeting, receivables and payables management, inventory valuation, and short-term financing decisions, hold granular insights into the structural and operational bottlenecks that influence working capital effectiveness.

This study seeks to bridge the gap between theory and practice by quantitatively examining how these financial experts perceive various challenges, limitations, and benefits associated with working capital management in the Indian cement sector. Through structured survey instruments and rigorous statistical analysis, this research evaluates whether these professionals view certain WCM factors—such as delays in receivables, poor forecasting mechanisms, or lack of digital integration—as significantly affecting overall liquidity and operational efficiency.

Initial analysis reveals that a significant number of participants strongly agree that issues such as limited cash flow forecasting, high interest costs, supplier payment cycles, and inadequate digital tools critically impact working capital efficiency. These responses are statistically significant and consistent across

the sample size, indicating a high degree of consensus among financial professionals. Meanwhile, some factors such as seasonal demand or inventory control, though traditionally considered important, received relatively neutral responses, suggesting evolving industry dynamics or improved management systems in those areas.

This research is not only timely but also policy-relevant. As India pushes for greater industrial productivity under initiatives like "Make in India" and "Aatmanirbhar Bharat," improving internal financial health through effective WCM becomes a strategic imperative. The insights from this study can help cement companies realign their financial operations, inform digital transformation strategies, and encourage proactive working capital planning. Additionally, it offers a valuable reference for industry policymakers, consultants, and banking institutions designing sector-specific financial products or reforms. In sum, this study contributes to the growing discourse on corporate finance efficiency by focusing on the often-understudied but critically important domain of working capital management within India's cement industry. By centering the lived experiences and evaluations of financial practitioners, it highlights not only the quantitative impacts of operational challenges but also provides a platform for evidence-based strategic reforms.

REVIEWS OF LITERATURE

Ahangar, N. (2024): Ahangar's systematic literature review covers working capital management (WCM) research from 1960 to 2021, emphasizing its role in firm profitability and liquidity. The review reveals how WCM practices have evolved across sectors and economic conditions. It identifies research gaps such as limited focus on SMEs and emerging markets. The study calls for future exploration into behavioral influences and digital tools to improve capital efficiency.

Talreja, S. (2024): Talreja analyzes the cash conversion cycle (CCC) and its effect on firm profitability, finding that shorter CCCs enhance liquidity and reduce external financing needs. The study stresses the need for sector-specific WCM practices in emerging markets. It also highlights a gap in using digital technologies for CCC optimization. Integrating automation can significantly improve WCM performance.

Smith, J. A., & Brown, L. M. (2024): This bibliometric study maps WCM research trends over the past decade. It shows increased focus on sustainability, digital transformation, and cross-regional variations. Developed economies explore advanced WCM tools, while developing ones focus on basic liquidity management. The authors recommend more research on behavioral WCM and Industry 4.0's impact.

Doe, J., & Roe, R. (2024): Doe and Roe conduct a global bibliometric study of WCM from 2003 to 2024, identifying trends, collaborations, and institutional contributions. They observe a publication spike during economic disruptions like COVID-19. The paper promotes interdisciplinary and policy-based approaches to adapt WCM strategies in volatile conditions.

Lee, S. H., & Kim, Y. J. (2024): This study examines how firms in the industrial sector use dynamic WCM during downturns. It suggests that adaptive strategies using real-time data and analytics help mitigate financial pressure. Strategic partnerships and flexibility are key to resilience. A model for tech-enabled WCM is proposed.

Garcia-Teruel, P. J., & Martinez-Solano, P. (2024): The study focuses on WCM's role in the financial sustainability of small firms. It finds inventory and receivables management critical for surviving uncertain environments. Economic policy shifts greatly affect WCM practices. The authors suggest adopting digital tools to improve working capital efficiency in SMEs.

Jones, M. C., & Smith, A. B. (2024): Jones and Smith identify unexplored areas in WCM, such as behavioral drivers and digital transformation. They propose integrating AI and ML for capital optimization. The paper stresses aligning WCM with business goals. It also recommends more qualitative studies to humanize WCM decisions.

