RESEARCH ARTICLE

Relationship between Working Capital Management and Profitability: A Study of Selected FMCG Companies in India

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Relationship between Working Capital Management and Profitability: A Study of Selected FMCG Companies in India

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Abstract

The purpose of this paper is to investigate the relationship between working capital management and firm profitability and to identify the variables that most affect profitability. Working capital management is considered to be a vital issue in financial management decision and it has its effect on liquidity as well as on profitability of the firm. Moreover, an optimal working capital management positively contributes in creating firm value. In this study, we have selected a sample of 10 FMCG (Fast Moving Consumer Goods) companies in India from CMIE database covering a period of 10 years from 2000–01 to 2009–10. Profitability has been measured in terms of return on assets (ROA).Cash conversion cycle (CCC), interest coverage ratio, age of inventory, age of creditors, age of debtors and debt-equity ratio have been used as explanatory variables. Pearson's correlation and pooled ordinary least squares regression analysis are used in the study. The study results confirm that there is a strong negative relationship between variables of the working capital management and profitability of the firm**.** As the CCC increases, profitability of the firm decreases, and managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level. There is also a stumpy negative relationship between debt used by the firm and its profitability.

Keywords: Working capital; profitability.

1. Introduction

Working capital is considered as a significant issue in financial decision-making given that it is being a part of investment in asset which calls for appropriate financing investment. However, according to Sanger [1], working capital has always been ignored in financial decision-making because it involves investment and financing in short-term period and also acts as a restrain in financial performance, since it does not contribute to Return on Equity (ROE). Although, it ought to be critical for to a firm to sustain their short-term investment as it will ensure the ability of a firm in longer period. The essential part in management of working capital lies in maintaining its liquidity in day-to-day operation to ensure smooth running of the business and meets its obligations [2]. Nevertheless, this is not an effortless task because managers must ensure that the firm is running in efficient and profitable manner and also there are high possibilities of mismatch of current asset and current liability during this process. If this happens and firm's manager failed to manage it properly then it will affect firm's growth and profitability which will further escort to financial distress and finally firms can go bankrupt.

Various surveys have pointed out that managers use up considerable time on day-to-day problems that involve working capital decisions. One major reason for this is that current assets are short-lived investments that are continually being converted into other asset types [3]. As far as current liabilities are concerned, the firm is accountable for paying these obligations on a timely basis. Liquidity for the ongoing firm is not reliant on the liquidation value of its assets, but rather on the operating cash flows generated by those assets [4]. Thus, when taken together, decisions on the level of different working capital components become frequent, repetitive, and time consuming. According to Joshi [5], working capital management is a very sensitive area in the field of financial management and it involves the decision of the amount and composition of current assets and the financing of these assets. The working capital management of a firm partly affects its profitability.

Firms have to maintain an optimal level of working capital that maximizes its value. Huge inventory base and a liberal trade credit policy may lead to lofty sales, whereas larger inventory reduces the risk of a stock-out. On the other hand, trade credit may stimulate sales because it allows customers to assess product quality before paying [6, 7]. One of the well-accepted measures of working capital is the Cash Conversion Cycle (CCC), i.e., the time lag between the expenditure for the purchases of raw materials and the collection of sales of finished goods. The longer this time lag, the larger the investment in working capital [2]. A longer CCC might increase profitability because it leads to higher sales. However, corporate profitability might also decrease with the CCC, if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers [8].

This discussion on the importance of working capital management, its various components and their impact on profitability leads us to the problem statement which we will be analyzing in this study. Moreover, this study validates some of the findings of previous authors by way of examining the relationship between working capital management and profitability of the sample Indian FMCG firms, thus, adding substance to the existing theory developed by previous authors.

2. Review of Literature

Many researchers have studied working capital management from different views in different environments some of which are found very interesting and useful for our present study. The essence of those literatures is mentioned hereunder.

