

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT

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STUDY THE RELATION BETWEEN WORKING CAPITAL SYSTEM AND PROFITABILITY IN AUTO MANUFACTURING INDUSTRY IN INDIA

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ABSTRACT

The new economic policy adopted in India in 1991 known as Liberalization, Privatization and Globalization (LPG model). This policy has been designed to make the Indian economy progressively market oriented and integrate it with the emerging global economy structure. Therefore, in line with this policy it was very indispensable to analyze the working management and some financial ratios in some selected Auto manufacturing companies. The purpose of the study was to analyze the practice of working capital Management and Asset and liquidity ratios in six selected Indian auto manufacturing companies. For this aforementioned study, a time series data for the years 2003- 2012 has been employed and a secondary data from the annual reports of the six companies was solicited. Both qualitative and quantitative paradigms were employed so as to analyze the research. Regarding the relation between working capital and liquidity analysis, Index of current assets, quick assets and debt equity assets ratios were used. The minimum current ratio chain index among all selected companies was founded in Ashok Leyland that was 50.29 in 2011-2012. The maximum current ratio chain index among all selected companies was founded in Hero MotoCorp that was 145.00 in 2009 -2010. With reference to the above listed companies the minimum quick ratio chain index was founded in Ashok Leyland that was 39.34 in 2011-2012 and the maximum quick ratio chain index was founded in Hero MotoCorp that was 231.04 in 2009 -2010. With reference to the above listed companies the minimum debt equity ratio chain index was founded in Maruti Suzuki that was 6.67 in 2005-2006 and the maximum debt equity ratio chain index was founded in TVS Motor that was 400.00 in 2009-2010.

KEYWORDS

Profitability, liquidity, Working capital, Auto manufacturing companies.

1. INTRODUCTION

The new economic adopted in India known as Liberalization, Privatization and Globalization (LPG model) in 1991. This policy designed to make the Indian economy progressively market oriented and integrate it with the emerging global economy structure. Due to advance technology and precise research and development activity Indian auto- mobiles industries have made significant growth in last decades. After LPG began a number of foreign firms commenced joint ventures with existing Indian automobile companies. The variety of options of automobiles available to the consumers. Fixed and working capital are necessary financial requirement of any industry to run through their relative share and importance varies according to the nature of the industry. Implementing an effective working capital management system helps to improve the earnings of the firm. The ratio analysis and management of individual components of working capital are two main aspects of working capital management. Working capital management system involves the relationship between short-term assets and short-term liabilities of the firm. The goal of working capital management system is to ensure that the firm is able to continue its operations and that it has sufficient ability to satisfy maturing short-term debt. The working capital management system engages the managing of inventories, accounts receivable and payable, and cash. Considering the role and importance of working capital systems in the success of the companies, this project aims to study the relation between working capital management system and profitability of auto-manufacturing companies in India. The working capital management system has an effect on the liquidity as well on the profitability of the firm. So, it is important to study the role of working capital in the profit generating process. If the firm desire to improve liquidity, increases the size of working capital of the firm. On the other hand, If a company is interested to obtain a greater risk for greater profits, it decreases the size of working capital in relation to its sales. The firm should tradeoff between its profitability and liquidity and decides the size of its working capital requirement. The objective of any firm is to maximize the profit. But, maintaining liquidity of the firm is an important objective also. If profit increase in the cost of liquidity can bring serious problems to the firm. As both the objectives are important, therefore achieving of one objective should not be at the cost of the other. If the firm doesn't have optimum liquidity, it may face the problem of insolvency or bankruptcy conversely, If the firm does earn optimum profit it cannot survive for a longer period. For these reasons working capital management should be given proper consideration.

2. STATEMENT OF THE PROBLEM

Managing the financial needs and operations of any business is very important to the management of the company, because it has an effect on both profits and liquid assets of the firm. Financial needs are largely classified into two types of needs 1) working capital needs and 2) fixed capital needs. That part of the finance which enables an enterprise to conduct its day-to-day operations is called the working capital. It needs to analyze short term assets and liabilities carefully in order to manage the firm's liquidity, management of working capital helps managers to manage their operation of the firm through making available cash to pay for short-term debt and the maturity of long term debt as well as expenses resulting for daily operations. So, an optimal level of working capital must be kept to trade off between return and risk (Ranjith, 2008).