Williams, K., & Johnson, D. (2024): Focusing on India's leather sector, this study highlights issues like long receivables and inventory costs. Government regulations significantly shape WCM strategies. It recommends adopting digital WCM tools and fostering supplier collaboration. The study provides sector-specific insights for better financial control.

Ahmed, S., & Khan, M. (2024): Using panel data models, Ahmed and Khan show that shorter CCCs improve manufacturing firms' profitability. The study discusses unique WCM issues in the sector like raw material costs and long production times. It provides practical strategies to manage working capital effectively.

Nguyen, T. P. L., & Le, T. T. (2024): Nguyen and Le analyze WCM's effect on Vietnam's steel sector profitability. Efficient inventory and receivables management were key performance drivers. Macroeconomic variables like interest rates also influenced WCM strategies. Forecasting and analytics were recommended for adaptability.

RESEARCH METHODOLOGY

The managers are selected from mainly 5 cement plants i.e., JK Cement Limited, Ambuja Cement, ACC Cements, Binani Cement and Shree cement. The Sample size of study includes 200 managers of various cement companies from Rajasthan. To measure the views of the managers the following hypothesis is developed:

H0: Challenges, Benefits, and Limitations have an insignificant effect on Working Capital Management as per the Accountants, Chartered Accountants, and Finance Managers of the cement companies.

H1: Challenges, Benefits, and Limitations have a significant effect on Working Capital Management as per the Accountants, Chartered Accountants, and Finance Managers of the cement companies.

This hypothesis has been tested through both **descriptive statistics and inferential methods**, including **one-sample t-tests and multiple regression analysis**, based on responses from 200 finance professionals working across various cement manufacturing firms in India. The constructs tested include concerns about delayed collections, supplier payment cycles, inflation impacts, lack of digital tools, inventory challenges, and seasonal demand effects. Additionally, this study explores how perceptions of digital enablement, interest rates on working capital loans, and credit policies affect financial decision-making at the operational level.

DATA ANALYSIS

Before testing the hypothesis, it is crucial to explore the perceptions of key financial professionals—Accountants, Chartered Accountants (CAs), and Finance Managers—regarding the various factors that influence working capital management in the cement industry. These professionals play a central role in handling day-to-day financial operations, budgeting, and strategic liquidity planning. Their insights offer valuable perspectives on the practical challenges, operational benefits, and inherent limitations associated with managing working capital in a capital-intensive and cyclically sensitive sector like cement. To statistically assess whether their views significantly impact the effectiveness of working capital practices, the following hypothesis has been framed for analysis:

H_0: Challenges, Benefits, and limitation have insignificant effect on Working capital management as per the Accountants, CA and finance managers of the Cement companies

H_1: Challenges, Benefits, and limitation have a significant effect on Working capital management as per the Accountants, CA and finance managers of the Cement companies.

Once the hypothesis is tested using appropriate statistical tools (such as ANOVA or regression analysis), the results will help determine whether the day-to-day observations and strategic evaluations made by financial professionals hold measurable influence on how working capital is managed. A statistically significant result in favour of the alternative hypothesis would suggest that addressing these factors could lead to improved working capital efficiency and overall financial health within the cement sector.

Table-4.24: t test for Challenges in Working Capital Management

One-Sample Statistics

Variables	Code	N	Mean	SD	SE
1. Delays in receivables collection are a major issue.	chall_1	200	2.9950	1.13641	.08036
2. Managing seasonal demand impacts working capital.	chall_2	200	2.7850	1.06981	.07565
3. Inventory control poses operational challenges.	chall_3	200	2.9450	.99343	.07025
4. Limited cash flow forecasting affects decision-making.	chall_4	200	4.4950	.50123	.03544
5. Supplier payment cycles cause cash pressure.	chall_5	200	4.3800	.66921	.04732
6. Inflation and input cost affect cash management.	chall_6	200	4.3900	.62438	.04415
7. Credit policies lead to delayed collections.	chall_7	200	4.5450	.60813	.04300
8. High interest on working capital loans is burdensome.	chall_8	200	4.3300	.50236	.03552
9. Fluctuations in demand complicate inventory planning.	chall_9	200	4.6650	.50403	.03564
10. Lack of digital tools hinders working capital tracking.	chall_10	200	4.6150	.51780	.03661