Ching *et al.* [9] conducted a study to find out the relationship between working capital management and profitability in Brazilian-listed companies. The objectives of their study were to investigate if there was any difference between corporate profitability and working capital management in two separate groups of companies: working capital intensive and fixed capital intensive; and to identify the variables that most affect profitability. They have measured profitability in three different ways: Return on Sales (ROS), Return on Assets (ROA) and ROE. The independent variables used are cash conversion efficiency, debt ratio, days of working capital, days receivable and days of inventory. Multiple linear regression used in their study identified that, there exists negative relationship between CCC (equal to days of working capital), debt ratio and profitability.

Deloof [2] is of the opinion that most firms had a large amount of cash invested in working capital and it is expected that the way in which working capital is administered will have a significant impact on profitability of those firms. He established a noteworthy negative relationship between gross operating income and the number of days accounts receivable, inventories and accounts payable of Belgian firms with the help of correlation and regression analysis. The findings of the study suggested that managers could create value for their shareholders by reducing the number of days' accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

A cross-sectional study using a sample of 131 firms listed on the Athens Stock Exchange for the period of 2001–2004 was conducted by Lazaridis and Tryfonidis [10] who explores a statistically significant negative relationship between profitability measured through gross operating profit and independent variables like CCC and financial debt using correlation and regression tests. They suggest that managers can create profits for their companies by correctly handling the CCC and by keeping each component of the conversion cycle at an optimum level.

To determine the effect of working capital management on the net operating profitability and liquidity, Raheman and Nasr [8] selected a sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of 6 years. Average collection period, inventory turnover in days, average payment period, CCC, current ratio, debt ratio, size of the firm, and financial assets to total assets ratio are the selected independent variables and net operating profit is the dependent variable used in their analysis. They found that there is a strong negative relationship between variables of working capital management and profitability of the firms. Their study also demonstrates a considerable negative relationship between liquidity and profitability, and that a positive relationship exists between size of the firm and its profitability. Furthermore, there is a significant negative relationship between debt used by the firm and its profitability.

Banos-Caballero *et al.* [11] analyzes the relationship between working capital management and profitability for small and medium-sized enterprises (SMEs) by controlling for unobservable heterogeneity and possible endogeneity. Unlike previous studies, they have examined a non-linear relation between these two

variables. Their results show that there is a non-monotonic (concave) relationship between working capital level and firm profitability, which indicates that SMEs have an optimal working capital level that maximizes their profitability. In addition, a robustness check of results confirms that firms' profitability decreases as they move away from their optimal level.

From a scan of the above studies it has been found that the term profitability was measured in different ways by the authors. It was measured in terms of ROS, ROA, ROE, gross operating income, gross operating profit and net operating profit. But, all the above authors found negative relationship between CCC and profitability. Also, the authors established negative relationship between debt used by the firm and profitability.

2.1. Research ambiguity

The conclusive sum of this retrospective review of relevant literature produced till date on the offered subject reveals wide room for the validity and originates of this work and reflects some decisive evidences that affirm its viability, as may be marked here it. Nor has any previous research examined the relationship between working capital management and profitability of FMCG companies in India.

2.2. Objectives of the study

To analyze the problem statement as mentioned earlier, we have developed objectives of our research. This research is focusing on working capital management and its effects on profitability for a sample of 10 Indian FMCG companies over a period of 10 years (2000–01 to 2009–10). The main objectives are:

- To determine the nature and extent of the relationship between working capital management and profitability.
- To explore the joint impact of different components of working capital management on profitability.

2.3. Hypothesis of the study

As the objective of this study is to examine the relationship between working capital management and profitability, the study makes a set of testable hypotheses. These hypotheses were also used and tested by Ching *et al.* [9].

Hypothesis 1

- H_0: There exists no relationship between cash conversion cycle and profitability.
- $H_{1:}$ There exists significant relationship between cash conversion cycle and profitability.

Hypothesis 2

- H_0: There exists no relationship between debt-equity ratio and profitability.
- $H_{1:}$ There exists strong relationship between debt-equity ratio and profitability.

3. Methods

In this segment, we talk about the sample companies and variables included in the study, the distribution patterns of data and applied statistical techniques in exploring the relationship between working capital management and profitability of FMCG companies in India.

