

Liquidity and Profitability Trade-off: A Study of Indian Pharmaceutical Companies

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Abstract

Liquidity plays a vital role in the successful functioning of every business. The important part in managing working capital is maintaining liquidity on a day-to-day basis to ensure the smooth running of the organisation and to meet its obligations. Hence, it is very important to keep a close eye on the liquidity position of the company as without it, the company cannot survive. But efforts to increase the profitability would tend to reduce firms' liquidity and too much attention on liquidity would tend to affect profitability. No doubt, every firm tries to maximise profitability by maintaining liquidity. However, increasing profits at the cost of liquidity might cause serious problems for the firm including financial insolvency. Thus, an effective WCM would be needed to strike a balance between the two core objectives of the firm. It is essential that the firm's liquidity should be properly balanced because excessive liquidity on one hand, indicates the accumulation of idle funds that don't fetch any profits for the firm and on the other hand, insufficient liquidity might damage the firm's goodwill, deteriorate the firm's credit standing, which may lead to forced liquidation of the firm's assets. Hence, a trade-off needs to be maintained between liquidity and profitability. This paper attempts to study the association between liquidity and profitability for a period of five years from 2011-12 to 2015-16 for five selected pharmaceutical companies. The objective of the study was mainly to know whether companies earn profit while maintaining the necessary liquidity or are they ready to sacrifice liquidity for the sake of earning higher profit. The results indicate that among the five selected pharmaceutical companies, i.e. Ajanta Pharma, Biocon Ltd, Torrent Pharma, Ipca Labs and Lyka Labs., the liquidity position of Biocon is best when it comes to liquidity analysis as per Motaal's test of liquidity. The techniques of Motaal's ultimate rank test have been applied to analyse the data. The researchers have used purely secondary data for the purposes of this study. In this paper, an attempt has also been made to study the association between liquidity and profitability of the sample companies by using Spearman's Rank Coefficient of Correlation. The results found were the same with the theoretical views i.e. both are negatively correlated. But there are instances like Wal-Mart, which is able to generate profit and maximise shareholders' wealth with negative working capital, i.e. an example of foregoing liquidity for the sake of maximising profits. In such a case, can we say that the company is on the verge of bankruptcy or is it a sign of managerial efficiency?

Keywords: *Pharmaceutical Companies, Working Capital, Motaal's Ultimate Rank, Liquidity, Profitability, Spearman's Rank Correlation*

Introduction

It has been observed that at any point in an investigation, the focus is more on an entity's profitability than on its liquidity. It is but natural since the most imperative goal of any organisation is to make profit. Hence, managers tend to pay more attention to profitability than to liquidity. Hypothetically, the method of managing working capital influences both profitability and liquidity.

Working capital is regarded as the result of the time lag between expenditure for the purchase of raw material and receipt of funds from sales of finished goods. The method of managing working capital can have a significant impact on both liquidity and profitability of the company. The main purpose of any firm is to maximise profit. However, maintaining liquidity of the firm is also an imperative objective. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Thus, a firm should maintain a balance between these two objectives.

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With respect to the theory of risk and return, riskier investments result in higher returns. Thus, firms with high liquidity with respect to working capital may bear low risk, but also low profitability. Conversely, firms with low liquidity with respect to working capital will bear higher risk, but this results in the probability of higher profits. A firm must maintain sufficient working capital to conduct its day-to-day operations; an inadequate amount of working capital impairs a firm's liquidity while excessive working capital results in the reduction of profitability. Estimating an optimal level of working capital is a difficult task for the management since this varies across firms and over different periods depending upon the nature of business, scale of operations, production cycle, credit policy, availability of raw materials, etc. This implies permanently investing a significant amount of capital in various current assets. For instance, due to time-lag between sale of goods and their actual realisation in cash, adequate amount of working capital is always required to be made available for maintaining the desired level of sales. A firm can be very profitable if it can translate cash from operations within the same operating cycle; otherwise the firm would need to borrow to support its continued working capital needs. Thus, the twin objectives of profitability and liquidity must be synchronised.

Working capital meets the short-term financial requirements of a business enterprise; it is required to run the day-to-day operations of a business. It is the result of the time lag between the expenditure incurred for the purchase of raw materials and the receipt of funds from sales of finished products. The components of working capital are inventories, accounts to be paid to suppliers and payments to be received from customers after sales. Financing is needed for receivables and inventories, net of payables. The proportions of these components in the working capital change from time to time during the trade cycle. Working capital requirements impact the liquidity and profitability of a firm and hence, affect financing and investing decisions. Lower requirement of working capital leads to lower need for funds and lower cost of capital and hence, availability of more cash for shareholders. However, lower working capital may lead to lost sales and thus, may affect profitability. Hence, it is imperative for every organisation to strike a balance between liquidity and profitability.

Review of Literature

An important part of working capital management is maintaining liquidity for day-to-day operations to ensure the smooth running of a firm and meeting its obligations. This is not a simple task and managers need to ensure that business operations are both efficient and profitable. There are chances of mismatch in current assets and current liabilities during this process, which could affect the growth and profitability of the business. A number of research studies have revealed the following:

Ghosh and Maji (2003) attempted to examine the efficiency of working capital management of Indian cement companies during 1993 to 2002. Instead of using working capital management ratios, they calculated three index values - performance index, utilisation index and overall efficiency index - to measure the efficiency of working capital management. By using regression analysis and industry norms as a target efficiency level of individual firms, they tested the speed of achieving target level of efficiency by individual firms during the period of study and found that some of the sample firms successfully improved efficiency during these years.

Elijelly (2004), in the study on "Liquidity – profitability tradeoff: An empirical investigation in an emerging market", empirically examined the relationship between profitability and liquidity, as measured by current ratio and cash gap (cash conversion cycle) on a sample of joint stock companies in Saudi Arabia. The study found significant negative correlation between the firm's profitability and its liquidity levels, as measured by current ratio.

Singh and Pandey (2008) suggested that for successful operations of any business organisation, fixed and current assets play a vital role, and management of working capital is essential as it has a direct impact on profitability and liquidity. They studied the working capital components and found a significant impact of working capital management on profitability for Hindalco Industries Limited.