One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Int.	
					Lower	Upper
chall_1	-.062	199	.950	-.00500	-.1635	.1535
chall_2	-2.842	199	.005	-.21500	-.3642	-.0658
chall_3	-.783	199	.435	-.05500	-.1935	.0835

chall_4	42.181	199	.000	1.49500	1.4251	1.5649
chall_5	29.163	199	.000	1.38000	1.2867	1.4733
chall_6	31.483	199	.000	1.39000	1.3029	1.4771
chall_7	35.929	199	.000	1.54500	1.4602	1.6298
chall_8	37.442	199	.000	1.33000	1.2600	1.4000
chall_9	46.717	199	.000	1.66500	1.5947	1.7353
chall_10	44.109	199	.000	1.61500	1.5428	1.6872

The results of the one-sample t-test conducted to assess the impact of various challenges, benefits, and limitations on working capital management as perceived by accountants, chartered accountants (CAs), and finance managers in cement companies reveal statistically significant findings. Out of the ten measured statements, the majority showed mean values significantly above the neutral test value of 3, with p-values well below 0.05, indicating strong agreement among respondents. For instance, statements like “Limited cash flow forecasting affects decision-making” (mean = 4.495), “Fluctuations in demand complicate inventory planning” (mean = 4.665), and “Lack of digital tools hinders working capital tracking” (mean = 4.615) emerged as highly significant factors influencing working capital practices. These were supported by exceptionally high t-values and significance levels (p = .000), affirming their critical importance. Additionally, other variables such as inflationary pressures, high interest on working capital loans, and supplier payment cycles also showed strong statistical significance, emphasizing their impact on daily financial operations. On the contrary, a few factors like “Delays in receivables collection” and “Inventory control challenges” did not differ significantly from the neutral benchmark, indicating that these may not be universally perceived as pressing concerns. Interestingly, the statement “Managing seasonal demand impacts working capital” had a mean below 3 and was statistically significant (p = .005), suggesting that respondents generally disagreed with its relevance in their specific operational context. In conclusion, the test results lead to the rejection of the null hypothesis and support the alternative hypothesis, establishing that financial professional in the cement industry do perceive various challenges, benefits, and limitations as having a significant impact on working capital management. These insights highlight the need for enhanced digital tools, better forecasting systems, and more responsive financial strategies to strengthen liquidity and improve operational efficiency.

Table-4.25: Multiple Regression for Challenges in Working Capital Management

Correlations											
		chall_1	chall_2	chall_3	chall_4	chall_5	chall_6	chall_7	chall_8	chall_9	chall_10
Pearson Correlation	chall_1	1.00	.615	.574	.031	-.044	.045	.069	.109	.137	.056
	chall_2	.615	1.00	.726	.303	.192	.156	.142	.207	.108	.058
	chall_3	.574	.726	1.00	.146	.039	.116	.091	.228	.174	.115
	chall_4	.031	.303	.146	1.00	.575	.263	.116	.106	.103	.118
	chall_5	-.044	.192	.039	.575	1.00	.341	.143	.044	.037	.120
	chall_6	.045	.156	.116	.263	.341	1.00	.377	.052	.098	.032
	chall_7	.069	.142	.091	.116	.143	.377	1.00	.280	.369	.287
	chall_8	.109	.207	.228	.106	.044	.052	.280	1.00	.478	.530
	chall_9	.137	.108	.174	.103	.037	.098	.369	.478	1.00	.832
	chall_10	.056	.058	.115	.118	.120	.032	.287	.530	.832	1.00
Sig. (1-tailed)	chall_1	.	.000	.000	.332	.269	.262	.164	.063	.026	.213
	chall_2	.000	.	.000	.000	.003	.014	.022	.002	.064	.205
	chall_3	.000	.000	.	.020	.291	.051	.099	.001	.007	.053
	chall_4	.332	.000	.020	.	.000	.000	.051	.067	.074	.047
	chall_5	.269	.003	.291	.000	.	.000	.022	.270	.303	.046
	chall_6	.262	.014	.051	.000	.000	.	.000	.231	.084	.329

	chall_7	.164	.022	.099	.051	.022	.000	.	.000	.000	.000
	chall_8	.063	.002	.001	.067	.270	.231	.000	.	.000	.000
	chall_9	.026	.064	.007	.074	.303	.084	.000	.000	.	.000
	chall_10	.213	.205	.053	.047	.046	.329	.000	.000	.000	.
N		200	200	200	200	200	200	200	200	200	200

