

Impact of Working Capital on Financial Performance: A Case of Cement Companies in Gujarat

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ABSTRACT

Working capital Management is a veritably important element of commercial finance because it directly affects profitability of a company. Effective operation of working Capital is one of the pre-conditions for the success of an enterprise. The present research article examines the impact of working capital management on the financial performance of 15 cement companies in Gujarat by taking balanced panel data for ten years (2013 – 2022). The variables of the study are divided into three categories, financial performance, working capital, control variables. Financial performance has been considered as the dependent variable. Accounting performance has been measured by return on asset (ROA). Working capital is treated as the independent variable which has been measured using the inventory conversion period (ICP) and net accounts receivable period (ACP). Using panel data regression methodology, the study concludes the negative and significant effect of working capital measured by the inventory conversion period on the accounting performance measures, whereas market measures have been favourably affected by the same. The outcome of research work will help practitioners to devise a suitable strategy for managing working capital, and it also bridges the gap in the existing literature by contributing to the pool of knowledge.

INTRODUCTION

Functions of finance are categorised into four major groups, i.e., investment, financing function, working capital and dividend function. Investment and financing are associated with a long- term horizon and are non-recurring functional areas. On the other hand, working capital management (WCM) is more concerned with the operating conditioning of business and is more episodic than other aspects. The hunt for working capital starts with the procurement of raw material, transubstantiating them into finished goods to cash collection from debtors (Soukhakian & Khodakarami, 2019). The significance of WCM has been recognised in literature and is substantiated by significant contribution by many researchers (Deloof, 2003; Lazaridis & Tryfonidis, 2006; Garcia-Teruel & Martinez- Solano, 2007; Muhammad, Jan, & Ullah, 2008; Aggarwal & Chaudhary, 2015; Afrifa & Tingbani, 2018). In practice, WCM is a process of seeking for a balance between liquidity and profitability. Lowering investments in current means similar as stock and receivables can reduce cost and ameliorate profitability (Afrifa & Tingbani, 2018), whereas disproportionate investment in current means yields sour returns (Raheman & Nasr, 2007). Effective operation of WCM can help in maximisation of enterprises' value (Deloof, 2003) and have a critical impact on profitability and threat of the establishment (Garcia- Teruel & Martinez- Solano, 2007).

Working capital Management is a veritably important element of commercial finance because it directly affects profitability of a company. Effective operation of working Capital is one of the pre-conditions for the success of an enterprise. Effective operation of working capital means operation of colourful factors of working capital in such a way that an acceptable quantum of working capital is maintained for smooth handling of a establishment and for fulfilment of binary objects of profitability (BPP Learning Media, 2010). An establishment is needed to maintain a balance between profitability while conducting its day-to-day operations.

Conventionally, the influence of WCM on profitability has been analysed using operating profit and return on means (ROA) as a measure (Raheman & Nasr, 2007; Rahman, 2011; Vijayakumaran & Atchyuthan, 2017) which further extended to request- grounded measures like Tobin's Q rate (Abuzayed, 2012; Afrifa & Tingbani, 2018). The present work is aimed at assessing the effect of WCM on the financial performance of the Indian cement industry. The current study differs from previous studies in two ways. Originally, it adopts 'net receivables period'

as a new measure of WCM, as enterprises always try to balance between accounts receivables and outstanding payables period to reduce the need for working capital financing; hence, the net period should be used due to offsetting effects. Secondly, the study examines the effect of WCM on accounting as well as market-based financial performance in the environment of the Indian cement sector. Previous studies have revealed opposing results, similar as the exploration findings of Ganesan (2007), Ramachandran and Janakiraman (2009), Aggarwal and Chaudhary (2015) and Vartak and Hotchandani (2019) have concluded that WCM has a negative effect on profitability whereas Muhammad et al. (2008), Sharma and Kumar (2011) and Makori and Jagongo (2013) have reported a positive impact. Similar differing results produce a need for further delving in this area.

