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**INVENTORY AND WORKING CAPITAL MANAGEMENT: A CASE STUDY OF PHARMACEUTICAL SECTOR****DR. TEJ SINGH****ASSOCIATE PROFESSOR****M. D. UNIVERSITY (PG) REGIONAL CENTRE****REWARI – 123 401****ABSTRACT**

*The study of the inventory and working capital management occupies an important place in financial management. Working capital management indicates the management of day to day activities and the liquidity level of business enterprises. Thus, the working capital refers to a firm's investment in short-term assets-cash, short-term securities, accounts receivable and inventories. On the other hand, inventory reflects the investment of a firm's fund. So, it is necessary to manage inventories efficiently in order to avoid unnecessary investments. A firm, which neglects the management of inventories, will have to face serious problems relating to long term profit ability and may fail to survive. Therefore, the amount of investment in inventories should be at a level which is neither more nor less than required. Here, in this paper an attempt has been made to analyse the inventory and working capital management of the two selected companies i.e. Cipla Limited, and Dr. Reddy's Laboratories Limited with the help of various inventory and working capital ratios and Motaal's Comprehensive Ranking Test. The statistical techniques like Growth rate, Mean, Standard Deviation, Coefficient of Variation, and Correlation coefficient, and Student's 't' test have been used. The study covers a period of ten years and based on secondary data which has been collected through the Prowess CMIE. The study found that the liquidity position of the Dr. Reddy's Laboratories Ltd. is sound and inventory properly managed during the study period compared to the Cipla Ltd. Further, the results indicate that there is a high degree association between the inventories and working capital in Cipla Ltd., whereas, there is a low degree negative association between these two variables in case of Dr. Reddy's Laboratories Ltd.*

**KEYWORDS**

Absolute Liquid Ratio, CATA, Gross Working Capital, Inventory, Inventory Holding Period.

**INTRODUCTION**

Working capital management is usually described as involving the administration of current assets such as cash and marketable securities, receivables and inventories and the administration of current liabilities. The task of the management is to optimize the levels of cash and marketable securities, receivables and inventories. The investment in current assets changes so frequently that it requires a constant exercise on the part of financial manager to maintain it within reasonable limits. The decisions are to be taken every now and then and promptly also so that the management is efficient and there is neither inadequate working capital nor excessive working capital. Excessive working capital affects the firm's profitability adversely and inadequate working capital affects the firm's solvency adversely. Thus, the study of the working capital behavior occupies an important place in financial management. Working capital or circulating capital indicates circular flow of funds in the day to-day or routine activities of business. 'Working capital means current assets' (Mead, Baker, Malott). The sum of the current assets is the working capital of a business (Mills). Any acquisition of funds which increases the current assets increases working capital also, for they are one and the same (Bonneville). Working capital is description of that capital which is not fixed. But the more common use of the working capital is to consider it as the difference, between the book value of the current assets and the current liabilities (Hoagland). Working capital management is considered with the problems that arise in attempting to manage the current assets, the current liabilities and the inter-relationships that exist between them (Smith).

Thus, the working capital management policies have a great effect on a firm's profitability, and its structural health. Therefore, the basic goal of working capital management is to manage each of the firm's current assets and current liabilities in such a way that an acceptable level of net working capital is always maintained in the business.

On the other hand, inventory which is one of the important elements of current assets reflects the investment of firm's fund. The objective of inventory management is to minimise the costs associated with holding inventories without impairing operational efficiency. The problem in inventory management is to determine the optimum level of inventories and to maintain the same. The optimum level should ensure that the firm does not suffer on account of production and sales requirements, keeping in view the minimum possible costs in order to maximize profitability. Excessive investment in inventories and short investment in inventories may be equally harmful for the enterprise. On one hand, if more inventories are held unnecessarily, costs of holding inventories increase—there is a servicing cost consisting of storage, insurance, spoilage, interest costs etc. the longer the period and larger the size of inventory, the greater the servicing cost. If the inventories are kept at too low a level, production and sales are likely to be hampered, causing loss to the revenue of the business. Therefore, the amount of investment in inventories should be at a level which is neither more nor less than required. An efficient management in this direction is badly needed to subserve the main goal of financial management.

**JUSTIFICATION OF THE STUDY**

Working capital is just like the heart of business. If it becomes weak, the business can hardly prosper and survive. It is an index of the solvency of a concern. The importance of working capital can be very well explained in the words of Husband and Dockery, "The prime objective of management is to make a profit whether or not this is accomplished in most business depends largely on the manner in which the working capital is administered". Therefore, working capital should be maintained at an optimum level, so that it will fulfill the ultimate goal of the business enterprise i.e. maximization of the overall value of the firm. Hence, an attempt has been made in this study to analyse the size and composition of working capital and such an investment has increased or declined over a period.

Inventory is one of the major components of current assets, which requires huge investments. Management of inventory is designed to regulate the volume of investment in goods on fund and the types of goods carried in stock to meet the needs of production and sales while at the same time the investment in them is to be kept at a reasonable level. The main purpose of carrying inventory is to avoidance of over-investment or under investment in inventories and to provide the right quantity of standard raw material to the production department at the right time. Therefore, it is better to maintain an optimum level of inventories that is needed in an organization. While analyzing the working capital, it is necessary to analyse the various components of working capital especially inventory, because inventory is one of the major components of the current assets.

