



A STUDY ON THE RELATIONSHIP BETWEEN PROFITABILITY AND WORKING CAPITAL VARIABLES OF SELECTED PHARMACEUTICAL IN INDIA

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ABSTRACT

This paper studies the relationship between profitability and working capital variables of selected pharmaceutical companies in India over the period from 2003-2004 to 2012-2013. In this study, independent variables including the cash conversion cycle, periods of circulation of inventories collection period, the average period of account payable period, and account receivable period on the factories net operating profits are studied. The research method is applied and collection of data is descriptive statistic and correlations are used.

INTRODUCTION

Working capital management is one of the most important areas in financial management of a firm. Managers spend much time on day-to-day problems that involve working capital decisions. Management of working capital generally means managing current assets and current liabilities. It's important for manufacturing firms because current assets of these manufacturing firms account for almost half of the total assets. Efficient working capital management involves planning and controlling of current assets and current liabilities in such a way that eliminates the risk of inability to meet short term obligations on the one hand and avoid too much investment in these assets on the other hand. Effective management of working capital components are increase in the financial health of business. To reduce accounts receivable a firm may have harsh collections policies and lesser sales credit would lead to lost sales thus reducing the profit. Maximizing accounts payable by having longer credit from the suppliers also has the chance of getting poor quality materials from supplier that would ultimately affect the profitability. Minimizing inventory may lead to lost sales by stock outs. The working capital management

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should aim at having balanced optimal proportion of the working capital management components to achieve maximum profit and cash conversion cycle is used as a board measure of working capital management actually cash conversion cycle is a time interval between payment for the purchase of raw material and collection of sales of financial goods.

Working capital is considered as the life blood for the business. If a business has some favorable amount of working capital then it is always getting the return on any favorable opportunities. Working capital can be utilized to pay the pay role of the employees and petty expenses. Every success full business owners may be maintaining the right amount of working capital funds to meet the unanticipated situations. Every firm tries to competently handle the working capital because it shows the efficiency and strength of the business and working capital is also used to create the extra return for the stakeholders. If working capital is too low than firm may lose the profitable opportunities and may face the short term liquidity crisis. Amount of working capital depends upon the many factors like nature of the business, technology used in the business, scale of operations, nature of finished goods, nature of raw materials, competition and credit policy.

The critical objectives of any firm are to maximize the profit, but, preserving that liquidity of the firm is an also important objective. The problem is that increasing the profit at the cost of liquidity can bring serious problems to the firm. Therefore, there must be tradeoff between these two objectives because both have their own importance. If we don't care about profit, we cannot stay alive for a longer period. On the other hand, if we don't care about liquidity, we may face the problems of bankruptcy. For this reasons working capital management should be given proper consideration and will finally affect the profitability of the firm.

REVIEW OF LITERATURE

Izadinia and Taki (2010) examined the effects of working capital management on capability of profitability for listed firms on Tehran Stock Exchange. The results indicated that there was a negative significant relationship between cash conversion cycle and return on assets and significant amount of investment in inventories and accounts receivable leads to declining of profitability.

Danulețiu (2010) assessed the effect of working capital management efficiency on the financial performance on Alba country corporations. He concluded that profitability had an inverse relationship with working capital management components.

Singh and Asress (2011) examined the effect of working capital solvency level on profitability by their study on Indian manufacturing firms. They reported that if a firm could have adequate amount of capital for its current operations, its performance would be better as compared with the firms having lower amount of working capital. Therefore, they suggested that availability of

sufficient amount of working capital had positive impacts on the profitability of a firm as it enables a firm to manage all the current operating activities without any interruption.

RESEARCH HYPOTHESIS

The present research is in accordance with the following major hypothesis. There is a relationship between capital inflow management and gaining profit in research prospective. In addition, there is other hypothesis as follows

1. There is a relationship between cash conversion cycle and Return on Assets.
2. There is a relationship between accounts receivable period and Return on Assets.
3. There is a relationship between accounts payable period and Return on Assets.
4. There is a relationship between inventory collection period and Return on Assets.

RESEARCH APPROACH

This research is practical as it was intended to contribute to decision making process and conducted based on reasonable theories and approaches. This research uses a random sample and the research design in date of post event as it uses applied historical data. The study selected ten companies over the period since 2003-04 to 2012-13. SPSS software and required statistics approaches have been utilized to analyze the data in this research.

1. Descriptive methods such as a the average parameters, standard deviation, kurtosis, skewness, range, minimum and maximum are used to describe research variables
2. Pearsons co-efficient of correlation is used to analyse the relationship between the independent variables to dependent variables

The following equations used to estimate the impact of working capital management on the profitability measure

$$ROA_{it} = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (ARP_{it}) + \beta_3 (APP_{it}) + \beta_4 (ICP_{it}) + \epsilon \text{ (Equation-3.0)}$$

Where

ROA_{it} = Return on Assets of the Companies i at time = 1, 2,....., 10 Companies.