Chakraborty (2008), in the study on "Working Capital and Profitability: An Empirical Analysis of Their Relationship with Reference to Selected Companies in the Indian Pharmaceutical Industry", evaluated the relationship between working capital and profitability of Indian pharmaceutical companies. He pointed out that there were two distinct schools of thought on this issue: according to one school of thought, working capital is not a factor of improving profitability and there may be a negative relationship between them, while according to the other school of thought, investment in working capital plays a vital role to improve corporate profitability, and unless there is a minimum level of investment of working capital, output and sales cannot be maintained; in fact, the inadequacy of working capital would keep fixed assets inoperative.

Kevin and Young (2009) in their article, "Need Cash? Look Inside Your Company" took a hard look at the way a company

manages its working capital. They observed that a lot of capital was tied up in receivables and inventory could be turned into cash by challenging the working capital practices and policies of the company. They listed six common mistakes that companies make in managing working capital; the simple act of correcting them could free up enough cash to make the difference between failure and survival in a recession.

Karamjeet and Firew (2011) conducted a study to assess working capital adequacy and its impact on profitability of firms using a sample of 449 Indian manufacturing firms and found that there is a significant difference in relative solvency levels of firms depending on efficient management of working capital.

Chandrabai et al. (2011) in their paper on “Working Capital Management of Indian Electrical Equipment Manufacturers - A Comparative study” found that the companies in the electrical equipment industry have performed fairly well for financial year 2010. Most firms recorded an increase in sales. The management of working capital is one of the most important and challenging aspects of the overall performance of the organisation. More effective and efficient management of working capital can ensure survival of a business enterprise. Working capital management is concerned with the problems that arise in attempting to manage the current assets, current liabilities and the interrelation that exists between them. This study analyses the comparative study of working capital management in the Indian Electrical Equipment Industry and it is limited to two companies - BHEL and ABB Ltd representing public and private sector enterprises respectively. Relevant data has been extracted from the consecutive annual reports between financial years 2005-06 and 2009-10 of both the companies.

Brahma (2011) conducted a study to examine and evaluate the importance of liquidity management on profitability as a factor accountable for poor financial performance in the private sector steel industry in India.

Rohit and Vipin (2012) investigated the determinants of corporate liquidity in India for a sample of 100 firms in the Indian market over the period 1999-2008. It was found that size of the firm has no impact on liquidity.

Sandhar et. al (2013) examined the relationship between liquidity and profitability of selected Indian cement companies using regression analysis and revealed that current ratio, liquid ratio and cash turnover ratio are negatively associated with return on assets (ROA) and return on investment (ROI).

Neeraj and Devesh (2013) studied the liquidity position and impact on profitability of Tata Steel and Steel Authority of India. The study found that the liquidity position can be improved with the help of a low average collection period and average collection can be reduced by proper coordination between sales, production and finance departments. The study found a positive impact of the liquidity position on profitability with the help of various techniques.

Ashok Kumar (2013) studied the liquidity position of five leading companies over a period of 10 years from 2000-2010. It has been found that the liquidity position of small companies is better as compared to large ones. Lastly, it was concluded that companies should maintain an ideal current and liquid ratio.

Sarvanan and Abarna (2014) conducted a study on liquidity analysis of selected automobile companies in India using Anova and found that there is a significant difference between the absolute liquid ratios of the selected automobile companies.

Mohmad and Dr. Syed (2016) analysed the liquidity and profitability of selected companies and more specifically sought to compare liquidity and profitability performance of selected companies. They discovered a significant difference between the performances of pharmaceutical companies on the basis of Quick Ratio. The performance of Cipla is better than that of Dr. Reddy's Labs in terms of profitability.

The key challenge

The key aspect of managing working capital is to maintain liquidity on a day-to-day basis to ensure the smooth functioning of the organisation and to meet its obligations. Hence, it is very important to keep a close watch on the liquidity position of the company as without it the company cannot survive. But efforts to increase the profitability would tend to reduce firms' liquidity and too much attention on liquidity would tend to affect the profitability. No doubt, every firm tries to maximise profitability while maintaining liquidity. However, increasing profits at the cost of liquidity might cause serious problems for the firm and this problem might lead to financial insolvency as well. Thus, effective working capital management would be needed to strike a balance between the two core objectives of the firm. It is essential that the firm's liquidity should

be properly balanced because excessive liquidity on one hand, indicates the accumulation of idle funds that don't fetch any profits for the firm and on the other hand, insufficient liquidity might damage the firm's goodwill, deteriorate its credit standings, which may lead to forced liquidation of the firm's assets. Hence, a trade-off needs to be maintained between liquidity and profitability.

Scope of the Study

This study covers a period of 5 years from 2011-12 to 2015-16. The investigation has been carried out using secondary information acquired from yearly reports of the organisations and from the website named www.moneycontrol.com. Moreover, journals and magazines were studied for setting out the procedure for examination. For the purpose of the study, five pharmaceutical companies were randomly selected, whose financial information was available in the public domain. Altering, grouping and arrangement of the information gathered was done according to the prerequisites of the study.

The study attempts to determine the efficiency and effectiveness of management in each segment of working capital. Since the net concept of working capital has been widely taken in the present study, the management of both liquidity and profitability were also critically reviewed in due course. The difference between profitability and liquidity is simply the availability of profits versus availability of cash. Profit is the principle measure to assess the stability of a company and is of priority interest to shareholders. While profit is the most important, this does not necessarily mean that the business operations are sustainable. Further, a profitable company may not have sufficient liquidity because most of the funds in the company are invested into projects; on the other hand, a company which has a lot of cash or liquidity may not be profitable because it has not utilised excess funds effectively. Thus, the success depends on better management of both profitability and liquidity.

Need and Importance of the Study

A firm's financial stability and profitability are largely dependent upon sound working capital management. If there is a shortage of working capital, it affects the day-to-day operations of the firm. Similarly, if there is an excess of working capital, the funds remain idle, which, in turn, affects the financial soundness of the firm. In this perspective, there is a need to manage the working capital of a business effectively. The literature has been reviewed to find out how pharmaceutical companies manage their working capital. This study has been undertaken to answer this question.