Here, an attempt has been made in this study to analyse the size and composition of working capital and inventory of the Cipla limited (CL) and Dr. Reddy's Laboratories limited (DRLL). Further the study also tries to examine the relationship between the inventory and working capital. The findings may help the researchers and scholars to develop new ideas, techniques and methods in respect of the inventory and working capital management of both the selected companies.

**OBJECTIVES OF THE STUDY**

The following are the main objectives of the study:

1. To analyse the inventory and inventory management of both the selected companies through the inventory ratios.

2. To analyse the working capital management of both the selected units by using the working capital ratios.
3. To examine the relationship between the inventory and working capital management by using correlation of coefficient and students' 't' test.
4. To assess the liquidity position of the sample companies through the Motaal's comprehensive ranking test.

## HYPOTHESIS OF THE STUDY

The study has the following hypothesis:

1.  $H_0$ : Null hypothesis - There is no significant relationship between the inventory and working capital in the selected companies.
2.  $H_1$ : Alternative hypothesis - There is a significant relationship between the inventory and working capital in selected companies.

## LIMITATION OF THE STUDY

1. The study is limited to only ten years (from 2000-2001 to 2009-10) performance of the sample units.
2. The data used in the study have been taken from only the secondary sources of information. Primary data have not been taken.
3. The study is limited to only two pharmaceutical companies i.e. Cipla Limited and Dr. Reddy's Laboratories Limited.
4. Analysis and interpretation of the collected data has been made in the study through the correlation of coefficient, students' 't' test and Motaal's comprehensive ranking test.

## RESEARCH METHODOLOGY

In the study, two pharmaceutical companies viz. Cipla Limited (CL) and Dr. Reddy' Laboratories Limited (DRLL) have been taken as sample. Both the companies in their respective business are the largest pharmaceutical companies in India as well as in the rest of the world. The study is based on the secondary sources of information. The relevant data used for analysis and interpretation has been taken from the published annual reports of both the companies and Prowess CMIE (the online data base facility of the centre for monitoring Indian economy). The study covers the period of ten years i.e. from 2000-01 to 2009-10. Editing, classification and tabulation of the financial data which has been collected from the above mentioned sources have been done as per the requirement of the study. For the purpose of analyzing the collected data of both the companies, the techniques of Ratio analysis, Motaal's comprehensive ranking test, and statistical techniques like growth rate, mean, standard deviation, coefficient of variation and correlation coefficient. For testing the significance, the method of students' 't' test has also been applied. The collected data have been analysed in the following manner:

- Analysis of the inventory and inventory management
- Analysis of the working capital and its management
- Analysis of the various components of the gross working capital
- Liquidity ranking
- Coefficient of correlation and testing the significance

## ANALYSIS AND INTERPRETATION

### INVENTORY RATIO ANALYSIS

1. **INVENTORY TURNOVER RATIO (ITR):** Inventory turnover ratio establishes the relationship between the sales and average stock held by the enterprise during a period. It helps in determining the liquidity position of a concern. This ratio gives the rate at which inventories are converted into sales and then into cash. A higher ITR shows higher efficiency of the management and vice-versa. Table 1 depicts the ITR of both the selected companies which reveals that the inventory turnover ratios registered a fluctuating trend during the study period. In case of Cipla Ltd. this ratio varied between 3.19 times in 2002-03 and 4.36 times in the year 2000-01. The overall average of this ratio is 3.85 times with a negative growth rate of 10.55 %. The standard deviation is .34 and coefficient of variation is 8.83 %. On the other hand, ITR of Dr. Reddy's Ltd. is also showing the fluctuating trend. It changed from 5.77 times in 2005-06 to 9.28 times in 2001-02. The overall average is 7.22 times with a negative growth rate of 31.8 %. The standard deviation is 1.29 and coefficient of variation is 17.85 % which is more than the Cipla Ltd. Therefore, the result shows that both the companies have a similar position about the fluctuation in ITR. However, there is more consistency and stability in the ratio in Cipla Ltd. compared to Dr. Reddy's Ltd.
2. **INVENTORY HOLDING RATIO (IHR):** Inventory holding ratio represents how many days, on an average, an item remain in the firm's inventory. The shorter the age of firm's inventory, the better the liquidity position and vice-versa. Table 1 evidences that the age of inventory in case of Cipla Ltd. fluctuated between 84 days in 2000-01 and 114 days in 2002-03 with the overall mean of 96 days. However, on the other hand, in case of Dr. Reddy's Ltd., the IHR fluctuated between 39 days in 2001-02 and 63 days in 2004-05 and 2005-06 with the overall average of 52 days which shows that the control over inventory is more than the Cipla Ltd. The growth rate of this ratio in Dr. Reddy's Ltd. is 45.24 % which is more than the growth rate of 11.90 % of Cipla Ltd. The S.D. and the C.V. is .34 and 8.83 % respectively, however, in case of Cipla Ltd. it is 8.83 and 16.95 % respectively, which shows more variation in the inventory holding period. Thus, the results show that both the selected companies tried to control the inventory level throughout the study period, which in turn, positively influenced the liquidity position of the companies.
3. **INVENTORY TO WORKING CAPITAL RATIO (IWCR):** This ratio establishes the relationship between the inventory and working capital. It shows the operational efficiency and profitability of the concern. Table 1 reveals that the minimum IWCR of Cipla Ltd. is 63.20 % in the year 2007-08 and the maximum ratio is 145.09 % in 2000-01 with an overall average of 102.49 % during the study period. In case of Dr. Reddy's Ltd. the minimum ratio is only 21.58 % during the year 2001-02 and maximum ratio is 492.27 % in the year 2009-10 with overall mean of 83.17 % during the study period. The growth rate of Cipla Ltd. is negative of -33.48 % against the 1098.03 % of Dr. Reddy's Ltd. In case of Cipla Ltd. the S.D. and C.V. is 26.94 and 26.28 % respectively compared to 137.22 and 164.99 % respectively of Dr. Reddy's Ltd., which indicates that there is high variance in inventory and working capital ratio in case of Dr. Reddy's Ltd. Thus the lower proportion of inventory in working capital indicates that the liquid position of Dr. Reddy's Ltd. is good and inventory properly managed during the period under reference compared to the Cipla Ltd.
4. **INVENTORY TO CURRENT ASSETS RATIO (ICAR):** The inventory to current ratio shows the level of inventory in current assets. Inventory is one of the major components of the current assets, so it better to know the position of inventory as compared to current assets. In Cipla Ltd., the ICAR registered an increase from 36.61 % in 2007-08 to 56.73 % in the year 2000-01 with an average of 46.50 % during the study period. In case of Dr. Reddy's Ltd., the ICAR is varied between 16.15 % in 2001-02 to 34.23 % in the year 2009-10 with a mean of 23.24 % during the whole study period. In case of Cipla Ltd., the growth rate is -31.22 % as against of 11.50 % of Dr. Reddy's Ltd., which shows that the Cipla Ltd. has more control over the inventory compared to Dr. Reddy's Ltd. In case of Cipla Ltd., the value of coefficient of variation is less than Dr. Reddy's Ltd., which shows that there is more uniformity and consistency in the inventory and current assets of Cipla Ltd.