β_0 = the intercept of equation

β_1 = co efficient of independent variables

X_{it} = the different independent variables for working capital management of firm i at time t

t = Time = 1, 2,.....10 years

ϵ = the error term

ROA (Return on Asset) is a dependent variable and the other ones are independent. In this research, the independent variables are as follows, CCC = Cash Conversion Cycle, ARP = Average Receivable Period (Accounts Receivable / Daily Sales) APP= Average Payable Period (Accounts Payable/Daily Purchase) ICP=Inventory Collection Period (Net sales/Inventories).

ANALYSIS OF DATA

In this section first, the summary of descriptive statistics founding is explained. Based on similar and related research methodology, the relationship between of variable was estimated based on selected variable. Descriptive statistics present the different statistics and the different variables which were used in the study. Descriptive statistics also present the minimum and maximum values of the variables which help in getting a picture about the maximum and minimum values a variable can achieve.

TABLE 1.1.-DESCRIPTIVE STATISTICS OF SELECTED VARIABLES IN LARGE SCALE COMPANIES

STATISTICS	NOP (%)	CCC (DAYS)	ARP (DAYS)	APP (DAYS)	ICP (DAYS)
Mean	1104.47	23	24	28	27
Median	743.37	24	23	25	27
Standard Deviation	2388.04	16	8	14	10
Kurtosis	38.98	45	48	356	24
Skewness	5.83	72	46	163	13
Range	19181.82	68	37	79	48
Minimum	-2475.59	20	10	4	1
Maximum	16706.23	48	47	75	46
Sum	55223.57	11	11	13	13
Count	50	50	50	50	50

SOURCE: COMPUTED

ANALYSIS AND INTERPRETATION

Table 1.1 presents descriptive statistics among the large scale pharmaceutical companies in India for period of ten years from 2002-03 to 2012-13.

The cash conversion cycles used as a proxy to check the efficiency in managing working capital was on average 23 days and standard deviation was 16 days. Here the minimum value was 20 days and maximum value for this purpose was 48 days.

The mean value of the Accounts Receivable Period was 24 days and standard deviation was 8 days. Minimum time taken by a company to collect receivables was 10 days while the maximum time for this purpose was 47 days.

Companies wait an average 28 days to pay their purchase with standard deviation of 14 days. Here, minimum time taken by a company was 4 days and maximum time taken for this purpose was 75 days.

It takes average 27 days to sell inventory with standard deviation of 10 days. Here maximum time taken by a company was 46 days, which was a large time period to converted inventory into sales.

PEARSON'S CORRELATION ANALYSIS

Pearson's Correlation analysis was used to found the relationship between variables such as these between working capital management and profitability. According to below table, Pearson's correlation factor and a meaningful level is determined. The Pearson's correlation rates are shown in 2-ways. The upper number is correlation factor and the lower one is meaningful level. Linear dependence of independent variables is the assumed conditions are near to 0, which means the correlation between variables can be ignored. Fig 1 shows that data are not following a regular pattern and the stability of the variance can be accepted.

**TABLE 1.2 -RELATIONSHIP BETWEEN WORKING CAPITAL AND PROFITABILITY OF LARGE SCALE COMPANIES
(DEPENDENT VARIABLE: RETURN ON ASSETS)**

Variables	No. of observation	Coefficient of Correlation	sig.(2-tailed)	Relationship	Significance
CCC	50	0.420**	0.020	Positive	Significant
ARP	50	-0.260	0.068	Negative	Not Significant
APP	50	-0.402	0.004	Negative	Significant
ICP	50	0.310*	0.029	Positive	Significant

*.Correlation is significant at the 0.05 level (2-tailed), **. Correlation is significant at the 0.01 level (2-tailed)

ANALYSIS AND INTERPRETATION

As we can observe from the results of table 1.2 Presents Pearson's correlation co-efficient for all variable considered.

The cash conversion cycle which was a comprehensive measure of working capital management also has a positive coefficient of correlation of 0.420 and table value was 0.020 and it was significant at 1% level of significance. From the above results I conclude that if companies increase these time period the companies was efficient managing working capital and their efficiency will lead to increase profitability.

The analysis of correlation results relationship between the accounts receivable period and return on assets. The results of correlation analysis show a negative co efficient of correlation of -.260 with table value of 0.068. It means that the results are not significant and if accounts receivable period was decreased then that put the positive impact on return on assets.

Correlation results between accounts payable period and return on assets also show the negative relationship and significant. It means less profitable companies wait longer to pay their bills.