3.1. Data source and sample design

The data used in the present study was acquired from CMIE database. The purposive sample design method was applied in this analysis. Preferred samples of 10 FMCG companies from the year of 2000–2001 to 2009–2010 were utilized in this analysis. The sample size is restricted to only 10 FMCG firms because latest data for analysis was available from CMIE database for these 10 FMCG firms only. The use of a preferred sample of selected companies might introduce a potential firm's success bias [12]. It is claimed that the potential for success is overstated using this technique. However, it is worried that the bias may or may not be important depending on the usage of the model. If the model is used to rank the firms for the potential success in order to perform a more detailed analysis, then the bias is not important. However, if the model is used to identify investment portfolio selection, then the bias is significant. A total of 10 FMCG companies were identified during the year of determination which is demonstrated in Table 1 below.

Table 1: Selected FMCG companies.

S. No.	FMCG companies
1	Hindustan Unilever Limited (HUL)
2	ITC Limited
3	Dabur India
4	Brittania Industries Limited
5	Nestlé India
6	GCMMF (AMUL)
7	Reckitt Benckiser
8	Procter & Gamble Hygiene and Health Care
9	Marico Industries Limited
10	Colgate-Palmolive India Limited

Source: CMIE database.

3.2. Variables selected

Selection of variables is influenced by the previous studies on working capital management as mentioned earlier in this paper. All the variables stated below have been used to test the hypotheses of our study. The dependent variable is defined as the profitability of the sample firms. The independent variable is interpreted as the commonly used financial ratios. The ratios used are chosen from those utilized by Ching *et al.* [9] and Padachi [13]. An itemized listing of the variables is accessible in Table 2.

Table 2: Selected variables.

S. No.	Independent variables	Dependent variable
1	Cash Conversion Cycle (CCC)	
2	Interest Coverage Ratio (ICR)	
3	Debt-Equity Ratio (DER)	Return on Assets (ROA)
4	Age of Inventory (AI)	
5	Age of Debtors (AD)	
6	Age of Creditors (AC)	

CCC is used as a comprehensive measure of working capital as it shows the time lag between expenditure for the purchases of raw materials and the collection of sales of finished goods. The longer the cycle, the larger the funds blocked in working capital. Amongst various measures of profitability ROA is a better one since it relates the profitability of the business to the asset base [13]. All the above selected variables have been computed as follows:

Table 3: Computation of selected variables.

Variables	Method of Computation
Cash Conversion Cycle (CCC)	(No. of Days Accounts Receivables + No. of Days Inventory) – No. of Days Accounts Payable
Interest Coverage Ratio (ICR)	PBIT/ Interest
Debt-Equity Ratio (DER)	External Equities or debts/Equity capital
Age of Inventory (AI)	(Average Inventory/Average Cost of Sales) x 365 days
Age of Debtors (AD)	(Average Debtors/Average Annual Credit Sales) x 365 days
Age of Creditors (AC)	(Average Creditors/Average Cost of Sales) x 365 days
Return on Assets (ROA)	PBIT/ Total assets

3.3. Model specifications

Apart from using normality tests, descriptive statistics and Pearson's Correlation coefficient analysis, panel data regression analysis of cross-sectional and time series data have been employed in the study. We have used pooled ordinary least square (OLS) regression type of panel data analysis. The pooled OLS regression, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross-section firm data and time series data are pooled together in a single column assuming that there is no significant cross-section or temporal effects [8]. In this model, we have pooled together all 100 observations and we are assuming the regression coefficients are the same for all the FMCG firms. That is, there is no distinction between the FMCG firms—one FMCG firm is as good as the other, irrespective of their size. However, this is considered to be the major problem with this model that it does not distinguish between various firms nor does it tell us whether the response of explained variable to the explanatory variables over time is the same for all the firms [14]. In other words, by lumping together different FMCG firms at different times we camouflage the heterogeneity that may exist among the FMCG firms or individuality of each subject is subsumed in the disturbance term ε_{it} [14]. In order to test our proposition, the general form of our model is as follows:

$$ROA_{it} = £ + \sum_{all}^{n} \beta_i X_{it} + \varepsilon_{it}(\text{unexplained variables or error terms}) \quad (1)$$

where ROA_{it}: Return on assets of firm i at time t (i = 1, 2, …, 10 firms, and t = 1, 2, …,10 years).
£: The intercept of equation.
β_i: Coefficients of X_{it} variables.
X_{it}: Different independent variables of firm 'i' at time't'.