### WORKING CAPITAL RATIO ANALYSIS

1. **CURRENT RATIO (CR):** Current ratio shows the relationship between the current assets and current liabilities. This ratio is measure of the firm's short term solvency. This ratio according to accepted standards or idle ratio should be 2:1, it is an index of sound working capital position for the business and in case it is less than 2:1, there is need to further investigate about the short term solvency. The higher the CR, greater the margin of safety and vice versa. The current ratios of both the selected companies have been exhibited in Table 2. The current ratio of Cipla Ltd. is varied between 1.64 times in 200-01 and 2.38 times in the year 2007-08. It is clear from the analysis that this ratio is almost below than the ideal standard of 2:1, except during the year from 2005-06 to 2007-08. The average ratio is 1.93 times with a growth rate of 2.44 %. The S.D. is .32 and the value of C.V. is 16.58 %. In case of Dr. Reddy's Ltd. this ratio is always more than the idle ratio of 2:1, except in the last two years of the study. The overall average is 2.74 times with a negative growth rate of -32.98 %, which shows that the current assets of the company have decreased during the last two years of the study. The S.D. is .93 and the value of C.V. is



- 33.94 %. Since the value of coefficient of variation of Cipla Ltd. is less than the value of C.V. of Dr. Reddy's Ltd., hence, there is more consistency in this ratio in case of Cipla Ltd. compared to Dr. Reddy's Ltd.
2. **LIQUID RATIO (LR):** Liquid ratio is also known as acid test ratio, quick ratio or liquidity ratio. It can be calculated by dividing the current assets minus inventory and prepaid expenses by current liabilities. Normally, an idle quick ratio of 1:1 is considered satisfactory as a firm can easily meet its all current obligations. Liquid ratio provides a sense, a check on the liquidity position of a firm as shown by the current ratio. Quick ratio is more rigorous and penetrating test of the liquidity position of a business firm. Table 2 depicts the liquid ratio of both the selected companies. In case of Cipla Ltd., liquid ratio is in a satisfactory position in the last five years of the study because it is more than the idle standard of 1:1, but it is below the standard norm in the first five years of the study. Highest ratio during the study period is 1.51 times in the years 2006-07 and 2007-08 and the lowest ratio is .77 times in the year 200-01. On average, this ratio is 1.05 times, which is in a satisfactory position as per the norm. The Growth rate is 43.66 % which shows that the liquidity position of the company is in a positive direction during the study period. The S.D. is .27 and the value of C.V. is 25.71 %. In case of Dr. Reddy's Ltd., this ratio is fluctuated between .71 times in the year 2009-10 to 3.33 times in 2001-02. Moreover, this ratio is always more than the idle norm of 1:1 leaving only one exception i.e. .71 times in the year 2009-10. The average ratio is 2.74 times with a negative growth rate of -74.09 %. One of the important observations is that the current liabilities increased dramatically in the last years of the study period. Again, there is more consistency in the liquid assets and current liabilities of the Cipla Ltd. as evident by the value of C.V. (25.71 %) compared to the value of C.V. (36.92 %) of Dr. Reddy's Ltd. Thus, it can be concluded that the liquidity position of the Dr. Reddy's Ltd. is sound except the last year of the study compared to the liquidity position of the Cipla Ltd.
  3. **ABSOLUTE LIQUID RATIO (ALR):** This ratio is also regarded as cash position ratio or super quick ratio. It is a more rigorous test of the liquidity position of a firm. This is calculated by dividing cash and bank balances and marketable securities by the current liabilities. A high cash position ratio is good for the creditors but for management, it indicates poor investment policy. The idle standard for this ratio is 50 %; it means that if a business firm has 50 % cash to meet its current obligation, it is regarded that liquid position of the company is satisfactory. Table 2 depicts that this ratio is always less than the idle norm of 50 % or 0.5:1 in case of Cipla Ltd. It ranged from .01 times in the year 2003-04 and 2004-05 to .14 times in 2006-07. The overall average is .04 times with a growth rate of 50 %. The S.D. is .05 and the value of C.V. is 92.5 %. Thus, the cash position of Cipla Ltd. is not satisfactory during the study period, because the level of cash and bank balances maintained by the company is lower in current assets. On the other hand, in case of DRLL, this ratio is lower than the idle norm of .5:1 in total four years of the study i.e. .15 times in 2000-01, .47 times in 2007-08, .22 times 2008-09 and .16 times in the year 2009-10. The overall average is .92 times with a growth rate of 6.67 %. The value of S.D. is .61 and C.V. is 66.45 %, which indicates that there is more uniformity in this ratio compared to the Cipla Ltd. (C.V. 92.5 %). Thus, the overall cash position of the DRLL is sounder compared to the Cipla Ltd.