Correlation results between inventory collection period in days and return on assets also show a positive coefficient of correlation of 0.310 with table value of 0,029 and it was significant at 5% level of significance. It means if companies take the less time to selling the inventory, it will positively affect the profitability of the companies.

TABLE 1.3.-DESCRIPTIVE STATISTICS OF SELECTED VARIABLES IN MEDIUM SCALE COMPANIES

STATISTICS	NOP (%)	CCC (DAYS)	ARP (DAYS)	APP (DAYS)	ICP (DAYS)
Mean	371.76	33	26	31	38
Median	350.36	26	22	26	29
Standard Deviation	211.75	22	12	16	21
Kurtosis	0.26	75	24	72	79
Skewness	0.87	35	98	26	75
Range	833.44	98	52	80	72
Minimum	73.46	8	5	17	12
Maximum	906.90	90	57	96	84
Sum	18588.10	16	12	15	18
Count	50	50	50	50	50

SOURCE: COMPUTED

ANALYSIS AND INTERPRETATION

The table 1.3 presents descriptive statistics among the large scale pharmaceutical companies in India for period of ten years from 2002-03 to 2012-13.

The cash conversion cycles used as a proxy to check the efficiency in managing working capital was on average 33 days and standard deviation was 22 days. Here the minimum value was 8 days and maximum value for this purpose was 90 days.

The mean value of the Accounts Receivable Period was 26 days and standard deviation was 12 days. Minimum time taken by a company to collect receivables was 5 days while the maximum time for this purpose was 57 days.

Companies wait an average 31 days to pay their purchase with standard deviation of 16 days. Here, minimum time taken by a company was 17 days and maximum time taken for this purpose was 96 days.

It takes average 38 days to sell inventory with standard deviation of 21 days. Here maximum time taken by a company was 84 days, which was a large time period to converted inventory into sales.

PEARSON'S CORRELATION ANALYSIS

Pearson's Correlation analysis was used to found the relationship between variables such as these between working capital management and profitability. According to below table, Pearson's

correlation factor and a meaningful level is determined. The Pearson's correlation rates are shown in 2-ways. The upper number is correlation factor and the lower one is meaningful level. Linear dependence of independent variables is the assumed conditions are near to 0, which means the correlation between variables can be ignored. Fig 1 shows that data are not following a regular pattern and the stability of the variance can be accepted.

TABLE 1.4 -RELATIONSHIP BETWEEN WORKING CAPITAL AND PROFITABILITY OF MEDIUM SCALE COMPANIES (DEPENTDENT VARIABLE: RETURN ON ASSETS)

Variables	No.of. observation	Coefficient of Correlation	sig.(2-tailed)	Relationship	Significance
CCC	50	0.260	0.068	Positive	Not Significant
ARP	50	-0.236	0.099	Negative	Not Significant
APP	50	- 0.473**	0.001	Negative	Significant
ICP	50	0.114	0.042	Positive	Not Significant

***.Correlation is significant at the 0.05 level (2-tailed), **. Correlation is significant at the 0.01 level (2-tailed)**

ANALYSIS AND INTERPRETATION

As we can observe from the results of table 1.4 presents Pearson's correlation co-efficient for all variable considered.

The cash conversion cycle which was a comprehensive measure of working capital management also has a positive coefficient of correlation of 0.260 and table value was 0.068. From the above results I conclude that if companies increase these time period the companies was efficient managing working capital and their efficiency will lead to increase profitability.

The analysis of correlation results relationship between the accounts receivable period and return on assets. The results of correlation analysis show a negative co efficient of correlation of -.236 with table value of 0.099. It means that the results are not significant and if accounts receivable period was decreased then that put the positive impact on return on assets.

Correlation results between accounts payable period and return on assets also show the negative relationship and significant and it was significant at 1% level of significance. It means less profitable companies wait longer to pay their bills.

Correlation results between inventory collection period in days and return on assets also show a positive coefficient of correlation of 0.114 with table value of 0.042. It means if companies take the less time to selling the inventory, it will positively affect the profitability of the companies.

TABLE 1.5-DESCRIPTIVE STATISTICS OF SELECTED VARIABLES IN OVERALL SELECTED COMPANIES

STATISTICS	NOP (%)	CCC (DAYS)	ARP (DAYS)	APP (DAYS)	ICP (DAYS)
Mean	738.12	28	25	29	32
Median	436.54	24	23	25	27
Standard Deviation	1726.36	20	10	15	17
Kurtosis	75.64	19	113	576	102
Skewness	8.09	27	105	219	120
Range	19181.82	110	52	100	85
Minimum	-2475.59	-20	5	-4	-1
Maximum	16706.23	90	57	96	84
Sum	73811.67	28	24	29	32
Count	100	100	100	100	100

SOURCE: COMPUTED

ANALYSIS AND INTERPRETATION

The table 1.5 presents descriptive statistics among the overall selected pharmaceutical companies in India for period of ten years from 2002-03 to 2012-13.