LITERATURE REVIEW

Financial performance of business, as indicated by measures like gross profit periphery, net operating profit, ROA, ROE, and earnings per share, is grounded on information recorded in the books of accounts. Deloof (2003) has considered gross operating income as a measure of enterprises' performance. He has concluded that profitability can be bettered significantly by reducing receivable days and force conversion period. Hindered collections affect in a cash deficiency which further leads to detention in payments to creditors. Lazaridis and Tryfonidis (2006) have supported the findings of Deloof (2003) and proved the adverse effect of a longer cash conversion cycle (CCC) on profitability. The extension of credit to the client may lead to collection delinquencies and bad debts. To incorporate this adverse effect, gross profitability should be replaced by net profitability, i.e., net operating profit. Raheman and Nasr (2007) and Ramachandran and Janakiraman (2009) have considered net operating profit as a measure of fiscal performance. They've shown the strong negative effect of colourful factors of working capital operation on operating profit, indicating that longer conversion cycles negatively affect fiscal performance. Enterprises with lower profitability are converted to reduce the credit period allowed to guests to ground the gap between cash demand and its vacuity (Ramachandran & Janakiraman, 2009).

Profitability, when expressed as a chance of means or investments, enables peer comparison and assists in decision timber. ROA has been one of the most extensively used measures of account-grounded fiscal performance (Chowdhury & Amin, 2007; Rahman, 2011; Makori & Jagongo, 2013; Gaur & Kaur, 2017). Deloof (2003) supported for the use of operating income rate to measure fiscal performance. But, ROA incorporates the operating gains of the company as well as utilisation of available means in generating similar gains (Makori & Jagongo, 2013) and hence can be viewed as a comprehensive measure of profitability (Padachi, 2006). Following the once studies from Senanayake, Dayaratna, and Semasinghe (2017) and Vartak and Hotchandani (2019), the study adopts ROA as the account-grounded measure of fiscal performance. Liberal credit policy can increase deals which further boosts profitability, but it also extends the CCC, which is used as a wide-ranging measure of WCM of the establishment. Hence, companies have to trade-off between profitability and liquidity. Advanced cash holding enables companies to avoid high-cost backing and also provides autonomy in decision (Vijayakumaran & Atchyuthan, 2017).

Sharma and Kumar (2011) have concluded an analogous positive relationship for Indian corporates by considering a large data set of 263 listed companies. The direct relationship between profitability and CCC is relatively uncommon in empirical exploration and has been contradicted by the findings of Rahman (2011), Goel and Jain (2017) and Vartak and Hotchandani (2019). A longer conversion cycle may be the result of inefficiency in the product process and detention in entering payments. CCC as a compound measure cannot help in decision making directly because of its inclusiveness, and thus, it has to be broken down into sub-parts, vicelike inventory conversion period (ICP), average collection period (ACP) and creditor disbursement period (CDP). Research studies from Ganesan (2007), Muhammad et al. (2008) and Aggarwal and Chaudhary (2015) have stoked the single measure of WCM, i.e., CCC, by incorporating activity wise conversion time to help directorial decision timber. Holding force for a longer span of time is an index of poor fiscal performance as enterprises with deteriorating gains find their stock position enhancing (Deloof, 2003; Garcia- Teruel & Martinez- Solano, 2007; Sharma & Kumar, 2011).

The detention in payments negatively affects the profitability and credit worthiness of an organisation, and hence profitable enterprises prefer to discharge their scores on time (Vartak & Hotchandani, 2019). On the negative, loss-making enterprises struggle to pay their pretences and hence longer CDP negatively affects profitability (Ganesan, 2007; Muhammad et al., 2008; Seyoum, Tesfay, & Kassahun, 2016). In addition to the phases of operating cycle and time period involved, the working capital policy can be analysed using an exertion rate expressed as a frequency rather than number of days. Rehman and Anjum (2013) and Gaur and Kaur (2017) have considered current ratio, acid-test ratio, current assets to total assets and current assets to sales ratio as exploratory variables and assessed their impact on financial performance. Both exploration studies have verified a positive relationship between working capital operation and the profitability of enterprises. inclusively, this section highlights the significant impact of WCM on enterprises' performance; still, it also reveals that the exploration findings aren't harmonious.

METHODOLOGY

Though substantial literature focusing on working capital and firm performance is available, very limited research work has concentrated on the linkage between WCM and shareholders' wealth. Besides, empirical studies focusing on this point are not carried out in the Indian context, especially in the cement sector of Gujarat. Moreover, past research work shows inconsistent results so far as WCM and financial performance are concerned. Hence, the current research will bridge the gap in the existing research by assessing the effect of WCM market based financial measures along with accounting measures.