Now converting the above general least square model with our variables we have the following:

$$ROA_{it} = £ + ß_1 CCC_{it} + ß_2 ICR_{it} + ß_3 DER_{it} + ß_4 AI_{it} + ß_5 AD_{it} + ß_6 AC_{it} + \varepsilon_{it} \text{ (unexplained variables or error terms)} \quad (2)$$

$$ROA_{it} = £ + ß_1 AI_{it} + ß_2 AD_{it} + ß_3 AC_{it} + \varepsilon_{it} \text{ (unexplained variables or error terms)} \quad (3)$$

where ROA_{it} = Return on Asset counted yearly of each firm; CCC_{it} = cash conversion cycle counted yearly of each firm; ICR_{it}= Interest Coverage Ratio counted yearly of each firm; DER_{it}= Debt-Equity Ratio counted yearly of each firm; AI_{it}= Age of Inventory counted yearly of each firm; AD_{it} = Age of Debtors counted yearly of each firm; AC_{it} = Age of Creditors counted yearly of each firm.

4. Results and Discussion

4.1. Test of normality

Before using OLS regression analysis, normality test was carried out for all independent variables. Two generally utilized tests were the Shapiro-Wilks' test and Lillifors test. The Shapiro–Wilks' test is shown to be better tool in many statistical conditions correlated to other tests of normality. Moreover, the Shapiro-Wilks' test is well suited to small-size samples. The null hypothesis will be rejected for large values of Kolgomorov–Smirnov D-statistics. According to Norusis [15], "it is almost impossible to find data that are exactly normally distributed." He advised that for most statistical tests, it is adequate that the data are approximately normally distributed.

Table 4 below disclosed the Kolgomorov–Smirnov tests (altered for Lilliefors) and Shapiro-Wilks' test. Most of the variables are almost normal out of seven variables tested. Accordingly, we exclude the hypothesis null that all of the financial ratios examined are normally distributed. In order to enhance the normality, data transformation processes (natural log, square root, square and inverse, natural logs and square roots) may be implemented. But in this study, only descriptive statistics and multiple regression analysis were utilized.

4.2. Descriptive statistics

Table 5 provides descriptive statistics of the collected dependent and independent variables of all 10 FMCG companies over the 10-year period. All variables were calculated using accounting ratios. The accounting ratios were used because CMIE database provides all ratios related to the variables, which is used in this study. To make

the analysis and interpretation more precise and accurate, the values of maximum, minimum, mean and standard deviation have been computed from the ratios.

Table 4: Raw data of Normality Tests for all variables for all firms over the 10-year period.

Variables	Details	Shape		Kolmogorov–Smirnov[a]		Shapiro–Wilks'	
		Skewness	Kurtosis	Stat.	Sig.	Stat.	Sig.
1	Cash conversion Cycle (CCC_{it})	0.688	-0.325	0.178	0.000	0.920	0.002
2	Interest Coverage Ratio (ICR_{it})	0.410	-0.619	0.108	0.200*	0.955	0.056
3	Debt-Equity Ratio (DER_{it})	2.273	4.140	0.287	0.000	0.600	0.000
4	Age of Inventory (AI_{it})	0.170	-0.797	0.112	0.160	0.968	0.200
5	Age of Debtors (AD_{it})	2.454	6.143	0.362	0.000	0.623	0.000
6	Age of Creditors (AC_{it})	1.167	1.628	0.139	0.017	0.913	0.001
7	Return on Assets (ROA_{it})	-0.374	-0.807	0.110	0.183	0.950	0.033

* This is a lower bound of the true significance.
[a] Lilliefors Significance Correction.