This study brings out the fact that the manner of administration of current assets and current liabilities determines the success or failure of any business. The efficient and effective management of working capital is of crucial importance for the success of a business. The business concern has to optimise the use of available resources through efficient and effective management of current assets and current liabilities. This helps increase the profitability of the concern and facilitates the firm meeting its current obligations in time. Liquidity is just as important as profitability, sometimes even more important in the short term. This is because the company needs cash to run day-to-day business operations. This includes manufacturing and selling costs, payment of salaries to employees and payments to creditors, tax authorities and interest on borrowed funds.

Without successfully meeting its liabilities and expenses, companies cannot survive to make a profit. Additional funding sources such as acquiring more debt can be considered; however, that comes with higher risks and more costs. Thus, it is important to be vigilant regarding cash flow situation and manage the trade-off between liquidity and profitability effectively.

Objectives of the Study

This study aims to evaluate the management of working capital and existence of the relationship between liquidity and profitability of five leading Indian pharmaceutical companies over a period of 5 years (2012-16). The main focus was to study the liquidity position of the firms along with their profitability position over the period of the study, to find out the relationship that exists between the two and to check whether the relationship matches with the results of earlier studies.

Information on the Companies under Study

- 1. Ajanta Pharma:** Ajanta Pharma Limited is a holding company. The company is a specialty pharmaceutical company engaged in developing, producing and marketing a range of branded and generic formulations. Its business includes branded generics in emerging markets of Asia and Africa, generics in the developed markets of the United States, and institutional sales. The branded generics business is spread across India and over 30 emerging countries including Africa, Commonwealth of Independent States (CIS), the Middle East and South East Asia. The company offers a range of therapeutic segments such as antibiotics, anti-malarial, anti-diabetic, cardiology, gynaecology, orthopaedics, paediatric,

respiratory and general health products. It has approximately four existing manufacturing plants located in and around Aurangabad in Maharashtra, India. The company's subsidiaries include Ajanta Pharma (Mauritius) Ltd., Ajanta Pharma USA Inc., Ajanta Pharma Philippines Inc. and Ajanta Pharma Nigeria Ltd.

- Biocon Ltd:** Biocon Limited is a biopharmaceutical company. The company's focus is to reduce therapy costs of chronic diseases like autoimmune, diabetes and cancer. Through its products and research services, it is facilitating access to affordable healthcare for patients, partners and healthcare systems across the globe. The company has developed and taken a range of Novel Biologics, Biosimilars, differentiated Small Molecules and affordable Recombinant Human Insulin and Analogs from Lab to Market. The company's brands include INSUGEN (rh-insulin), BASALOG (Glargine), CANMab (Trastuzumab), BIOMAb-EGFR (Nimotuzumab) and ALZUMAb (Itolizumab), an anti-CD6 monoclonal antibody. It has a pipeline of Biosimilars and Novel Biologics at various stages of development, including Insulin Tregopil, an oral insulin analog.
- Torrent Pharma:** Torrent Pharmaceuticals Limited is engaged in the manufacture and sale of branded, as well as unbranded generic pharmaceutical products. The company operates in the therapeutic areas of cardiovascular (CV), central nervous system (CNS), gastrointestinal, diabetology, anti-infective, anti-diabetics and pain management segments. The company offers products in various categories, including tablets, capsules and parenteral. Its geographical segments include India and outside India. It manufactures various active pharmaceutical ingredients (APIs) such as Nicorandil, Risperidone, Venlafaxine Hydrochloride, Ropinarole Hydrochloride, Duloxetine Hydrochloride, Ormexifen Hydrochloride, Nebivolol Hydrochloride, Lamotrigine and Sertraline Hydrochloride. The company's subsidiaries include Heumann Pharma GmbH & Co., Torrent Pharma GmbH, Heunet Pharma GmbH, Norispharm GmbH, Torrent Pharma (Thailand) Co. Ltd., Torrent Pharma S.R.L., Aptil Pharma Limited and Laboratories Torrent Malaysia Sdn. Bhd.
- Ipca Labs:** Ipca Laboratories Limited is a manufacturer and supplier of over 10 active pharmaceutical ingredients (APIs). It offers APIs such as atenolol, hydroxychloroquine sulfate, morantel citrate, pyrantel pamoate and zaltoprofen. It offers brands such as Zerodol, Lariago, HCQS Perinorm, Rapither, Tenoric, Lumerax, Etova, Malirid and Folitrix. Its 3c division focuses on cardiovascular and anti-diabetic markets. The company's activa division serves the rheumatology market. Its altus division caters to the needs of intensivists, both surgical and non-surgical. Its Bionova division's focus area is dermatology. Its dynamic division focuses on cardiovascular, gastro-intestinal, anti-bacterial, pain management and respiratory sectors. Its hycare division caters to the needs of cardiologists and diabetologists. Its divisions also include innova, intima, pain management, pharma and uro sciences.
- Lyka Labs:** Lyka Labs Limited is engaged in the business of pharmaceutical products and pharma-related activities, including research. The company's principal business activity is formulation. It is engaged in the manufacture of pharmaceutical formulations and active pharmaceutical ingredients (APIs) across various therapeutic segments. Its geographical segments include domestic and exports. The company, through Cerabelle, offers skin and hair care solutions for skin lightening, skin hydration, anti-aging, protective, trichology, cleansers and anti-acne. Its products include Hyglow Tablet, Hyglow Skin Lightening Cream, Hyglow Foaming Face Wash, Gomoist Moisturizing Cream/Lotion, Oral Moisturizer Capsules, Agestop Collagen Boosting Cream, Rejuvenating Stem Cell Cream, Anacare Hair Revitalizing Serum & Shampoo, Sunsire Day Night Sunscreen, Anti Dandruff Shampoo, Hyglow Exfoliating Facial Scrub, Gomoist Daily Facial Cleanser, Anti Acne Foaming Face Wash and Phyto-Astringent Toner.

Research Methodology

In this study, the researchers have attempted to determine the liquidity position of the selected companies for the period of the study and to correlate it with their profitability in order to find out how these two variables viz., liquidity and profitability behave when they are viewed together. To achieve the desired objective, necessary statistical techniques and tools used in the study include mean, percentage method, standard deviation, ratio analysis, Motaal's Ultimate Rank Test, coefficient of variation, Spearman's Rank Correlation, etc.