The present research aims to analyse the effect of working capital management on accounting and market based financial performance of selected cement sector companies in Gujarat. The current study extends the research work of Nazir and Afza (2009) and Abuzayed (2012) in the Indian context. Based on the existing literature, the variables of the study are divided into three categories, i.e. (i) financial performance, (ii) working capital, and (iii) control variables.

Financial performance has been considered as the dependent variable. Accounting performance has been measured by return on asset (ROA). Working capital is treated as the independent variable which has been measured using the inventory conversion period (ICP) and net accounts receivable period (ACP).

As the financial performance is affected by several firm-specific factors other than working capital. Therefore, income growth, firm size, leverage and total assets turnover ratio are considered as control variables. The annual percentage change in sales has been proxied for growth (Gaur & Kaur, 2017), whereas the size is measured by the natural log value of total assets (Vijaya kumaran & Atchyuthan, 2017). Leverage is computed as the ratio of debt to assets (Makori & Jagongo, 2013), and the asset turnover ratio is measured as sales to total assets ratio. The present study adopts a descriptive methodology of research and analyses the effect of WCM on financial performance. Following hypothesis are formed and eventually tested using empirical results.

- H01: ICP does not have a significant impact on ROA
- H02: ACP does not have a significant impact on ROA
- H03: ICP does not have a significant impact on ROE
- H04: ACP does not have a significant impact on ROE

The present study focuses on the cement industry in Gujarat; hence all listed and private cement companies in Gujarat are considered for inclusion in the sample. The empirical results are based on the secondary data collected from the Ace Equity database. According to the ACE Equity database, 15 cement companies are selected. To create a balanced panel dataset for the study period of 10 years (2013 – 2022), companies are selected using a multistage sampling technique. Availability of data for selected variables throughout the study period is the primary filter of sample selection. Finally, 15 companies are selected based on the requirement, which creates an ultimate dataset of 150 firm-year observations.

Financial data collected from secondary sources have been analysed using descriptive analysis, correlation and multiple regression analysis. The data has been validated for assumptions like autocorrelation and multicollinearity using the Durbin-Watson (DW) test and Variance Inflation Factor (VIF), respectively. Panel data methodology has been adopted as it incorporates the potential endogeneity of variables arising from unobserved firm heterogeneity, which is ignored in the ordinary least square method (Vijayakumaran & Atchyuthan, 2017). Fixed effects model assess the firm-wise variation in intercept assuming same slope, constant variations, and time-invariant individual effects whereas random-effects model treats individual intercept as a random variable with mean value α and express intercept of each company as $\alpha_i = \alpha + \epsilon_i$ where ϵ_i is a random error with zero mean (Gujarati, 2003). The suitability of fixed and random effects has been examined by a Hausman test with the null hypothesis that a random-effects model is a better estimate than fixed effects. Following regression models are formulated considering financial performance as the dependent variable and working capital as the independent variable.

$$ROA = \alpha + \beta_1 ICP_{it} + \beta_2 ACP_{it} + \beta_3 Income\ Growth_{it} + \beta_4 Firm\ Size_{it} + \beta_5 Leverage_{it} + \beta_6 TATR_{it} + \epsilon_{it} \quad (1)$$

$$ROE = \alpha + \beta_1 ICP_{it} + \beta_2 ACP_{it} + \beta_3 Income\ Growth_{it} + \beta_4 Firm\ Size_{it} + \beta_5 Leverage_{it} + \beta_6 TATR_{it} + \epsilon_{it} \quad (2)$$

RESULTS

Table – 1 shows the descriptive statistics of the sample that assist in analysing the data and its variability. healthcare companies generate an average ROA of 14.04% with a standard deviation of 8.01%, which indicates moderate volatility in returns. The mean and standard deviation values of the ROE are 1.0516 and 0.0784, respectively, indicating quite satisfactory results. The average inventory conversion period of selected companies is approximately 69 days indicating a huge piling of inventory in the industry. The average net receivable period is

above 15 days, and its standard deviation is 29 days portraying firm-wise differences in collection and payment policies. The cement industry has reported an average revenue growth of 13.49%, whereas its average debt ratio is only 0.3241, from which it can be inferred that healthcare companies rely more on owners' funds compared to borrowings.