  4. **DEBTORS TURNOVER RATIO (DTR):** The turnover of debtors is also a measure of their liquidity or activity. It is determined by dividing the net credit sales by the average debtors. This ratio measures how rapidly debts are collected. A high ratio is indicative of shorter time lag between credit sales and cash collection. A low ratio shows that debts are not being collected rapidly. Pandey opined that the higher the value of DTR, the more efficient is the management of assets. On the other hand, low DTR implies inefficient management of debtors/ sales and less liquid debtors. DTR of the both the selected companies are shown in the Table 2. In case of Cipla Ltd., DTR is 3.11 times in the beginning of the study and reached to 1.65 times at the end of the study. It is highest (3.11 times) in the year 2000-01 and lowest (1.43 times) in the year 2008-09 with a mean of 1.95 times. There is a negative growth rate of -46.95 %, which is not a good sign from the liquidity point of view. The standard deviation is .48 and the value of coefficient of variation is 24.62 %. But in case of DRLL, the situation is changed because the DTR is increased from 1.70 times in 2000-01 to 2.08 times in the year 2009-10 with a positive growth rate of 22.35 %. On the average, the DTR in the company is 1.80 times during the period under reference. The value of S.D. is .13 and C.V. is 7.22 %, which shows that there is more stability and uniformity in this ratio compared to Cipla Ltd.
  5. **WORKING CAPITAL TURNOVER RATIO (WCTR):** The working capital turnover ratio establishes relationship of sales to net working capital. Sales in respect of working capital should be normal. Too high or too low sales in comparison to working capital means either over trading or under trading, none of which is good for the business. In case of Cipla Ltd., Table 2 exhibits that the WCTR is decreased from 5.60 times in 2000-01 to 3.62 times at the end of the study period i.e. the year 2009-10 with a negative growth rate of -35.36 %. The Standard deviation is .96 and the value of C.V. is 26.82 %. On the other hand, in case of DRLL, this ratio increased from 2.60 times in 2000-01 to 26.78 times at the end of the study period i.e. in the year 2009-10. One of the important observations is that working capital increased rapidly in the year 2009-10. The overall mean is 4.82 times with a growth rate of 930 %, which is much more than the growth rate of Cipla Ltd. The value of Standard Deviation is 7.37 and coefficient of variation is 152.90 %, which indicate that there is more inconsistency in this ratio as compared to Cipla Ltd. In other words, in case of Cipla Ltd., there is more consistency and stability in this ratio compared to the DRLL.
  6. **CURRENT ASSETS TURNOVER RATIO (CATR):** This ratio is used to measure the turnover and profitability of the total current assets. This ratio is calculated by dividing the sales by the current assets. The lower the value of CATR, the worse is the utilization of current assets. The higher the turnover, the better is the use of current assets. So, this shows the overall efficiency of the working capital management of a business firm. Table 2 exhibits the current assets turnover ratio of both the selected company. In respect of Cipla Ltd., the current assets turnover ratio registered a decrease from 2.19 times in 2000-01 to 1.40 times in the year 2008-09 with a negative growth rate of -32.88 %. The S.D. is .29 and the value of C.V. is 17.79 %. Thus, the decrease in the CATR shows that the overall efficiency of the working capital management is poor. In respect of DRLL, this ratio ranged between 0.97 times in 2004-05 to 1.94 times in the year 2000-01. The overall mean is 1.45 times with a negative growth rate of -4.12 %. The S.D. is .30 and the value of C.V. is 20.69 %. Thus, due to the decreasing trend in this ratio, it can be concluded that the current assets are not utilized efficiently. But again there is more homogeneity and uniformity in this ratio in case of Cipla Ltd. compared to DRLL as proved by the value of the standard deviation and coefficient of variation.
  7. **CURRENT ASSETS TO TOTAL ASSETS RATIO (CATA):** This ratio establishes the relationship between the current assets and the total assets. This ratio indicates the extent of funds invested for working capital purpose. In case of Cipla Ltd., Table 2 shows that CATA recorded a fluctuating trend during the study period. It is higher .59 times in 2005-06 and lower .46 times in the year 2009-10 with a negative growth rate of -2.13 %. On the average, Cipla Ltd. invested 53 % of the total assets in the form of current assets and the remaining 47 % are invested in permanent assets during the study period. Thus, it indicates that the major portion of the total investment is made for working capital purpose. Hence, the higher investment in current assets will increase the liquidity but it will decrease the profitability. On the other hand, CATA of DRLL shows the more fluctuating trend during the study period. This ratio varied between .29 times in 2009-10 to .64 times in the year 2001-02 with a negative growth rate of -39.58 %. On the average, the company invested only 47 % of the total assets in the form of current assets and the remaining 53 % is invested in permanent assets during the study period. Thus, low investment in current assets will decrease the liquidity but will increase the profitability of the company. But the CATA of Cipla Ltd shows that there is more uniformity in this ratio compared to DRLL, because the value of S.D. (0.04) and C.V. (7.55 %) is less than the value of S.D. (.11) and C.V. (22.92 %) of DRLL.