Data Analysis and Findings

Liquid ratios, the amount invested in liquid assets, working capital and other related ratios have been calculated to determine the liquidity position of the selected companies, which are depicted in the following tables:

Table 1: Lyka Labs – working capital related ratios

Rs. in crores

Year	Current assets	Current liabilities	Working capital (CA-CL)	Inventory	Quick assets (CA-IN)	Current ratio	Quick ratio	Working capital to current assets (%)	Stock / Inventory to current assets (%)	Quick asset / Liquid resources to current assets (%)
2012	98.82	110.38	-11.56	14.97	83.85	0.76	1.32	-11.69	15.14	84.85
2013	101.0	113.6	-12.57	14.56	86.47	0.71	1.34	-12.44	14.41	85.58
2014	66.98	141.71	-74.73	8.6	58.38	0.54	0.86	-111.57	12.83	87.16
2015	63.84	139.68	-75.84	12.56	51.28	0.52	0.77	-118.79	19.67	80.32
2016	58.73	134.04	-75.31	6.96	51.77	0.48	0.89	-128.23	11.85	88.14
Mean	77.88	127.88	-50.00	11.53	66.35	0.60	1.03	-76.54	14.78	85.21
Growth	-40.09	23.66	-63.75	-8.01	-32.08	-0.28	-0.43	-116.53	-3.29	3.29
Growth %	-40.56	21.43	551.4	-53.50	-38.25	-36.8	-32.57	996.1744	-21.77	3.88
S.D.	18.20	13.25	30.97	3.210	15.58	0.11	0.243	52.91	2.70	2.70
C.V.%	0.23	0.10	-0.61	0.27	0.23	0.18	0.23	-0.69	0.18	0.03

Source: www.moneycontrol.com

Lyka Labs: Table 1 indicates that the current assets of Lyka Labs has shown a decline in growth rate by 40 percent and current liabilities increased by 21 percent in 5 years. The coefficient of variation (CV) of the current assets was found to be 0.23 percent, whereas the standard deviation (SD) was 18.20. This demonstrates an unfaltering and a quick decrease of current assets during the period of study. The working capital, quick assets and current liabilities have likewise changed simultaneously just like current assets. Current liabilities were found to be 21.43 percent, SD was found to be Rs.13.25 crores and CV is 0.10 percent. The working capital growth rate was 551.4 percent, SD was Rs.30.97 crores, whereas CV was -0.61 percent. As the coefficient of variance increases, a higher CV rate is obtained which demonstrates a more prominent variety of working capital. A reduction in growth rate of 38.25 percent, SD of Rs. 15.58 crores and CV of 0.23 percent was found in quick assets. Lyka Labs' current ratio and quick ratio have shown a decrease in growth i.e. -36.8 percent and -32.57 percent respectively. The organisation's liquidity position has worsened throughout the years because of the negative growth. The organisation's average current ratio was found to be 0.60 which is far below the ideal thumb rule, i.e. 2, and quick ratio was found to be 1.03, more than the ideal thumb rule which is 1; this shows an attractive liquidity position of the organisation during the period of study. We found that working capital to the current assets ratio demonstrated a negative development by 76.54 percent. This indicates that the growth rate of current liabilities was more when contrasted with the growth rate of current assets and henceforth, the working capital diminishes gradually. The approach of the company towards working capital may be a strategy to upgrade productivity; however, undoubtedly, it risks the liquidity position of the organisation. The quick assets to current ratio additionally registered a positive growth of 3.88 percent during the period of study, which means that the organisation is concerned about liquidity. All aspects of liquidity were analysed and it was found that the liquidity position of the organisation isn't healthy. The organisation should find a way to expand the working capital level, build the quick ratio and current ratio. When contrasted with current liabilities, current assets ought to be expanded at a faster rate. The organisation should guarantee that it has adequate liquid assets to fulfil its short term obligations as they arise. It can also be concluded that the organisation works entirely on cash basis; it can pay its creditors after it collects from its debtors at which point the organisation is in a comfortable position.

Table 2: Biocon – working capital related ratios

Rs. in crores

Year	Current assets	Current liabilities	Working capital (CA-CL)	Inventory	Quick assets (CA-IN)	Current ratio	Quick ratio	Working capital to current assets (%)	Stock / Inventory to current assets (%)	Quick asset / Liquid resources to current assets (%)
2012	1352.1	563.6	788.5	340.4	1011.7	1.03	0.95	58.31	25.17	74.82
2013	1473.3	627.9	845.4	358.9	1114.4	1.32	1.15	57.38	24.36	75.63
2014	1467.3	603.8	863.5	357.6	1109.7	1.02	1.05	58.84	24.37	75.62
2015	1735.9	564	1171.9	406.3	1329.6	1.31	1.25	67.50	23.40	76.59
2016	2302.3	810.8	1491.5	467.5	1834.8	1.88	2.2	64.78	20.30	79.69
Mean	1666.18	634.02	1032.16	386.14	1280.0	1.312	1.32	61.36	23.52	76.47
Growth	950.2	247.2	703	127.1	823.1	0.85	1.25	6.46	-4.86	4.86
Growth rate %	70.27	43.86	89.15	37.33	81.35	82.52	131.5	11.08	-19.34	6.50
S.D.	342.02	91.72	265.78	46.20	296.20	0.312	0.451	4.02	1.70	1.70
C.V%	0.20	0.14	0.25	0.11	0.23	0.23	0.34	0.06	0.07	0.02

Source: www.moneycontrol.com

Biocon: Table 2 indicates that the current assets demonstrated a growth rate of 70 percent while the current liabilities increased by only 44 percent during the period. The SD of the current assets was found to be Rs.342.02 and CV was found to be 0.20 percent, which demonstrates quick growth of current assets during the period of study. From the study, working capital, quick assets and current liabilities have likewise changed at a comparable rate to current assets. Current liabilities' growth rate was found to be 43.86 percent with SD of Rs.91.70 crores and a CV of 0.14 percent. Growth in working capital and CV was also seen during the period. Quick assets, additionally, have registered a higher growth rate of 81.35 percent, SD of Rs. 296.20 crores and CV of 0.23 percent. This shows consistency in the organisation's liquidity position; increase in working capital and quick assets prompts growth of the organisation and demonstrates a consistent steadiness in the company's liquidity position. The liquidity ratio indicates that both quick ratio and current ratio have registered positive development i.e. 82.52 percent and 131.5 percent respectively. This positive growth in both the ratios demonstrates that the company's liquidity position has increased through the years. The average current ratio of the organisation is 1.312 and average quick ratio is 1.32, which is high and shows a satisfactory liquidity position during the period of study. In addition, a high CV rate, i.e. current ratio of 0.23 percent and quick ratio of 0.34 percent indicates stability in the liquidity position of the organisation.