Table 1: Descriptive Statistics

Variables	Observations	Average	S. D.	Minimum	Maximum
ROA	150	0.1404	0.0801	-0.2534	0.4193
ROE	150	1.0516	0.0784	-0.2715	0.3945
ICP	150	69.3674	27.0348	12.6712	163.4831
ACP	150	15.3941	29.1760	9.0397	98.5367
Income Growth	150	0.1349	0.1861	-0.4137	1.7318
Firm Size	150	4.0574	0.6142	2.0361	4.8152
Leverage	150	0.3241	0.3607	0.0000	0.8757
TATR	150	0.7659	0.3351	0.2248	1.6725

Correlation Matrix

Results of Pearson correlation are shown in Table – 2, indicating linear relationships among the selected variables. A significant negative correlation has been observed between ROA and both working capital indicators. The results indicate that a higher length of operating cycle will adversely affect the financial performance of selected companies. Reducing the inventory conversion period and minimising the gap between collection and payment days can significantly improve the profitability of firms. Past research from Deloof (2003), Lazaridis and Tryfonidis (2006) and Sharma and Kumar (2011) have also supported the inverse relationship. Analysing the result for ROE, ACP has an indirect relation, but it is not significant, and only inventory conversion has a significant negative relation which is in line with previous studies. An explanation for such results can be given as the current market value of a firm is an indicator of future returns, and investors analyse inventory holding jointly with revenue growth. Increasing inventories are associated with higher sales which can further improve operating profitability (Abuzayed, 2012) and gives a positive signal towards future profitability. Further, among control variables, income growth, leverage and TATR have significant relation with ROA, whereas ROE is significantly related with only leverage and TATR.

Table – 2: Correlation Matrix

	ROA	ROE
ICP	-0.3133**	-0.2946**
ACP	-0.0917*	-0.0063
Income Growth	0.1537*	0.1311
Firm Size	-0.4157	-0.3918
Leverage	-0.3328**	-0.2846**
TATR	0.4567**	0.3127**

**Significance at 1% level, * Significance at 5% level

To strengthen the conclusion on the effect of working capital on financial performance, multiple regression analysis has been applied. Table 3 and Table 4 summarises the regression output of Model 1 and Model 2, respectively. The robustness of results has been analysed by estimating both equations using fixed-effects as well as random effects methods, and the Hausman test has been applied to check their suitability. The results support (Significance value < 0.05) rejection of the null hypothesis and confirms the applicability of fixed-effects for both econometric models. Further, DW statistic and VIF values are also within the acceptable range (DW = 1.5 to 2.5; VIF < 10), indicating that any problem of autocorrelation and multicollinearity has been controlled (Gujarati, 2003). The fit of regression models has been tested using F-statistics, and its probability value (<0.01) shows that both models are significant.

The output of regression Model 1 (see Table 3) portrays the negative impact of working capital variables on the profitability of selected companies. Inventory conversion period has a significant negative effect on ROA, whereas the impact of ACP has not been supported by statistical significance. Holding inventory for a longer span of time will increase the carrying cost that adversely affects the profitability of the firm. Likewise, increasing the gap between collection and payments creates a liquidity crunch and forces companies to resort to external financing that leads to interest and procurement cost. Critical values of regression coefficients of ICP and ACP concludes **rejection of H₀₁** hypothesis whereas **failed to reject H₀₂** hypothesis. The findings of the present research coincide with the conclusions drawn from the research work of Raheman and Nasr (2007), Ramachandran and Janakiraman (2009), Aggarwal and Chaudhary (2015) and Goel and Jain (2017). Makori and Jagongo (2013) have reported contradictory results and concluded the positive effect of stock holding on profitability as higher inventory reduces

the possibility of production interruption and loss of sales. Among the control variables, only leverage and asset turnover ratio are found to be significant, and leverage reported negative impact, whereas turnover ratio improves profitability. Further, the fixed effects model can explain 57.20% variations in ROA, which is more than random effects validating the results of the Hausman test.

Table 3: Regression Results of Impact of Working Capital on ROA

	Fixed Effects Model		Random Effects Model	
	Coefficient	p-value	Coefficient	p-value
Constant	0.2302	0.0063	0.1835	0.005
ICP	-0.0023	0.0000	-0.0014	0.0005
ACP	-0.0005	0.0702	0.0000	0.7764
Income Growth	0.0303	0.1593	0.0059	0.7638
Firm Size	-0.0025	0.9127	-0.0053	0.6983
Leverage	-0.0793	0.0003	-0.0801	0.0000
TATR	0.0792	0.0096	0.0893	0.0003
F Statistic (p-value)	12.3761 (0.0000)		15.2610 (0.0000)	
R ² / Adjusted R ²	0.6235 / 0.5720		0.3257 / 0.2861	
Hausman Test Statistic (p – value): 23.1489 (0.0015)				
Durbin Watson Statistic 2.3105				
VIF: 2.2837				