A total of 100 firm year observations were used. To check the solvency position of the selected Indian FMCG companies, two popular ratios (Interest Coverage Ratio and Debt-Equity Ratio) were used. Both these ratios indicate that the companies were able to meet their matured current obligations in every year under the study period.

The interest expense of the companies was covered at an average of 4.78 times with standard deviation of 1.66 times, maximum of 8.11 times and minimum of 1.97 times, which were considered to be satisfactory. So, even if the profit comes down by, say, three or four times the interest expense, the creditors' interest will not be affected because interest will still be covered by the profit.

The results of descriptive statistics show that the average debt-equity ratio (DER) was 63% with a standard deviation of 109%. The maximum debt financing used by a company was 418% which was unusual but might be possible if the equity of the company was negative. The minimum level of the DER was 1%.

CCC used to check the efficacy in working capital management was on average 72 days and standard deviation was about 37 days. The selected companies take an average of 6 days to sell inventory with standard deviation of 1–2 days. Here, maximum time taken by a company was 9 days, while minimum time was only 3 days. This is considered to be a fairly good time period in terms of converting inventory into sales.

The companies receive payment from debtors after an average of 6–7 days whose standard deviation was about 7 days. Minimum time taken by a company to collect cash from debtors was 2 days while the maximum time taken for this purpose was 32 days. Companies usually take an average 6 days to pay their creditors with standard deviation of only 2 days. Here, minimum time taken by a company was 3 days and maximum time taken for this purpose is 12 days. The mean value of return on total assets was 22.47% with standard deviation of 8.39%. It means that the profitability can deviate from mean to both sides by 8.39%. The maximum value of ROAs was 36.62% while the minimum was 6.66%.

Table 5: Descriptive statistics results for all variables tested for all firms over the 10-year period.

Variables	Details	N	Maximum	Minimum	Mean	Std. Dev.
1	Cash Conversion Cycle (CCC_{it})	100	172.22	21.29	72.07	36.62
2	Interest Coverage Ratio (ICR_{it})	100	8.11	1.97	4.78	1.66
3	Debt-Equity Ratio (DER_{it})	100	4.18	0.01	0.63	1.09
4	Age of Inventory (AI_{it})	100	8.71	2.99	5.64	1.45
5	Age of Debtors (AD_{it})	100	32.12	1.79	6.47	6.65
6	Age of Creditors (AC_{it})	100	11.67	2.98	6.01	1.89
7	Return on Assets (ROA_{it})	100	36.62	6.66	22.47	8.39

4.3. Correlation statistics

Correlation coefficient is computed from selected working capital management and profitability ratios derived from ten-year financial statements of the selected quoted companies. The coefficient gives an insight into the nature and extent of the relationship. Pearson product–moment correlation coefficient or "Pearson's correlation" is obtained by dividing the covariance of the two variables by the product of their standard deviations. The Pearson's Correlation coefficient "r" is defined as:

$$r = \frac{N \Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{(N \Sigma x2 - (\Sigma x)2)(N \Sigma y2 - (\Sigma y)2)}}$$

r = Karl Pearson's correlation formula

The Pearson's Correlation is defined only if both of the standard deviations are finite and both of them are nonzero. It is a corollary of the Cauchy–Schwarz inequality that the correlation cannot exceed 1 in absolute value. Pearson's Correlation analysis has been used to see the relationship between working capital management and profitability. If efficient working capital management increases profitability, one should expect a negative relationship between the measures of working capital management and profitability variable and vice versa.

However, care must be exercised while interpreting the Pearson correlation coefficients because they cannot provide a reliable indicator of association in a manner which controls for additional explanatory variables. Examining simple bivariate correlation in a conventional matrix does not take account of each variable's correlation with all other explanatory variables [13]. Our main analysis will be derived from appropriate multivariate model, estimated using pooled OLS.