One of the integral components of the overall corporate strategy is to manage working capital efficiency. This needs to control short term obligation as well as decrease investment in liquid assets as much as possible in order to create shareholder value (Eljelly 2004). In practice, Narender, Menon and Shewtha, (2009) show that a firm may lose several profitable investment opportunities or suffer a liquidity problem if the working capital is too low or it is improperly managed. While a number of previous research studies have examined the effects of the working capital on the profitability, efficiency, performance and earnings before interest rate and tax (EBIT). (e.g. Nobanee, 2009; Padachi, 2006; Rahman and Nasr, 2007; Ramachandran and Janakiraman, 2009; Shin and Soenen, 1998; Wu, 2001), this subject is still a very important issue because it affects the short term investment decisions; and managers can increase the value of the firm by reducing the working capital ratio to its optimal level (Rahman and Nasr 2007).

Even though several studies about working capital management were undertaken, in both developed and underdeveloped countries; this study adds to the literature by examining the issue of the working capital management.

3. OBJECTIVE OF THE STUDY

The general objective of the study is to study the working capital management practices in some selected Auto manufacturing companies in India.

4. SCOPE OF THE STUDY

The study is delimited to the study of working capital management in India with six automobile manufacturing companies, namely Hero MotoCorp, TVS Motor, Ashok Leyland, Tata Motors, Mahindra & Mahindra and Maruti Suzuki for the year 2003 to 2012 and it is delimited to the study of working capital management.

5. SIGNIFICANCE OF THE STUDY

The research funding will be paramount in that it will contribute to the companies to manage their working capital effectively and efficiently. The study will help companies understand and solve the determinant factors that affect the working capital management. It will also play its part to guide policy makers, managers and shareholders and any others interested with the companies to positively intervene with the development agenda to carefully scrutinize the working capital sources, management and utilization optimally. The study concentrates on the relation between working capital and profitability in auto-manufacturing companies of India. It involves the study of working capital management, their comparison over the years in the industry. The study appraises the company's success in meeting the requirement of the country. The auto-manufacturing companies require the huge amount of funds to manufacture each product. The process of achieving the objectives, profit and wealth maximization of the firm the optimum working capital. Thus, a detailed study has been done with working capital management in the selected companies to consider its effectiveness, The deficiency identified and suggestions are made.

6. LIMITATIONS OF THE STUDY

The present study is intended to analyze the working capital management system of six companies over a period of 10 years from 2003-2012. However, their study suffers from limitations as follows:

- The study is covered only six selected auto-manufacturing industry and the period is also limited to 10 years from 2003-2012 and data relating to earlier years.
- The data used in this study have been taken from published annual reports and journals of the respective auto-manufacturing industries only. As per the requirement some data is grouped and sub grouped.
- Financial analyses are based on historical data and information.
- Sometime round figures take place on the actual figure and the figures are appropriated to two decimal while computing the ratios, averages and percentages.
- The data collected were mostly secondary in nature

7. LITERATURE REVIEW

V. Sarangarajan and Dr. S. A. Lourthuraj (2013)¹, in their research paper titled, "Asset management efficiency of selected cement companies in Tamil Nadu". The researchers collected data from ten cement companies for the year 1996 to 2006. The study was designed on the basis of secondary sources of information on financial data. They used Data Envelopment Analysis by an application of Kinsey DEA analysis used for benchmarking software professional version to find out the asset efficiency of the cement industry. Simple statistical tools such as standard deviation, standard error of the sample were used to carry out the research. The results clearly stated that the cement companies in Tamil Nadu have efficiently utilized their fixed assets and current assets to maximize the return in the form of sales, except during the year 1997 to 1999 and 2002 to 2003. This was mainly possible because of the increase in capacity with the existing facilities and also the companies had developed their current asset management. They had suggested that if the assets were efficiently used, it would result in an increase in sales.