#### GROSS WORKING CAPITAL ANALYSIS

The components of gross working capital have been shown in Table 3 and 4 for the Cipla Ltd. and DRLL respectively. Here, an attempt has been made to examine the contribution of different components of current assets to the gross working capital during the study period for the both the selected companies. Gross working capital included of four components viz; inventory, Sundry debtors, cash & bank balances and loan & advances.

In case of CL, it is evident from the Table 3 that the inventor contributed highest to the gross working capital. It changed from 33.6 % in 2008-09 to 50.4 % in the year 2002-03 with an average of 40.37 %. The growth rate of inventor over the study period is 449.24 %, which shows that the working capital of CL is largely affected by the size of the inventory. Sundry debtors occupied the second position toward the contribution in gross working capital and it is varied from 24.3 % in 2000-01 to 37.6 % in the year 2005-06 with an overall mean of 32.34 %. The growth rate of sundry debtors is 733.30 % at the end of the study period. Loan and advances ranked third position towards the contribution in gross working capital. Loan and advances increased from 12.8 % in the year 2005-06 to 37.2 % in 2009-10. The overall average is 25.78 % with a growth rate of 981.90% at the end of the study period. The share of cash and bank balances in the gross working capital increased from .50 % in 2003-04 to 2.7 % in the year 2007-08. The overall average is 1.60 % with a growth rate of 948.28 % during the study period. This

shows that position of the cash & banks balances is good in the middle of the study period but it is poorly managed during the year 2003-04 and 2004-05 and also poor position at the end of the study period i.e. 2009-10.

On the other hand, in respect of DRLL, out of four factors of gross working capital, loan & advances contributed highest to the gross working capital. The position of loan & advances in gross working capital increased from 10.1 % in 2000-01 to 43.6 % in the year 2009-10. The overall average is 28.95 % with a healthy growth rate of 3617.08 % during the study period. Sundry debtors occupied second position in contribution towards the gross working capital. It fluctuated from 21.0 % in 2004-05 to 52.6 % in the year 2000-01 with an average of 27.74 % during the period under reference. The growth rate is 307.38 %. Thus, it is clear that the debtors of the company decrease sharply during the middle of the study period, which indicate that the company's credit policy is good. The highest contribution of cash and bank balances in gross working capital is 48.6 % in the year 2004-05 and the lowest contribution is 4.1 % in the beginning of the study period i.e. 2000-01. The overall average is Rs. 59.23 cr. (24.96 %) with a growth rate of 1950.52 %. The contribution of inventory in gross working capital is the lowest from all the components. It increased from 12.8 % in 2006-07 to 33.2 % in the year 2000-01 with an average of 18.34 %. The growth rate of inventory during the study period is 469.42 %. Thus, it is clear from the study that the overall aggregated position of the inventory is 40.37 % in case of CL, while it is only 18.34 % in case of DRLL, which indicates that the working capital of CL largely affected from the size of the inventory.

The sundry debtors of CL contributed about 32.34 % towards the gross working capital whereas the contribution of DRLL is about 27.74 %, which shows that DRLL has a better receivable management practices during the study period. The contribution of loan & advances towards the gross working capital is almost equal in respect of both the selected companies. But one of the important trends observed is that loan & advances has increased sharply in case of DRLL compared to the CL during the period under reference. It is also clear from the study that the contribution of cash & bank balances in respect of DRLL is 24.96 % compared to the contribution of CL (1.60 %), which indicates that position of DRLL is better than the CL. Guthman and Dougall observed that in a comfortably financial business, cash and bank balances will probably run not less than 5 to 10 % of the current assets. Since the current liabilities are not expected to exceed half of the current assets, the cash percentage should run not below 10 to 20 % of the same. Thus, the CL is not maintained sufficient cash and bank balances during the whole study period, however, DRLL maintains the same in all most all the study period leaving only few exceptions.