Results in Table 6 reveal Pearson's Correlation analysis among all variables under investigation. As hypothesized, profitability has an inverse relationship with the DER, CCC and the components of this cycle; namely, Age of Debtors and Age of Creditors. The results imply that the firm's financial health is inversely related to the components of the CCC, which is consistent with our expectations.

Table 6: Pearson correlations for all variables tested for all firms over the 10-year period.

Variables	CCC_{it}	ICR_{it}	DER_{it}	AI_{it}	AD_{it}	AC_{it}	ROA_{it}
CCC_{it}	1						
ICR_{it}	-0.043 (0.768)	1					
DER_{it}	0.290* (0.041)	-0.246 (0.085)	1				
AI_{it}	0.196 (0.174)	0.373** (0.008)	-0.349* (0.013)	1			
AD_{it}	0.345* (0.014)	-0.217 (0.130)	0.646** (0.000)	-0.253 (0.076)	1		
AC_{it}	0.178 (0.217)	-0.406** (0.003)	0.549** (0.000)	-0.228 (0.110)	0.686** (0.000)	1	
ROA_{it}	-0.370** (0.008)	0.480** (0.000)	-0.719** (0.000)	0.399** (0.004)	-0.561** (0.000)	-0.456** (0.001)	1

Figures in parentheses indicate significance.

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

4.4. Regression statistics

In this section, an attempt has been made to examine the composite effect of working capital management on corporate profitability through multivariate regression analysis, and the regression coefficients have been tested with the help of the most popular 't' test. The determinants of corporate profitability were estimated using pooled OLS.

The following two regression models have been used in this analysis:

$ROA_{it} = £ + ß_1CCC_{it} + ß_2ICR_{it} + ß_3DER_{it} + ß_4AI_{it} + ß_5AD_{it} + ß_6AC_{it} + ε_{it}$ (unexplained variables or error terms) and
$ROA_{it} = £ + ß_1AI_{it} + ß_2AD_{it} + ß_3AC_{it} + ε_{it}$ (unexplained variables or error terms)

where ROA_{it} = Return on Asset counted yearly of each firm; CCC_{it} = cash conversion cycle counted yearly of each firm; ICR_{it} = Interest Coverage Ratio counted yearly of each firm; DER_{it}= Debt-Equity Ratio counted yearly of each firm; AI_{it} = Age of Inventory counted yearly of each firm; AD_{it} = Age of Debtors counted yearly of each firm; AC_{it}= Age of Creditors counted yearly of each firm.

In the case of first model, stepwise regressions have been done and on this way AI_{it}, AD_{it} and AC_{it} have been removed from the final equation. The strength of the relationship between the dependent variable, ROA and all the independent variables taken together of all firms and the impact of these independent variables on the profitability are given in Table 7. As of our expectation, it was observed that an increase in DER by one unit; the ROA decreased by 4.480 units that were statistically significant at 1 per cent level and when CCC increased by one unit, the ROA of the company decreased by 0.043 units. However, when ICR increased by one unit, the ROA also increased by 1.653 units, which was statistically significant at 1 per cent level. Coefficient for the constant is high, which indicates that there are other explanatory variables—such as asset management and financing of WC (CL/TA).

The multiple correlation coefficient between the dependent variable ROA and the independent variables taken together was 0.804. It indicates that the profitability was highly responded by its working capital management indicators. It is also evident from the value of R^2 that 64.7 per cent of variation in ROA was accounted by the joint variation in DER, ICR and CCC. The Durbin-Watson value of 1.097 shows that there is presence of positive serial correlation among the variables.

We also examine separately the impact of the elements of WC (AI_{it}, AD_{it} and AC_{it}) on ROA_{it}, the results of which are demonstrated in Table 8. In this model, AI_{it} and AC_{it} have been removed in stepwise regression method. It has been found that when AD increased by one unit, the ROA of the firm decreased by 0.708 units, which was statistically significant at 1 per cent level. The standardized coefficient (beta) tells us how strongly is the explanatory variable AD is associated with the dependent variable ROA. The multiple correlation coefficient between the dependent variable ROA and the independent variable AD was 0.561. R^2-value shows that 31.5 per cent of variation in ROA was accounted by the variation in AD. The only 'fly in the ointment' is that the estimated Durbin-Watson statistic is quite low, suggesting that perhaps there is autocorrelation and/or spatial correlation in the data.