The effect of WCM on the market value of firm measured by ROE has been highlighted in Table 4. As against ROA, ICP has a significant positive impact on the ROE, demonstrating that investors attach favourable signal to increasing inventory. Higher inventory reduces the procurement and operating risk and ensures undisturbed production. Further, as explained by Abuzayed (2012), the growing inventory level is linked with increasing sales which improves the profitability of the firm. This will further strengthen the expectations of future returns resulting in a positive effect on market value. Though this is in contrast with conventional understanding, the extant literature has not explored the relationship between the inventory conversion period and ROE adequately. Thus, these findings need further validation through future inquiries in this direction. On the contrary, increasing net ACP reduces the cash reserve of companies which could have been utilised for profitable investment opportunities and thereby maximising shareholders’ returns. Hence, ACP has a negative impact on ROE, but the results are significant at a 10% level (Prob. value = 0.067). Hypothesis testing for Model 2 reveals a similar result as Model 1 and supports the rejection of the H₀₃ hypothesis, and fails to reject the H₀₄ hypothesis. The Asset Turnover Ratio has a positive and significant effect on ROE as it indicates efficient utilisation of fixed assets. Other control variables are found to be insignificant.

Table 4: Regression Results of Impact of Working Capital on ROE

	Fixed Effects Model		Random Effects Model	
	Coefficient	p-value	Coefficient	p-value
Constant	0.5702	0.5113	0.7169	0.2936
ICP	0.011	0.0237	0.0093	0.0055
ACP	-0.0041	0.0673	-0.0033	0.0581
Income Growth	0.1322	0.5497	0.2197	0.2531
Firm Size	-0.1138	0.5674	-0.0093	0.9635
Leverage	-0.2251	0.1423	-0.2206	0.2107
TATR	0.5107	0.0302	0.1539	0.0603
F Statistic (p-value)	7.0349 (0.0000)		4.1528 (0.0000)	
R ² / Adjusted R ²	0.5013 / 0.4768		0.2844 / 0.2530	
Hausman Test Statistic (p – value): 12.3351 (0.0191)				
Durbin Watson Statistic 1.6684				
VIF: 2.2837				

CONCLUSION

Working capital management is an indispensable part of the decision making under corporate finance. The efficient management of current assets and current liabilities play a vital role in determining the profitability and value of a firm. The present research article examines the impact of working capital management on the financial

performance of 15 cement companies in Gujarat by taking balanced panel data for ten years (2013 – 2022). Using panel data regression methodology, the study concludes the negative and significant effect of working capital measured by the inventory conversion period on the accounting performance measures, whereas market measures have been favourably affected by the same. To strengthen the conclusion on the effect of working capital on financial performance, multiple regression analysis has been applied. Table 3 and Table 4 summarises the regression output of Model 1 and Model 2, respectively. The net receivable periods have a negative influence on profitability and market value, but the relationship is significant at the 10% level. As per Table 3 Inventory conversion period has a significant negative effect on ROA, whereas the impact of ACP has not been supported by statistical significance. Holding inventory for a longer span of time will increase the carrying cost that adversely affects the profitability of the firm. The effect of WCM on the market value of firm measured by ROE has been highlighted in Table 4. In these table 4 ACP has a negative impact on ROE, but the results are significant at a 10% level. Hypothesis testing for Model 2 i.e. Random effect model reveals a similar result as Model 1 i.e. fixed effect model and supports the rejection of the H_{03} hypothesis, and fails to reject the H_{04} hypothesis The Asset Turnover Ratio has a positive and significant effect on ROE as it indicates efficient utilisation of fixed assets. Hence, the findings conclude that firms can maximise their profitability and value by managing their working capital optimally. The outcome of research work will help practitioners to devise a suitable strategy for managing working capital, and it also bridges the gap in the existing literature by contributing to the pool of knowledge. Though the present research attempts to provide a comprehensive view of WCM and financial performance, few areas still require further examination. The current research does not include macroeconomic variables, which can be explored for future research. The conceptual model developed from the literature review can be empirically tested with different industry datasets. Further, similar studies can be conducted by concentrating on small and medium enterprises (SMEs) as they are equally exposed to the problems of profitability and liquidity.

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