Table 3: Ipca Labs – working capital related ratios

Rs. in crores

Year	Current assets	Current liabilities	Working capital (CA-CL)	Inventory	Quick assets (CA-IN)	Current ratio	Quick ratio	Working capital to current assets (%)	Stock / Inventory to current assets (%)	Quick asset / Liquid resources to current assets (%)
2012	1196.6	635.2	561.4	663.98	532.62	-	-	-	-	-
2013	1384.8	629.69	755.11	733.34	651.46	1.7	1.15	54.52	52.95	47.04
2014	1583.55	781.39	802.16	838.3	745.25	1.53	1.03	50.65	52.93	47.061
2015	1593.06	893.91	699.15	916.98	676.08	1.32	1.03	43.88	57.56	42.43
2016	1521.68	837.62	684.06	831.94	689.74	1.5	0.87	44.95	54.67	45.32
Mean	1520.77	755.56	700.37	796.90	659.03	1.51	1.02	48.50	54.53	45.46
Growth	325.08	202.42	122.66	167.96	157.12	1.5	0.87	44.95	54.67	45.32
Growth %	27.16	31.86	21.84	25.29	29.49	11.76	24.34	17.55	-3.24	3.65
S.D.	83.15	106.65	81.16	88.39	70.29	0.13	0.09	4.32	1.88	1.88
C.V%	0.05	0.14	0.11	0.11	0.106	0.08	0.08	0.08	0.03	0.04

Source: www.moneycontrol.com

Ipca Labs: Table 3 indicates that the current assets have demonstrated a growth rate of 27.16 percent and current liabilities have also increased by 31.86 percent in five years. The SD of the current assets was Rs.83.15 and the CV was 0.05 percent, which demonstrates an enduring and quick growth in current assets during the period of study. The growth rate of current liabilities was 31.86 percent with a standard deviation of Rs.106.65 crores and a CV of 0.14 percent. The rate of growth of working capital was found to be 21.84 percent, SD of Rs. 81.16 crores and CV of 0.11 percent. Quick assets have a growth rate of 29.49 percent, SD of Rs. 70.29 crores and CV of 0.106 percent. It was found that working capital to current asset ratio has increased by 44.95 percent. This indicates that the growth rate of current liabilities was more when compared with the rate of growth of current assets and henceforth, the working capital is expanding gradually. The company's strategy towards working capital may be to improve productivity. The positive development found in stock to current assets ratio can be dealt with as a negative activity in the direction of liquidity management. The quick assets to current ratio has likewise registered a positive growth of 45.3 percent during the period of study, which means that the organisation's liquidity position from all the aspects isn't satisfactory. The organisation should find a way to expand its working capital level, and there should be an increase in the current ratio and quick ratio. Also, the current assets ought to be expanded at a high rate when contrasted with current liabilities.

Table 4: Torrent Pharma – working capital related ratios

Rs. in crores

Year	Current assets	Current liabilities	Working capital (CA-CL)	Inventory	Quick assets (CA-IN)	Current ratio	Quick ratio	Working capital to current assets (%)	Stock / Inventory to current assets (%)	Quick asset / Liquid resources to current assets (%)
2012	1423.99	828.57	595.42	393.12	1030.87	1.25	1.04	41.81	27.60	72.39
2013	2062.86	1112.02	950.84	697.09	1365.77	1.33	0.93	46.09	33.79	66.20
2014	2672.33	1166.94	1505.39	694.51	1977.82	1.42	1.09	56.33	25.98	74.01
2015	2731.63	1325.88	1405.75	781.15	1950.48	1.16	1.01	51.46	28.59	71.40
2016	3111.42	1501.94	1609.48	970.13	2141.29	1.15	0.74	51.72	31.17	68.82
Mean	2400.44	1187.07	1213.37	707.2	1693.24	1.26	0.96	49.48	29.43	70.56
Growth	1687.43	673.37	1014.06	577.01	1110.42	-0.1	-0.3	9.91	3.57	-3.57
% Growth	118.50	81.26	170.31	146.77	107.716	-8	-28.8	23.71161	12.94138	-4.93
S.D	592.70	224.93	382.09	186.28	422.81	0.10	0.12	5.02	2.75	2.75
C.V%	0.24	0.18	0.31	0.26	0.24	0.08	0.12	0.10	0.09	0.03

Source: www.moneycontrol.com

Torrent Pharma: Table 4 indicates that the current assets have demonstrated a growth rate of 118.50 percent while the current liabilities have increased by 81.26 percent in these five years. The SD of the current assets was Rs. 592.70 and the CV was 0.24 percent, which demonstrates the relentless and quick development of current assets during the period of study. The working capital has additionally registered positive growth of 170.31 percent, which shows that the organisation has constantly endeavoured to maintain the required measure of working capital. The quick assets registered positive growth rate by 107.71 percent, SD of Rs. 422.81 crores and CV of 0.24 percent, which demonstrates that during the period, the organisation has maintained sufficient cash in liquid resources. On analysing the company's liquidity ratio, it was discovered that both the quick ratio and current ratio have a negative growth i.e. -8 percent and -28.8 percent, which indicates that the company's liquidity position has deteriorated through the years. The average current ratio was found to be 1.26 and average quick assets was 0.96, which indicates that even though the organisation maintains adequate liquid assets, the resources position isn't satisfactory. Additionally, the working capital to current asset ratio registered positive growth of 23.71 percent. This shows that the growth rate of current resources was higher than the growth rate of current liabilities and hence, the working capital was expanding gradually. The company's approach to working capital may be its strategy to grow profits. Growth of the component of stocks to current asset ratio, which is 12.94 percent is, however a positive sign for the organisation. The quick asset to current ratio likewise registered negative growth of 4.93 percent during the five years, which indicates that the organisation's liquid asset position as a part of current assets has declined during the period of study.