Table 7: Multivariate Regression Analysis models (for all years tested for all firms).

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	SE	Beta	t	Sig.	Tolerance	VIF
Constant	20.468	2.765		7.402	0.000		
DER_{it}	-4.480	0.724	-0.719	-6.190	0.000	0.861	1.161
ICR_{it}	1.653	0.456	0.480	3.626	0.001	0.939	1.065
CCC_{it}	-0.043	0.021	-0.370	-2.038	0.047	0.915	1.093

Dependent variable: ROA_{it}

Model Summary

Model	R	R^2	Adjusted-R^2	SEE	Durbin-Watson
1	0.804[b]	0.647	0.624	5.14633	1.097

[b] Predictors: (constant),DER_{it}, ICR_{it}, CCC_{it}
Dependent variable: ROA_{it}

Table 8: Multivariate Regression Analysis models (for all years tested for all firms).

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	SE	Beta	t	Sig.	Tolerance	VIF
Constant	27.056	1.391		19.451	0.000		
AD_{it}	-0.708	0.151	-0.561	-4.700	0.000	1.000	1.000

Dependent variable: ROA_{it}

Model Summary

Model	R	R^2	Adjusted-R^2	SEE	Durbin-Watson
1	0.561[b]	0.315	0.301	7.01595	0.904

[b] Predictors: (constant), AD_{it}.
Dependent variable: ROA_{it}.

4.5. Hypotheses testing

A hypothesis is an assumption to be tested. The statistical testing of hypothesis is the important technique in statistical inference. Hypothesis tests are widely used in business and industry for making decisions. The following are the hypotheses framed and tested using test of significance at 5% level of significance.

Hypothesis 1

- H_0: There exists no relationship between cash conversion cycle and profitability.
- H_1: There are significant relationships between cash conversion cycle and profitability.

Table 9: T-test results of Hypothesis 1.

	Mean	SD	SE of mean	Mean Difference	95% confidence interval of the difference		t	df	Sig. (2-tailed)
					Lower	Upper			
C_{it} & ROA_{it}	72.0722	36.6190	5.1787	49.5988	39.0555	60.1422	9.335	198	0.000

The calculated value of 't' is more than the significant value, hence null hypotheses is not accepted.

Hypothesis 2

- H_0: There do not exist any relationship between debt-equity ratio and profitability.
- H_1: There exists strong relationship between debt-equity ratio and profitability.

Table 10: T-test results of Hypothesis 2.

	Mean	SD	SE of mean	Mean Difference	95% confidence interval of the difference		t	df	Sig. (2-tailed)
					Lower	Upper			
DER_{it} & ROA_{it}	0.6260	1.0947	0.1548	-21.847	-24.2223	-19.4724	0.025	198	0.000

As the calculated value of 't' is more than the significant value, hence null hypotheses is not accepted.

5. Conclusion

Better utilization of firm's resources leads to value creation. In this study, we empirically investigated the effect of working capital management on firm's profitability using a sample of Indian FMCG companies. We hypothesized

that CCC and debt used by the firm are significantly associated with firm's profitability. Accordingly, the findings of our results indicate that both CCC and debt used by the firm are negatively associated with firm's profitability. The results of our study are in line with the findings of Ching *et al.* [9], Deloof [2], Lazaridis and Tryfonidis [10], and Raheman and Nasr [8], who found a strong negative relationship between the measures of working capital management with corporate profitability. Based on the findings of our study, we may further conclude that these results can be further strengthened if the firms manage their working capital in more efficient ways which will ultimately increase firm's profitability.

Limitations of the study

The study is limited to the small sample of Indian FMCG companies, so the results of the study are only indicative and not conclusive. Moreover, accounting ratios used in the study are taken from CMIE data base.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

BB developed the framework, carried out the final estimations and statistical analysis, and drafted the manuscript. BK gathered data.

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