The cash conversion cycles used as a proxy to check the efficiency in managing working capital was on average 33 days and standard deviation was 22 days. Here the minimum value was 8 days and maximum value for this purpose was 90 days.

The mean value of the Accounts Receivable Period was 26 days and standard deviation was 12 days. Minimum time taken by a company to collect receivables was 5 days while the maximum time for this purpose was 57 days.

Companies wait an average 31 days to pay their purchase with standard deviation of 16 days. Here, minimum time taken by a company was 17 days and maximum time taken for this purpose was 96 days.

It takes average 38 days to sell inventory with standard deviation of 21 days. Here maximum time taken by a company was 84 days, which was a **large** time period to converted inventory into sales.

PEARSON’S CORRELATION ANALYSIS

Pearson’s Correlation analysis was used to found the relationship between variables such as these between working capital management and profitability. According to below table, Pearson’s correlation factor and a meaningful level is determined. The Pearson’s correlation rates are shown in 2-ways. The upper number is correlation factor and the lower one is meaningful level. Linear dependence of independent variables is the assumed conditions are near to 0, which means the correlation between variables can be ignored. Fig 1 shows that data are not following a regular pattern and the stability of the variance can be accepted.

**TABLE 1.6 -RELATIONSHIP BETWEEN WORKING CAPITAL AND PROFITABILITY OF OVERALL
SELECTED COMPANIES
(DEPENDENT VARIABLE: RETURN ON ASSETS)**

Variables	No.of. observation	Coefficient of Correlation	sig.(2-tailed)	Relationship	Significance
CCC	100	0.304**	0.002	Positive	Not Significant
ARP	100	-0.241	0.016	Negative	Not Significant
APP	100	-0.438**	0.000	Negative	Significant
ICP	100	0.149	0.138	Positive	Not Significant

*.Correlation is significant at the 0.05 level (2-tailed), **. Correlation is significant at the 0.01 level (2-tailed)

ANALYSIS AND INTERPRETATION

As we can observe from the results of table 1.6 presents Pearson’s correlation co-efficient for all variable considered.

The cash conversion cycle which was a comprehensive measure of working capital management also has a positive coefficient of correlation of 0.304 and table value was 0.002 and it was not significant at 5% level of significance. From the above results I conclude that if companies increase these time period the companies was efficient managing working capital and their efficiency will lead to increase profitability.

The analysis of correlation results relationship between the accounts receivable period and return on assets. The results of correlation analysis show a negative co efficient of correlation of -.241 with table value of 0.016. It means that the results are not significant and if accounts receivable period was decreased then that put the positive impact on return on assets.

Correlation results between accounts payable period and return on assets also show the negative relationship and significant and it was significant at 5% level of significance. It means less profitable companies wait longer to pay their bills.

Correlation results between inventory collection period in days and return on assets also show a positive coefficient of correlation of 0.149 with table value of 0.138. It means if companies take the less time to selling the inventory, it will positively affect the profitability of the companies.

SUMMARY OF FINDING

It’s based on the results of table 1.2, relationship between working capital and profitability of large scale companies showed that

There is a reverse relation between dependent variable (Return on Assets) with accounts receivable period and accounts payable period, because the estimated coefficients of these variable are negative.

There is a direct relationship between dependent variable (return on assets) with cash conversion cycle and inventory collection period, because the estimated coefficients of these variable is positive.

It's based on the results of table 1.4, relationship between working capital and profitability of medium scale companies showed that

There is a reverse relation between dependent variable (Return on Assets) with accounts receivable period and accounts payable period, because the estimated coefficients of these variable are negative.

There is a direct relationship between dependent variable (return on assets) with cash conversion cycle and inventory collection period, because the estimated coefficients of these variable is positive.

Finally, based on the results of table 1.6, relationship between working capital and profitability of overall selected companies showed that

There is a reverse relation between dependent variable (Return on Assets) with accounts receivable period and accounts payable period, because the estimated coefficients of these variable are negative.

There is a direct relationship between dependent variable (return on assets) with cash conversion cycle and inventory collection period, because the estimated coefficients of these variable is positive.

SUGGESTION

Accounts receivable period of all companies were negatively related with return on asset. So the companies should follow proper collection technique to decrease their accounts receivable period to yield better return on their assets.

Accounts payable period were also negatively related with return on assets. So concern should increase their number of days of accounts payable period. It will give better results on return on assets.

Cash conversion period and Inventory collection period of selected companies were positively related with return on investment. So they should maintain same procedure to retain their earnings through such assets.

CONCLUSION

In overall cash conversion period and inventory collection period were positively related with return on assets. But pharmaceutical companies should properly utilize their accounts receivable period and accounts payable period to increase return on their assets.

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