Table 5: Ajanta Pharma – working capital related ratios

Rs. in crores

Year	Current assets	Current liabilities	Working capital (CA-CL)	Inventory	Quick assets (CA-IN)	Current ratio	Quick ratio	Working capital to current assets (%)	Stock / Inventory to current assets (%)	Quick asset / Liquid resources to current assets (%)
2012	309.19	245.46	63.73	162.35	146.84	1.06	1.25	20.61	52.50	47.49
2013	325.8	217.77	108.03	143.51	182.29	1.4	1.38	33.15	44.04	55.95
2014	453.65	263.96	189.69	148.77	304.88	1.41	1.47	41.81	32.79	67.20
2015	573.03	244.83	328.2	153.05	419.98	2.17	1.85	57.27	26.70	73.29
2016	699.64	253.13	446.51	189.78	509.86	2.12	2.19	63.81	27.12	72.87
Mean	472.26	245.03	227.23	159.49	312.77	1.63	1.628	43.33	36.63	63.36
Growth	390.45	7.67	382.78	27.43	363.02	1.06	0.94	43.20	-25.38	25.38
Growth %	126.28	3.12	600.62	16.89	247.22	100	75.2	209.6265	-48.34	53.44
S.D.	148.48	15.27	141.86	16.35	137.81	0.43	0.34	15.72	10.10	10.10
C.V%	0.31	0.06	0.62	0.10	0.44	0.26	0.20	0.36	0.27	0.15

Source: www.moneycontrol.com

Ajanta Pharma: Table 5 provides a good depiction of Ajanta Pharma's liquidity position. The current assets have registered a growth rate of 126.28 percent, while the current liabilities increased by 3.12 percent. The SD of the current assets was found to be Rs.148.48 and the CV of 0.31 percent indicates an unflinching as well as quick growth of current assets during the period of study. The current liabilities' growth rate was found to be 3.12 percent, SD of Rs.15.27 crores and CV of 0.06 percent. The growth rate of working capital was 600.60 percent with SD of Rs.141.86 crores and a CV of 0.62 percent. An increase in working capital and a positive CV rate indicates faster growth of current assets when compared with current liabilities. The quick assets, additionally, have registered a positive growth rate of 247.22 percent with SD of Rs. 137.81 crores and CV of 0.44 percent. All these ratios indicate a severe liquidity crisis in the organisation; the increase in working capital and quick assets are considerably more than normal, which shows a consistent instability in the company's liquidity position. On analysing the company's liquidity ratio, it was discovered that both current ratio and quick ratio registered positive growth i.e. 100 and 75.2 percent respectively, which indicates that the liquidity position of the organisation has been deteriorating through the years. The organisation's average current ratio was 1.63 and average quick ratio was 1.62, which indicates an unhealthy liquidity position during the period of study.

Motaal's Comprehensive Test of Liquidity

Motaal prescribes a comprehensive test for determining the soundness of a firm with respect to its liquidity position. A process of ranking is used to arrive at a more comprehensive measure of liquidity in which the following three ratios are combined in a point score:

- i) Working Capital (WC) to Current Asset Ratio = Working Capital/Current Assets x100
- ii) Stock to Current Asset Ratio = Inventory or Stock/Current Assets x100
- iii) Liquid Resources (LR) to Current Asset Ratio = Liquid Resources or Quick Assets/Current Assets x100

The higher the value of both working capital to current assets ratio and liquid resources to current assets ratio, the more favourable is the liquidity position of a firm, and vice versa. On the other hand, lower the value of stock to current assets ratio, the more favourable is the liquidity position of the firm. The ranking of the above three ratios of a firm over a period of time is done in their order of preferences. Finally, the ultimate rank is computed on the basis of the principle that the lower the points scored, the more favourable is the liquidity position, and vice versa.

Table 6: Motaal's Comprehensive Test of Liquidity

S.N.	Company	Capital to Current Assets Ratio (%)	Rank	Stock to Current Assets Ratio (%)	Rank	Liquid Resources to Current Assets Ratio (%)	Rank	Total Rank	Ultimate Rank
1	Lyka labs	-76.54	5	14.78	5	85.21	1	11	5
2	Biocon	61.36	1	23.52	4	76.47	2	7	1
3	Ipca labs	44.95	3	54.67	1	45.32	5	9	3
4	Torrent Pharma	49.48	2	29.43	3	70.56	3	8	2
5	Ajanta Pharma	43.33	4	36.63	2	63.36	4	10	4

Source: Authors' research findings

Table 6 (Motaal's comprehensive test of liquidity) reveals that on the basis of Motaal's ultimate rank test of liquidity, Biocon is awarded Rank 1 indicating that it is the most liquid company among the five companies covered in the research study. Torrent Pharma, Ipca Labs and Ajanta Pharma are assigned Ranks 2, 3 and 4 respectively. Lyka Labs at Rank 5 has the most unfavourable liquidity position.

Profitability and Liquidity Analysis

Liquidity and profitability are two conflicting terms; however, one can't be viable without the other. In any case, overabundance of one may result in a negative impact on the other. The management ought to maintain sufficient profitability and liquidity. To estimate the profitability and liquidity position of five pharmaceutical organisations, the authors utilised the distinctive markers appearing in Table 6. Profitability is measured using current assets and total assets; the total assets ratio has been utilised for the liquidity marker and profits for capital utilised. Analysis is done using Spearman's Rank Correlation to discover the connection between profitability and liquidity, and further, 't' test has been used to test the theory and to arrive at determinations. In the following tables, an effort is made to find out the relationship between Current Assets to Total Assets Ratio (CTTR) and Return on Capital Employed (ROCE) using Spearman's Rank Correlation Coefficient in order to understand whether there exists a relationship between liquidity and profitability.

$$\text{Correlation Coefficient (r)} = 1 - \frac{6 \sum D^2}{n(n^2-1)}$$

It is essential to know the sample coefficient of correlation in order to test the hypothesis. The appropriate test statistic to be used here is by applying the following formula:

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

Null Hypothesis (H₀): There is a negative relationship between the two variables, viz. Profitability and Liquidity.