Bhunja & Khan (2011)³, in their study "Liquidity management efficiency of Indian Steel Companies (a Case Study)". The researchers examined the relationship between liquidity management and profitability of 230 Indian private sector steel companies for the period of 2002-2010. Current ratio, liquid ratio, debt-equity ratio, cash position ratio, interest coverage ratio, inventory turnover ratio, debtors turnover ratio, creditors turnover ratio have been taken as the explanatory variables and return on capital employed has been used as the dependent variable. The result indicated in a lower degree of relationship between the liquidity management and profitability. He mentioned that liquidity and solvency position is very satisfactory.

Padachi (2006)⁴, in his research paper titled, "Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms". The researcher examined the trends in working capital management and its impact on firms' performance a sample of 58 small manufacturing firms for the period 1998-2003. The key variables used in the analysis were inventoried days, accounts payable days, accounts receivable days and the cash conversion cycle. Profitability is a dependent variable and return on total assets is used as a measure of profitability. The result indicated that with high investment in inventories and receivables, there is lower profitability. An investigation of the profitability, liquidity and operational efficiency of the five industries indicated significant changes and the paper and printing industry has been able to achieve high scores on the various components of working capital and this has positively impacted on the profitability of these firms.

Eljelly (2004)⁵, in his research paper titled, "Liquidity-Profitability Trade-off: An Empirical Investigation in an Emerging Market". The motive of this investigation was to evaluate the relation between profitability and liquidity on a sample of joint stock companies in Saudi Arabia. In this study the correlation and regression analysis was used for analyzing data. The study found that there was a significant negative relation between the profitability and liquidity level of the firms, as measured by current ratio. The cash conversion cycle is more affected on liquidity than the current ratio that affected profitability and the size variable was found to have significant effect on profitability at the industry level.

R.N. Agarwal (1982)⁶, in his research paper titled, "Investment and Financing Behavior of Indian Automobile Manufacturing Industry". The researcher analyzed the total inventory investment equation for individual firms in automobile manufacturing industry, which was divided into two sectors - cars-sectors and non-car sectors core and non-core sectors. Data had been taken from the Stock Exchange Official Directory, Mumbai for the period 1959-60 to 1978-79. Cost of capital and trend were significant in the car (core) sector and in non-core sector fixed investment and flows of external funds were significant. The study indicated that the important explanatory variables were sales and stock-sales ratio in both sectors. Existing stocks of inventories possessed negative coefficient and statistically significant in both the sectors. In explaining inventory investment behavior, several other variables as dividends, capacity utilization and liquidity ratio were found to be of no significance.

8. DATA AND METHODOLOGY

The general objective of the study is to study the working capital management practices in some selected Auto manufacturing companies in India. Samples of Six Auto Manufacturing Companies were taken for the study. A time series data for year 2003- 2012 has been collected from secondary sources. Both qualitative and quantitative approaches of a research have been employed for analysis. Ratio Analysis has been employed in order to analyze the relationship and practice of working capital management and other its components. The secondary data were collected from the annual reports of the companies for the period 2003-2012. Index analysis has been used for the analysis purpose.

8.1. RESEARCH QUESTIONS AND HYPOTHESIS

As presented in the above the broad objectives of the thesis are the working capital management practices in some selected Auto manufacturing companies in India. To achieve this broad objective, a series of research questions and hypotheses are developed. Thus, the primary research question is:

RQ: What are the different analysis and determinants of working capital management and how is the trend analysis is done?

The following hypotheses were developed:

H1: – There is a significant difference between efficient working capital management system and profitability of auto-manufacturing industry in India.

8.2. SAMPLE DESIGN

In the case of sample design, as the literature on survey method reveals, how well a sample represents a population depends on the sample frame, the sample size and the specific procedures of selecting potential respondents (Wollela Abehodie, 2008). Obviously, in the auto manufacturing industry survey, the **sample frame** ought to be the list of registered auto manufacturing industry population in India. That is, the sample needed to be chosen from the auto manufacturing industry registry of India. Accordingly, to select potential respondents, the list of the auto manufacturing industry registered in India in the year 2012/13 fiscal year were accessed. The other consideration in sample design is the **sample size**. The choice of the sample size has a bearing on the reliability of a study.