#### LIQUIDITY RANKING

The liquidity position of a firm is largely affected by the composition of working capital in as much as considerable shift from the relatively great current assets to the relatively little current assets or vice versa will materially affect a firm's ability to pay its current debts promptly (Khan & Jain). Thus, in order to evaluate the liquidity position of both the selected companies, Motaal's comprehensive test has been used. In this test, a method of ranking has been applied to find out the more comprehensive assessment of liquidity. In this method, four different factors such as inventory to current assets ratio, debtors to current assets ratio, cash & bank to current assets ratio and loan & advances to current assets ratio have been calculated and combined in a points score. A low value of inventory to current assets ratio indicates a more favourable liquidity position and hence, ranking has been done in that order. In other words, lower the value of this ratio higher the rank and vice versa. On the other hand, a high value of debtors to current assets ratio, cash & bank balances to current assets ratio and loans & advances to current assets ratio show a relatively favourable liquidity position and ranking has been made in that order ( Higher the values of these ratios, higher the rank and vice versa). At last, ultimate ranking has been made on the principle that the lower the total of the individual ranks, the more favourable is the liquidity position of the company and vice versa (Lower the value of the individual ranks, higher the rank has been given and vice versa).

Table 4 exhibits the liquidity position and its ranks of the Cipla Ltd. The company registered the most sound liquidity position in the year 2007-08, 2008-09 and 2009-10 respectively and then it is followed by the years 2005-06, 2001-02, 2006-07, 2003-04, 2000-01, 2002-03 and 2004-05 respectively in the order of ranking. Thus, it shows the fluctuation in the liquidity position over the different years of the study period. The study also shows that in the last three years the company has the more sound and stability in the liquidity position compared to the other years of the study period.

Table 5 reveals the ranking about the liquidity position of the DRLL. The company recorded the most sound liquidity position equally in the year 2001-02 and 2006-07 and then it is followed by the years 2002-03, 2008-09, 2003-04, 2004-05, 2007-08, 2005-06, 2009-10 and 2000-01 respectively in order of ranking of the liquidity position. So, it is clear that the liquidity position of the company is sound in the most of the years of the study period. However, the liquidity position is not sound in the beginning and at end of the study period. Thus, the study indicates that there is low fluctuation in the liquidity position of the DRLL compared to the liquidity position of the CL.

#### COEFFICIENT OF CORRELATION AND TESTING THE SIGNIFICANCE

An attempt has been made to study the relationship between the inventory and working capital of both the selected companies with the help of the correlation coefficient in Table 6 with a view of judging the significance of this relationship, the Student's 't' test has been used. In case of CL, coefficient of correlation between the inventory and working capital is 0.93, which indicates that there is a high positive correlation between these two variables.

The significance of this correlation ( $r = 0.93$ ) is examined by the Student's 't' test. The null hypothesis is that there is no significant relation between the inventory and working capital.

The value of 't' has been calculated with the help of the following formula of Student's 't' test:-

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

$$\text{Thus } t = 7.11 \quad t_{.05} = 2.31$$

The calculated value of  $t = 7.11$  is more than the Table value ( $t_{.05} = 2.31$ ) at 5 % level of significance. Hence, the null hypothesis is rejected that there is no significant relation between the inventory and working capital. In other words, there is a significant relation between the inventory and working capital.

On the other hand, in case of DRLL, the coefficient of correlation between the inventory and working capital is  $-0.04$ . This shows that there is a low negative correlation between the inventory and working capital. The significance of this correlation ( $-0.04$ ) is examined by using the Student's 't' test.

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

$$\text{Thus } t = .11 \quad \text{and } t_{.05} = 2.31$$

The calculated value of  $t$  is less than the table value at 5 % level of significance. Hence, the null hypothesis is accepted, which means that there is no significant correlation between the inventory and working capital.

#### CONCLUSIONS

On the basis of foregoing analysis, the following conclusions can be made:

1. Inventory ratios of both the selected companies have improved during the study period but the position of DRLL is far better than the CL.
2. The inventory holding period is fluctuated in both the selected company during the study period. On average, inventory holding period is 52 days for DRLL and 96 days of CL, which shows that the DRLL has more control over the inventory compared to the CL.
3. In case of DRLL, there is lower proportion of inventory in working capital, which indicates that the liquid position of the company is good and inventory properly managed during the study period as compared to the CL.
4. All the working capital ratios are in a sound position in DRLL, but in case of the CL only few working capital ratios are in a sound position.
5. The overall cash position of the DRLL is sounder as compared to the CL as indicated by the absolute liquidity ratio.
6. The CATA indicates that the CL invested 53 % of the total assets in form of current assets and the remaining 47 % in permanent assets which shows that there is more liquidity in the company but it will decrease the profitability. However, DRLL invested only 47 % in current assets and the remaining of 53 % in permanent assets. This shows that the low investment in current assets will decrease the liquidity but it will increase the profitability of the company.
7. The structural determinants of the working capital of the CL indicates that the inventory contributed highest to 40.37 %, the sundry debtors 32.34 %, loans & advances 25.78 % and cash & bank balances only 1.60 % to the gross working capital. However, in DRLL loans & advances contributed highest to 28.95 %, sundry debtors 27.74 %, cash & bank balances 24.96 % and inventory 18.34 % to the gross working capital.