Alternative Hypothesis (H₁): There is no negative relationship between the two variables, viz. Liquidity and profitability.

Table 7: Rank Correlation between CTTR and ROCE of Lyka Labs

Rs. in crores

Year	Current assets (Rs.)	Total assets (Rs.)	Capital employed (Rs.)	EBIT (Rs.)	CTTR	Rank	ROCE	RANK	D	D ²	r	t
					%	R1	%	R2				
2012	98.82	239.18	128.8	-14.44	41.31	1	-11.21	4	-3	9	0.1	0.2
2013	101.0	247.43	133.83	-3.05	40.81	2	-2.27	2	0	0		
2014	66.98	262.52	120.81	-26.64	25.51	4	-22.05	5	-1	1		
2015	63.84	233.12	93.44	-2.14	27.38	5	-2.29	3	2	4		
2016	58.73	228.03	93.99	5.09	25.75	3	5.41	1	2	4		

$$\sum D^2 = 18$$

Source: www.moneycontrol.com

Table 7 indicates that the table value of 't' at the 5 percent level of significance for 4= (n-1) degree of freedom is 2.776 and the calculated value is 0.17. As the table value is greater than the computed value, the null hypothesis, i.e. H₀ is accepted and concludes that there is a negative relationship between profitability and liquidity.

Table 8: Rank Correlation between CTTR and ROCE of Biocon

Rs. in crores

Year	Current assets (Rs.)	Total assets (Rs.)	Capital employed (Rs.)	EBIT (Rs.)	CTTR	Rank	ROCE	RANK	D	D ²	r	T
					%	R1	%	R2				
2012	1352.1	2820.30	2256.7	304.4	47.94	4	13.48	5	-1	1	0	0
2013	1473.2	3013.20	2385.3	360.9	48.89	3	15.13	3	0	0		
2014	1467.3	3218.50	2614.7	408.6	45.50	5	15.62	2	3	9		
2015	1735.9	3333.00	2769	450.1	52.08	2	16.25	1	1	1		
2016	2302.3	4398.90	3588.1	491.5	52.33	1	13.69	4	-3	9		

$$\sum D^2=20$$

Source:www.moneycontrol.com

Table 8 indicates that the table value of 't' at 5% level of significance for 4= (n-1) degree of freedom is 2.776 and the calculated value is 0. As the table value is more than the computed value, null hypothesis, i.e.H₀ is accepted with the conclusion that there is a negative relationship between profitability and liquidity.

Table 9: Rank Correlation between CTTR and ROCE of IPCA Labs

Rs. in crores

Year	Current assets (Rs.)	Total assets (Rs.)	Capital employed (Rs.)	EBIT (Rs.)	CTTR	Rank	ROCE	RANK	D	D ²	r	t
					%	R1	%	R2				
2012	1196.6	2330.05	1694.85	368.94	51.35	1	21.76	3	-2	4	0.6	1.7
2013	1384.8	2708.75	2079.06	461.37	51.12	2	22.19	2	0	0		
2014	1583.55	3217.10	2435.71	629.01	49.22	3	25.82	1	2	4		
2015	1593.06	3823.74	2929.83	353.48	41.66	4	12.06	4	0	0		
2016	1521.68	3822.84	2985.24	108.52	39.80	5	3.63	5	0	0		

$$\sum D^2=8$$

Source:www.moneycontrol.com

Table 9 indicates that the table value of 't' at the 5 percent level of significance for 4= (n-1) degree of freedom is 2.776 and the calculated value is 1.38. As the table value is more than the computed value, null hypothesis i.e. H₀ is accepted with the conclusion that there is a negative relationship between profitability and liquidity.

Table 10: Rank Correlation between CTTR and ROCE of Torrent Pharma

Rs. in crores

Year	Current assets (Rs.)	Total assets (Rs.)	Capital employed (Rs.)	EBIT (Rs.)	CTTR	Rank	ROCE	RANK	D	D ²	r	t
					%	R1	%	R2				
2012	1423.99	2578.38	1749.81	431.9	55.22	3	24.68	4	-1	1	0.3	0.6
2013	2062.86	3355.31	2243.29	701.91	61.48	2	31.28	2	0	0		
2014	2672.33	4332.68	3165.74	958.32	61.67	1	30.27	3	-2	4		
2015	2731.63	6509.59	5183.71	796.08	41.96	5	15.35	5	0	0		
2016	3111.42	7329.06	5827.12	2500.12	42.45	4	42.90	1	3	9		

$$\sum D^2=14$$

Source: www.moneycontrol.com

Table 10 indicates that the table value of 't' at 5% level of significance for 4= (n-1) degree of freedom is 2.776 and the calculated value is 0.54. As the table value is more than the computed value, null hypothesis, i.e. Ho is accepted with the conclusion that there is a negative relationship between profitability and liquidity.

Table 11: Rank Correlation between CTTR and ROCE of Ajanta Pharma

Rs. in crores

Year	Current assets (Rs.)	Total assets (Rs.)	Capital employed (Rs.)	EBIT (Rs.)	CTTR	Rank	ROCE	RANK	D	D ²	r	t
					%	R1	%	R2				
2012	309.19	617.16	371.7	79.76	50.09	3	21.45	5	-2	4	0.7	1.7
2013	325.8	675.38	457.61	163.51	48.23	5	35.73	4	1	1		
2014	453.65	879.87	615.91	313.06	51.55	2	50.82	2	0	0		
2015	573.03	1085.85	841.02	451.83	52.77	1	53.72	1	0	0		
2016	699.64	1414.90	1161.77	551.33	49.44	4	47.45	3	1	1		

$$\sum D^2=6$$

Source: www.moneycontrol.com

Table 11 indicates that the table value of 't' at 5 percent level of significance for 4= (n-1) degree of freedom is 2.776, while the calculated value is 1.7. As the table value is more than the calculated value, null hypothesis, i.e. Ho is accepted with the conclusion that there is a negative relationship between profitability and liquidity.