However; this does not mean that large sample size leads to high level of accuracy. Rather, it is to indicate that the sample size is one of the factors that contribute to the credibility of a survey estimate (Sarantakos; 2005). The sample size will depend on the type of research and what the researcher wants to do with the results. Choosing an appropriate sample size is crucial to have a study that will provide statistically significant results. Research needs to be cost effective, so it is best to use as small sample as possible to reduce time and cost.

In the year 2011, there were 3,695 auto-manufacturing industry were registered in all of India. From this study population, the researcher was listed 6 of the total population, which is equivalent to above most similar surveys: which is listed in the literature review. Considering the concentration of auto-manufacturing industries of the country, this sample frame again congregates among 3 cities (Mumbai, New Delhi and Chennai) by purposive sampling method and from each city auto-manufacturing industries were randomly selected as sample by simple random method of sample selection.

9. RESULT AND DISCUSSION

In this Part the result for profitability and working capital is thoroughly presented and for this end different Asset ratios are employed.

LIQUIDITY RATIOS

CURRENT RATIO

The current ratio is an indication of a firm's market liquidity and ability to settle its short-term liabilities. Current ratio explains the efficiency of a company's operating cycle or its ability to turn its product into cash.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

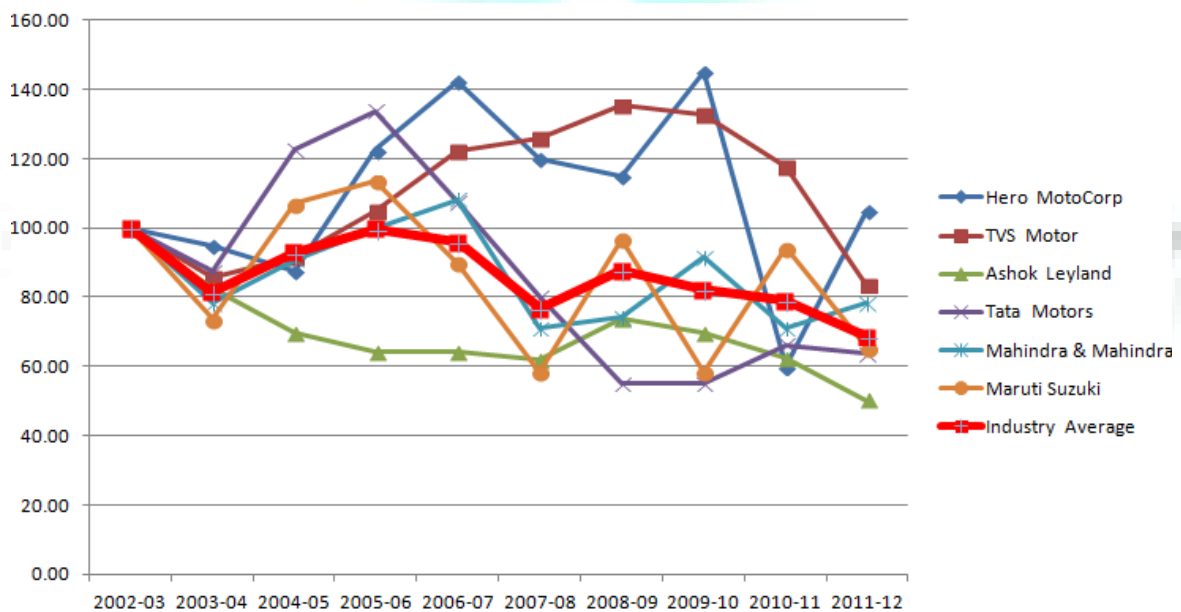
TABLE 1.1: CURRENT RATIO CHAIN INDICES OF AUTOMOBILE INDUSTRIES IN INDIA

Year	Hero		TVS		Ashok		Tata		Mahindra &		Maruti		Industry	
	MotoCorp		Motor		Leyland		Motors		Mahindra		Suzuki		Average	
	CR	Index	CR	Index	CR	Index	CR	Index	CR	Index	CR	Index	CR	Index
2002-03	0.40	100.00	0.85	100.00	1.75	100.00	0.80	100.00	1.21	100.00	1.56	100.00	1.10	100.00
2003-04	0.38	95.00	0.73	85.88	1.44	82.29	0.70	87.50	0.95	78.51	1.15	73.72	0.89	81.43
2004-05	0.35	87.50	0.78	91.76	1.22	69.71	0.98	122.50	1.10	90.91	1.67	107.05	1.02	92.85