8. As per the Mootal's comprehensive ranking test, the CL has more sound liquidity position in the last three years because rank one to three was secured in these last three years. However, the liquidity position of the DRLL was sound in the most of the years except the years 2000-01 and 2009-10 (Beginning and end of the study period).
9. In case of the Cipla Limited, there is a high degree positive correlation between the inventory and working capital ( $r = 0.93$ ). However, there is a low degree of negative correlation ( $r = -0.04$ ) between the inventory and working capital in respect of Dr. Reddy's Laboratories Limited.

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## TABLES

**TABLE 1: STATEMENT SHOWING INVENTORY RATIOS OF CIPLA LIMITED AND DR. REDDY'S LABORATORIES LIMITED**

	Cipla Limited				DR. Reddy's Laboratories Limited			
Years	ITR (Times)	IHR(Days)	IWCR (%)	ICAR (%)	ITR (Times)	IHR(Days)	IWCR (%)	ICAR (%)
2000-01	4.36	84	145.09	56.73	8.77	42	41.09	30.70
2001-02	4.17	88	133.39	53.04	9.28	39	21.58	16.15
2002-03	3.19	114	130.07	56.14	7.48	49	23.40	16.74
2003-04	3.55	103	116.00	48.62	7.05	52	37.85	21.59
2004-05	3.65	100	105.80	50.27	5.83	63	26.64	18.01
2005-06	3.64	100	85.10	47.08	5.77	63	38.56	24.79
2006-07	3.78	97	66.94	40.72	9.02	40	22.98	15.52
2007-08	4.09	89	63.20	36.61	6.41	57	54.42	27.74
2008-09	4.22	86	82.82	36.79	6.59	55	72.91	26.96
2009-10	3.90	94	96.52	39.02	5.98	61	492.27	34.23
Growth Rate (%)	-10.55	11.90	-33.48	-31.81	-31.81	45	1098.03	11.50
Mean	3.85	96	102.49	7.22	7.22	52.10	83.17	23.24
S.D.	.34	8.74	26.94	1.29	1.29	8.83	137.22	6.29
C.V. (%)	8.83	9.15	26.28	17.85	17.85	16.95	164.99	27.07

Sources: Compiled from the Annual Reports

**TABLE 2: STATEMENT SHOWING WORKING CAPITAL RATIOS OF CIPLA LIMITED AND DR. REDDY'S LABORATORIES LIMITED**

	Cipla Limited							DR. Reddy's Laboratories Limited						
Years	CR	LR	ALR	DTR	WCTR	CATR	CATA	CR	LR	ALR	DTR	WCTR	CATR	CATA
2000-01	1.64	.71	.02	3.11	5.60	2.19	.47	3.96	2.74	.15	1.70	2.60	1.94	.48
2001-02	1.66	.78	.03	2.45	4.71	1.87	.53	3.97	3.33	1.65	1.75	1.83	1.37	.64
2002-03	1.76	.77	.02	2.01	3.47	1.50	.58	3.51	2.92	1.68	1.74	1.57	1.12	.62
2003-04	1.72	.88	.01	1.93	4.19	1.76	.53	2.33	1.82	.79	1.86	2.57	1.47	.45
2004-05	1.91	.95	.01	1.95	3.41	1.62	.57	3.09	2.53	1.63	1.87	1.44	.97	.57
2005-06	2.24	1.18	.05	1.73	2.76	1.53	.59	2.80	2.11	1.02	1.71	1.87	1.21	.46
2006-07	2.55	1.51	.14	1.76	2.50	1.52	.54	3.08	2.60	1.43	1.90	1.98	1.34	.54
2007-08	2.38	1.51	.06	1.45	2.42	1.40	.53	2.04	1.47	.47	1.81	3.07	1.57	.35
2008-09	1.80	1.14	.03	1.43	3.14	1.40	.50	1.59	1.16	.22	1.59	4.50	1.66	.35
2009-10	1.68	1.02	.03	1.65	3.62	1.47	.46	1.07	.71	.16	2.08	26.78	1.86	.29
Growth Rate (%)	2.44	43.66	50.00	-46.95	-35.36	-32.88	-2.13	-72.98	-74.09	6.67	22.35	930	-4.12	-39.58
Mean	1.93	1.05	.04	1.95	3.58	1.63	.53	2.74	2.14	.92	1.80	4.82	1.45	.475
S.D.	.32	.27	.04	.48	.96	.29	.04	.93	.79	.61	.13	7.37	.30	.11
C.V. (%)	16.58	25.71	92.5	24.62	26.82	17.79	7.55	33.94	36.92	66.45	7.22	152.90	20.69	22.92

Sources: Compiled from the Annual Reports

TABLE 3: STATEMENT SHOWING WORKING CAPITAL COMPONENTS OF CIPLA LIMITED AND DR. REDDY'S LABORATORIES LIMITED (Rs. in crores)