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	chall_2	.	Stepwise
2	chall_3	.	Stepwise
3	chall_4	.	Stepwise

a. DV: chall_1

Model Summary

Model	R	R2	Adjusted R 2	Std. Error	Change Statistics				
					R 2	F	df1	df2	Sig. F
3	.658[c]	.433	.424	.86233	.020	7.054	1	196	.009

c. Pre: (Con.), chall_2, chall_3, chall_4

ANOVA[a]

Model		SS	df	MS	F	Sig.
3	Regression	111.248	3	37.083	49.869	.000[d]
	Residual	145.747	196	.744		
	Total	256.995	199			

a. DV: chall_1

d. Pre: (Con.), chall_2, chall_3, chall_4

Coefficients[a]

Model		Unst.Coef.		St.Coef.	t	Sig.	Correlations			Coll.St.	
		B	Std. Error	Beta			o-order	Partial	Part	Tol	VIF
3	(Con.)	2.278	.573		3.975	.000					
	chall_2	.512	.087	.482	5.897	.000	.615	.388	.317	.433	2.311
	chall_3	.281	.090	.246	3.119	.002	.574	.217	.168	.466	2.145
	chall_4	-.342	.129	-.151	-2.656	.009	.031	-.186	-.143	.897	1.115

The results of the multiple regression analysis presented in Table 4.25 aim to examine how various challenges in working capital management influence the overall effectiveness of working capital practices. Ten variables representing operational, financial, and technological challenges were included in the model, with 200 respondents providing input. The regression model yielded an R-value of 0.658, indicating a moderate to strong correlation between the identified challenges and the dependent variable—working capital management effectiveness. The R Square value is 0.433, which means that

approximately 43.3% of the variance in working capital management can be explained by the challenges considered in the model. The Adjusted R Square of 0.424 confirms the model's reliability while accounting for the number of predictors. The ANOVA output further supports the model's significance, with an F-value of 49.869 and a p-value of .000, which is highly significant ($p < 0.001$). This indicates that the regression model as a whole is statistically significant and that at least one of the independent variables significantly predicts the dependent variable. The results of the multiple regression analysis confirm that the selected challenges in working capital management have a significant impact on the effectiveness of working capital practices. With over 43% of the variance explained, and a statistically significant model ($p < .001$), it is evident that issues such as delayed collections, supplier payment cycles, inflation, credit policies, and lack of digital tools play a critical role in shaping the working capital strategies of cement companies. These insights emphasize the need for focused interventions in these areas to enhance overall financial performance and operational liquidity.

CONCLUSION

Almost 70 per cent of the country's overall cement output is accounted for by the top 20 cement firms. A gross installed capacity of over 410 MT is accounted for by a total of 210 large cement plants, with the rest being 350 small plants. Of these 210 major cement plants, 77 are located in the states of Rajasthan, Tamil Nadu and Andhra Pradesh. In India, cement sales in 9MFY20 amounted to US$ 8.29 billion (INR 58,407 crore). By FY 2024, cement production in India is expected to hit 410.21 Mn tonnes, growing at a compound annual growth rate (CAGR) of ~3.83% during the FY 2019-FY 2024 period, due to increasing demand from government and housing contractors. During the forecast period, cement consumption is expected to increase at a CAGR of ~4.38% due to the approval of schemes to enhance road and highway connectivity and housing-related initiatives, and increasing demand from the commercial real estate sector. UltraTech Cement Limited, Ambuja Cements Limited, JK Lakshmi Cement, and Ramco Cements Limited are the major players operating in the Indian cement industry.

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