2005-06	0.49	122.50	0.89	104.71	1.12	64.00	1.07	133.75	1.21	100.00	1.77	113.46	1.09	99.70
2006-07	0.57	142.50	1.04	122.35	1.12	64.00	0.86	107.50	1.31	108.26	1.40	89.74	1.05	95.89
2007-08	0.48	120.00	1.07	125.88	1.08	61.71	0.64	80.00	0.86	71.07	0.91	58.33	0.84	76.71
2008-09	0.46	115.00	1.15	135.29	1.29	73.71	0.44	55.00	0.90	74.38	1.51	96.79	0.96	87.52
2009-10	0.58	145.00	1.13	132.94	1.22	69.71	0.44	55.00	1.11	91.74	0.91	58.33	0.90	82.04
2010-11	0.24	60.00	1.00	117.65	1.09	62.29	0.53	66.25	0.86	71.07	1.47	94.23	0.87	79.00
2011-12	0.42	105.00	0.71	83.53	0.88	50.29	0.51	63.75	0.95	78.51	1.02	65.38	0.75	68.34
Company Average	0.44	109.25	0.94	110.00	1.22	69.77	0.70	87.13	1.05	86.45	1.34	85.71	0.95	86.35

Sources: Computed from Annual Reports

The minimum current ratio chain index in Hero MotoCorp was 60.00 in 2010-2011, TVS Motor was 83.53 in 2011-2012, Ashok Leyland was 50.29 in 2011-2012, Tata Motors was 55.00 in 2008-2010, Mahindra & Mahindra was 71.07 in 2007-2008 and 2010-2011 and Maruti Suzuki was 58.33 in 2007-2008 and 2009-2010. The maximum current ratio chain index in Hero MotoCorp was 145.00 in 2009-2010, TVS Motor was 135.29 in 2008-2009, Ashok Leyland was 100.00 in 2002-2003, Tata Motors was 133.75 in 2005-2006, Mahindra & Mahindra was 108.26 in 2006-2007 and Maruti Suzuki was 113.46 in 2005-2006. The minimum current ratio chain index among all selected companies was founded in Ashok Leyland that i.e. 50.29 in 2011-2012. The maximum current ratio chain index among all selected companies was founded in Hero MotoCorp that was 145.00 in 2009-2010.

GRAPH 1.1: CURRENT RATIO



The index of the current ratio of Hero Motocorp increased to 105.00 in 2011-2012 over 2002-2003 accounting for a rise of 5.00 percent. But, there were certain changes in the due course of 10 years, the index of ratio decreased during the year 2003-2005. It increased significantly in 2005-2006 by 35.00 percent, i.e. from 87.50 to 122.50 due to increase in current assets. The index of ratio fluctuated from 2006-2010. During the year 2010-2011 as the current liabilities increased rapidly and current assets declined, there was a sharp decrease in the index of the current ratio by 85.00 percent, i.e. from 145.00 to 60.00. It increased