Years	Cipla Limited					DR. Reddy's Laboratories Limited				
	Inventory	Debtors	Cash & Bank	Loan & Advances	GWC	Inventory	Debtors	Cash & Bank	Loan & Advances	GWC
2000-01	27.54 (48.7)	13.77(24.3)	.58 (1.0)	14.69(26.0)	56.58	15.76(33.2)	24.93 (52.6)	1.94(4.1)	4.8 (10.1)	47.43
2001-02	39.63 (45.5)	23.53(27.0)	1.56(1.8)	22.34(25.7)	87.06	18.98(15.1)	42.25 (33.6)	48.86(38.8)	15.8 (12.5)	125.85
2002-03	58.92 (50.4)	32.42(27.8)	1.31 (1.1)	24.15(20.7)	116.8	24.01(15.2)	41.88 (26.5)	68.84(43.6)	23.2 (14.7)	157.90
2003-04	56.89 (43.4)	47.06(35.8)	.62 (0.5)	26.62(20.3)	131.19	25.80(19.0)	41.20 (30.3)	40.81(30.1)	27.9 (20.6)	135.74
2004-05	74.57 (48.7)	50.74(33.2)	1.12 (0.7)	26.58(17.4)	153.01	30.38(16.5)	38.63 (21.0)	89.17(48.6)	25.5 (13.9)	183.66
2005-06	95.70 (47.3)	76.08(37.6)	4.45 (2.3)	25.95(12.8)	202.18	44.31(19.7)	56.68 (25.1)	65.10(28.9)	59.4 (26.3)	225.44
2006-07	97.86 (44.1)	78.05(35.1)	3.15 (1.4)	43.16(19.4)	222.22	48.76(12.8)	101.02(26.6)	145.7(38.3)	84.6 (22.3)	380.06
2007-08	112.05(37.4)	111.15(37.1)	7.93 (2.7)	68.34(22.8)	299.42	64.09(21.0)	86.28 (28.2)	53.67(17.5)	101.9(33.3)	305.90
2008-09	139.83(33.6)	137.27(33.1)	5.30 (1.3)	132.7(32.0)	415.05	73.51(18.3)	123.86(30.8)	38.44 (9.6)	165.6(41.3)	401.39
2009-10	151.26(35.0)	114.47(26.4)	6.08 (1.4)	160.8(37.2)	432.58	89.74(21.9)	101.56(24.8)	39.78 (9.7)	178.4(43.6)	409.50
Growth Rate (%)	449.24	731.30	948.28	14608.00	664.55	469.42	307.38	1950.52	3617.08	763.38
Mean	85.4	68.5	3.2	54.5	211.6	43.5	65.86	59.2	68.7	237.3

Sources: Compiled from the Annual Reports of CL and DRLL.

Note: Figures in brackets show percentage with Gross Working Capital (GWC).

TABLE 4: STATEMENT SHOWING MOTAAL'S COMPREHENSIVE RANKING TEST OF CIPLA LIMITED

Years	Inventory to GWC (%)	Debtors to GWC (%)	Cash & Bank to GWC (%)	Loan & Advances to GWC (%)	Liquidity Ranking				Total Ranking	Ultimate Ranking
	A	B	C	D	A	B	C	D	A+B+C+D	
2000-01	48.7	24.3	1.0	26.9	8.5	10	8	3	29.5	8
2001-02	45.5	27.0	1.8	25.7	6	8	3	4	21	5
2002-03	50.4	27.8	1.1	20.7	10	7	7	6	30	9
2003-04	43.4	35.8	0.5	20.3	4	3	10	7	24	7
2004-05	48.7	33.2	0.7	17.4	8.5	5	9	9	31.5	10
2005-06	47.3	37.6	2.2	12.8	7	1	2	10	20	4
2006-07	44.1	35.1	1.4	19.4	5	4	4.5	8	21.5	6
2007-08	37.4	37.1	2.7	22.8	3	2	1	5	11	1
2008-09	33.6	33.1	1.3	32.0	1	6	6	2	15	2
2009-10	35.0	26.4	1.4	37.2	2	9	4.5	1	16.5	3

Sources: Compiled from the Annual Reports of Cipla Limited.

TABLE 5: STATEMENT SHOWING MOTAAL'S COMPREHENSIVE RANKING TEST OF DR. REDDY'S LABORATORIES LIMITED

Years	Inventory to GWC (%)	Debtors to GWC (%)	Cash & Bank to GWC (%)	Loan & Advances to GWC (%)	Liquidity Ranking				Total Ranking	Ultimate Ranking
	A	B	C	D	A	B	C	D	A+B+C+D	
2000-01	33.2	52.6	4.1	10.1	10	1	10	10	31	10
2001-02	15.1	33.6	38.8	12.5	2	2	3	9	16	1.5
2002-03	15.2	26.5	43.6	14.7	3	7	2	7	19	3.5
2003-04	19.0	30.3	30.1	20.6	6	4	5	6	21	5
2004-05	16.5	21.0	48.6	13.9	4	10	1	8	23	6.5
2005-06	19.7	25.1	28.9	26.3	7	8	6	4	25	8
2006-07	12.8	26.6	38.3	22.3	1	6	4	5	16	1.5
2007-08	21.0	28.2	17.5	33.3	8	5	7	3	23	6.5
2008-09	18.3	30.8	9.6	41.3	5	3	9	2	19	3.5
2009-10	21.9	24.8	9.7	43.6	9	9	8	1	27	9

Sources: Compiled from the Annual Reports of Dr. Reddy's Laboratories Limited.



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