Summary of Findings and Managerial Implications

The study was done to provide empirical evidence about the effects of working capital management on profitability for a sample of five listed pharmaceutical companies for the period 2011-12 to 2015-16. Though liquidity and profitability are inversely related in all the cases, which coincides with the theory of finance, it is found that highly liquid companies do earn profit. It is not true that all profitable companies suffer from lack of liquidity or all liquid companies suffer losses. In other words, a company need not forego liquidity in order to earn profit. The only thing required is to draw a balance between the extent a company can lose liquidity to earn the desired profit, which is the ultimate trade-off between liquidity and profitability. While this is essential, there is no universally acceptable solution or rule on the method of working out this trade-off. On the other hand, the fashion of managing the show with negative working capital is gaining popularity in today's corporate world for the sake of earning more profit, which is regarded as managerial efficiency. But here is a word of caution to all finance managers - they need to ensure that 'managerial efficiency' must not lead to financial bankruptcy of the organisation.

In India, negative working capital is as popular as it is with global companies such as McDonalds, Amazon.com, etc. Negative working capital indicates non-liquidity or less liquidity within the firm, which is unfavourable at each and every stage of business. Many companies operating in India are able to manage with negative working capital efficiently, creating shareholder value by way of higher EPS and higher market capitalisation. At the same time, companies with higher working capital have sufficient liquidity, are more successful because of liquidity and can expand business optimally. However, a company with higher working capital needs higher revenue to maintain a healthy operating ratio. A better credit management system will help these companies generate higher ROCE in the long run. However, in each and every situation, lower level of liquidity is not preferable; a proper tradeoff between liquidity and working capital is needed in the long run.

Limitations of the Study

This study has the following limitations:

1. The study is restricted to just five companies and only with five years' data (2011-12 to 2015-16). Expanding the period of study may lead to variations in the outcome.
2. Data for the study was obtained from the website www.moneycontrol.com; quality of the results obtained from the study depends upon the reliability, quality and accuracy of the data.
3. The result of analysis is subject to the same constraints as are applicable to statistical tools.
4. Since the report is exclusively made from data from secondary sources, direct observation is not possible; limitations of secondary data are applicable.
5. The data collected for the study was historic in nature and hence, the suggestions might be irrelevant in certain situations.

Scope for Further Study / Potential for Future Work

This study covers only five companies for a limited time period of five years (2011-12 to 2015-16). There is scope to not only expand the number of companies, but also the time period of study to arrive at more accurate conclusions. Additionally, the study can be expanded to companies in other sectors (other than pharma). Every segment in the manufacturing sector should be studied at the micro level for efficient working capital management in order to assess which factors of working capital management influence profitability more and how working capital management can increase productivity and profitability in different sectors of our country. The influence of interest rate risk, foreign exchange risk, business risk, political risk and competitor risk on working capital management could be analysed in future research. A further possibility for research is the development of a risk-adjusted working capital rating. The conventional working capital ratio can be promoted to a risk-adjusted working capital ratio. The scope for further research may be extended to working capital management components including cash, marketable securities, receivables and inventory management. Hence, the key aim of a company should be to strike a balance between Liquidity and Profitability to achieve optimal efficiency.

Conclusion and Recommendations

Working capital management (WCM) is the functional area of finance that covers all current accounts of the firm. It involves the relationship between a firm's short-term assets and its short-term liabilities. A firm is required to maintain a balance between liquidity and profitability while conducting its day-to-day operations. Liquidity is a prerequisite condition to ensure that a firm is able to meet its short-term obligations and its continued flow can also be guaranteed from a profitable venture. The importance of cash as an indicator of continuing financial health should not be surprising in view of its crucial role within the business organisation. The goal of working capital management is to ensure that a firm is able to continue its operations and that it has the ability to satisfy both maturing short-term debt and upcoming operational expenses. So, the management of working capital involves managing inventories, accounts receivable, accounts payable and cash.

This study concludes that the liquidity ratio of Biocon is the best among the five companies included in the study. Other companies in the study need to enhance their liquidity position for better execution. Organisations must maintain a suitable liquid and current ratio, which is not the case with the organisations in the study. In one case, negative working capital was observed. In present times, a number of organisations are functioning with negative working capital to achieve superior returns on capital and profits. While negative working capital reduces cost of working capital (another way is higher profitability), it shows poor liquidity (stressed circumstance for the lenders and so forth). Alternatively, it can be stated that the organisation is over loaded with current liabilities, which is unsuitable particularly in a time of recession. Consequently a trade-off should be maintained, adjusting the two aspects i.e. profitability and liquidity.

A firm can be very profitable if it translates the cash from operations within the same operating cycle. If this is not possible, the firm may need to borrow to support its continued working capital needs. Thus, the twin objectives of profitability and liquidity must be well-synchronized. Investments in current assets are inevitable to ensure delivery of goods or services to the ultimate customers, and proper management of the same fulfils the desired impact on either profitability or liquidity. If resources are blocked at different stages of the supply chain, this will prolong the cash operating cycle. Although this might increase profitability (due to increase in sales), it may also adversely affect profitability if the costs tied up in working capital exceed the benefits of holding more inventory and/or granting more trade credit to customers.

We also recommend that firms in the pharmaceutical sector should forecast their sales and hold sufficient cash according to their projected sales level, so that they are able to take advantage of the bargaining position while making cash purchases, and thus cut their costs. It is very clear that efficient management of working capital and liquidity has a positive effect on the firm's profitability. This study clearly affirms that firms in the pharmaceutical industry in India have sufficient scope to improve their profitability by managing their working capital in more efficient ways. The inventory, if handled proficiently, can produce a significant positive impact on profitability of the firm. Consequently, this study finds sufficient proof that a firm is likely to enjoy better profitability if it manages its working capital with better efficiency and focuses on inventory and cash position with greater care. To conclude, it can be said that adopting the above measures will doubtlessly help the selected companies to improve their overall performance in the management of working capital. With efficient management of working capital, the selected companies can utilise their capacity optimally and accelerate the country's economic growth by increasing the production of medicines at a reasonable cost.

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