tremendously by 45.00 percent, i.e. from 60.00 to 105.00 during 2011-2012 because the current assets rose sharply and the current liabilities decreased. There was a decrease in the index of the current ratio of Tvs Motor to 83.53 in 2011-2012 over 2002-2003 accounting for a fall of 16.47 percent, during the course, there were some changes. The index of ratio fell by 14.12 percent, i.e. from 100.00 to 85.88 in 2003-2004. From 2004-2006 there was a slight increase. In the year 2006-2007 it further increased by 17.65 percent, i.e. from 104.71 to 122.35 due to the marginal increase in current assets, although there was an increase in current liabilities also. It decreased gently from 2009-2011. Later, in 2011-2012 it had decreased by 34.12 percent, i.e. from 117.65 to 83.53. Ashok Leyland showed a decline in the index of the current ratio to 50.29 in 2011-2012 over 2002-2003 accounting for a fall of 49.71 percent. However, there were some changes in a decade, the index of the ratio decreased slightly in 2003-2004 by 17.71 percent, i.e. from 100.00 to 82.29 as the current liabilities rose significantly, yet the current assets increased slightly. It continued for the next two years. During the year 2006-2007 the index of the current ratio was stable, as the current liabilities and current assets increased accordingly. It decreased gently in 2007-2008 by 2.29 percent. But in 2008-2009 the index of the ratio increased marginally by 12.00 percent, i.e. from 61.71 to 73.71 as the current assets increased and current liabilities decreased. The next three years, it decreased continuously. The index of the current ratio of Tata motors declined to 63.75 in 2011-2012 over 2002-2003 accounting for a fall of 36.25 percent. On the other hand, the index of the ratio altered over a period of time. It decreased by 12.50 percent, i.e. from 100.00 to 87.50 in the year 2003-2004. But in 2004-2005 the index of ratio increased sharply by 35.00 percent, i.e. from 87.50 to 122.50 as the current assets rose substantially even though the current liabilities increased. There was a rapid continuous decrease from 2006-2008. During the year 2008-2009 as the current liabilities increased there was a reduction of 25.00 percent, i.e. from 80.00 to 55.00 in the index of the current ratio. The index of the current ratio remained constant, but current liabilities and current assets increased accordingly in 2009-2010. The index of the ratio of Tata motors increased marginally by 11.25 percent, i.e. from 55.00 to 66.25 in 2010-2011 as the current assets increased and the current liabilities went down. It decreased the next year. Mahindra & Mahindra had a decrease in the index of the current ratio to 78.51 in 2011-2012 over 2002-2003 accounting for a fall of 21.49 percent, although, there were certain changes in the index of the ratio during the 10 years. It declined by 21.49 percent, i.e. from 100.00 to 78.51 during the year 2003-2004. The index of the ratio was noted by a slight increase from the year 2004-2007. It decreased significantly in 2007-2008 by 37.19 percent, i.e. from 108.26 to 71.07 due to the significant rise in current liabilities and a slight decrease in the current assets. The next two years, it increased gradually. It decreased in 2010-2011 by 20.66 percent, i.e. from 91.74 to 71.07, then it increased slightly. The index of of the current ratio of Maruti Suzuki has declined to 65.38 in 2011-2012 over 2002-2003 accounting for a fall of 34.62 percent. However, there were certain alterations all through the decade, the index of the ratio decline in 2003-2004 by 26.28 percent, i.e. from 100.00 to 73.72 as the current assets went down and the current liabilities decreased too. There was a remarkable increase in the index of the current ratio of 33.33 during the year 2004-2005 because of the swift increase in current assets. The index of the current ratio of Maruti Suzuki was slight fluctuation from the year 2005-2008. The index of current ratio increased strongly by 38.46 percent, i.e. from 58.33 to 96.79 in the year 2008-2009 as the current assets increased sharply although, the current liabilities also increased. It decreased the following year by 38.46 percent. During the year 2010-2011 the current assets increased greatly and even the current liabilities decreased, which had an impact on the index of the current ratio which increased substantially by 35.90 percent, i.e. from 58.33 to 94.23.

QUICK RATIO

The quick ratio measures a company's ability to pay off its current liabilities with its most liquid assets. The quick ratio excludes inventory from the current ratio because some companies have difficulty turning their inventory into cash, which compares all current assets to current debts.

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory} - \text{Prepaid Expenses}}{\text{Current Liabilities}}$$

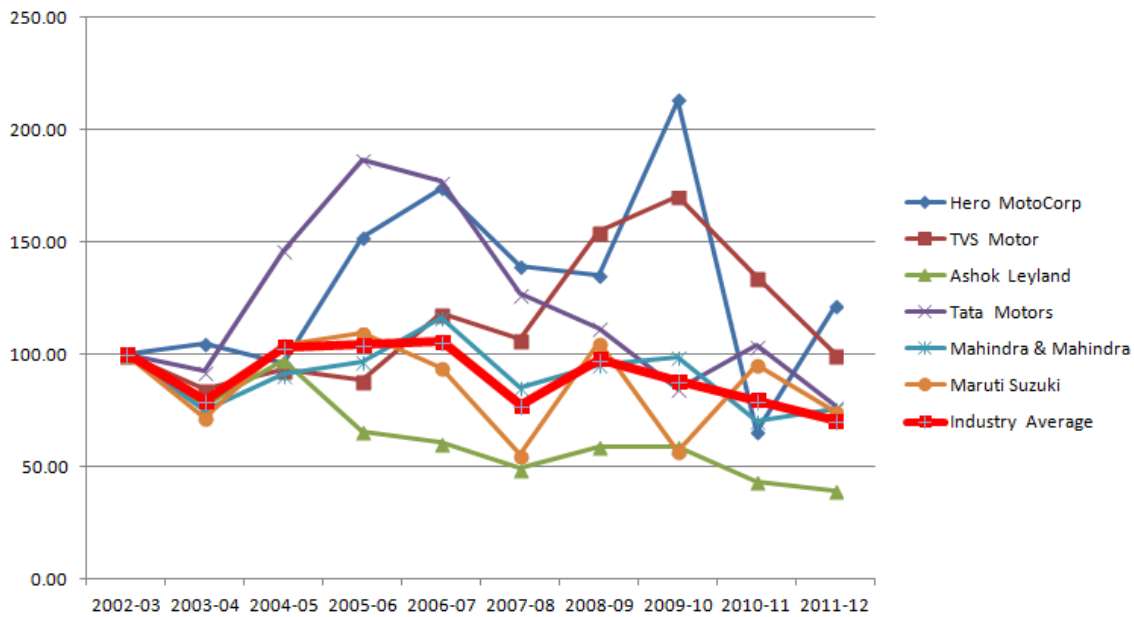
TABLE 1.2: QUICK RATIO CHAIN INDICES OF AUTOMOBILE INDUSTRIES IN INDIA

Year	Hero		TVS		Ashok		Tata		Mahindra &		Maruti		Industry	
	MotoCorp		Motor		Leyland		Motors		Mahindra		Suzuki		Average	
	QR	Index	QR	Index	QR	Index	QR	Index	QR	Index	QR	Index	QR	Index
2002-03	0.23	100.00	0.44	100.00	1.22	100.00	0.52	100.00	0.87	100.00	1.20	100.00	0.75	100.00
2003-04	0.24	104.35	0.37	84.09	0.94	77.05	0.48	92.31	0.65	74.71	0.86	71.67	0.59	79.02
2004-05	0.22	95.65	0.41	93.18	1.19	97.54	0.76	146.15	0.79	90.80	1.25	104.17	0.77	103.13
2005-06	0.35	152.17	0.39	88.64	0.80	65.57	0.97	186.54	0.84	96.55	1.31	109.17	0.78	104.02
2006-07	0.40	173.91	0.52	118.18	0.74	60.66	0.92	176.92	1.01	116.09	1.13	94.17	0.79	105.36
2007-08	0.32	139.13	0.47	106.82	0.60	49.18	0.66	126.92	0.74	85.06	0.66	55.00	0.58	77.01
2008-09	0.31	134.78	0.68	154.55	0.72	59.02	0.58	111.54	0.83	95.40	1.26	105.00	0.73	97.77
2009-10	0.49	213.04	0.75	170.45	0.72	59.02	0.44	84.62	0.86	98.85	0.68	56.67	0.66	87.95
2010-11	0.15	65.22	0.59	134.09	0.53	43.44	0.54	103.85	0.61	70.11	1.14	95.00	0.59	79.46
2011-12	0.28	121.74	0.44	100.00	0.48	39.34	0.40	76.92	0.66	75.86	0.89	74.17	0.53	70.31
Company Average	0.30	130.00	0.51	115.00	0.79	65.08	0.63	120.58	0.79	90.34	1.04	86.50	0.68	90.40

Sources: Computed from Annual Reports

The minimum quick ratio chain index in Hero MotoCorp was 65.22 in 2010-2011, TVS Motor was 84.09 in 2003-2004, Ashok Leyland was 39.34 in 2011-2012, Tata Motors was 76.92 in 2011-2012, Mahindra & Mahindra was 70.11 in 2010-2011 and Maruti Suzuki was 55.00 in 2007-2008. The maximum quick ratio chain index in Hero MotoCorp was 231.04 in 2009 -2010, TVS Motor was 170.45 in 2009-20010, Ashok Leyland was 100.00 in 2002-2003, Tata Motors was 186.54 in 2005-2006, Mahindra & Mahindra was 116.09 in 2006-2007 and Maruti Suzuki was 109.17 in 2005-2006. With reference to the above listed companies the minimum quick ratio chain index was founded in Ashok Leyland that was 39.34 in 2011-2012 and the maximum quick ratio chain index was founded in Hero MotoCorp that was 231.04 in 2009 -2010.

GRAPH 1.2: QUICK RATIO



There was an increase in the index of the quick ratio of Hero Motorcorp to 121.74 in 2011-2012 over 2002-2003 accounting for a rise of 21.74 percent. Whereas, in the due course of 10 years, there were certain changes, the index of the ratio rose slightly in 2003-2004 by 4.35 percent, i.e. from 100.00 to 104.35 then it fell gently. Sundry debtors and fixed deposits increased quickly, which led to a significant increase in the index of the quick ratio by 56.52 percent, i.e. from 95.65 to 152.17 in 2005- 2006. There was a slight fluctuation from 2006-2009. During the year 2009-2010 the rapid increase in the cash & bank balance had an impact on the index of the quick ratio that increased substantially by 78.26 percent, i.e. from 134.78 to 213.04 in spite of the increase in current liabilities. Then it fell enormously by 147.83 percent, i.e. from 213.04 to 65.22 during the year 2010-2011 because the current liabilities rose quickly and the cash & bank balance decreased. The index of the quick ratio increased swiftly in 2011-2012 by 56.52 percent, because of the sharp rise in the sundry debtors and loans & advances and decrease in current liabilities of the company.

The index of the quick ratio of Tvs Motor remained constant over a period of 10 years. However, there were certain alterations, the index of the ratio fluctuated from 2003-2006. During the year 2006-2007 it increased by 29.55 percent, i.e. from 88.64 to 118.18 due to the increase in the Sundry debtors and fixed deposits even the current liabilities increased slightly. It decreased the following year. In 2008-2009 it increased quickly by 47.73 percent, i.e. from 106.82 to 154.55 because of the sharp rise in the cash & bank balance and Sundry debtors although the current liabilities also increased. It was followed the next year. Due to the sharp increase in current liabilities the index of the quick ratio of Tvs Motor decreased by 36.36 percent, i.e. from 170.45 to 134.09 in 2010-2011. It went down in 2011-2012 by 34.09 percent. The Ashok Leyland's index of the quick ratio decreased to 39.34 in 2011-2012 over 2002-2003 accounting for a decline of 60.66 percent, though, the index of the ratio changed over a period of 10 years. It went down in 2003-2004 by 22.95 percent, i.e. from 100.00 to 77.05. Then it increased the next year by 20.49 percent. In 2005-2006 it decreased by 31.97 percent, i.e. from 97.54 to 65.57 as the current liabilities increased and the liquid assets decreased. It decreased the next two years. It increased gently in 2008-2009 by 9.84 percent, i.e. from 49.18 to 59.02. During 2009-2010 the index of the ratio remained stable because the current liabilities and the liquid assets increased accordingly. The index of the quick ratio of Ashok Leyland decreased in 2010-2011 by 15.57 percent, i.e. from 59.02 to 43.44 and continued to decrease the next year. Tata Motors's index of the quick ratio of decreased to 70.11 in 2011-2012 over 2002-2003 accounting for a fall of 23.08 percent, on the other hand, there were certain changes in a decade, the index of the ratio fell slightly in 2003-2004 by 7.69 percent, i.e. from 100.00 to 92.31. During the year 2004-2005 the fixed deposits increased significantly and also the sundry debtors increased, which reflected in the index of the quick ratio that increased substantially by 53.85 percent, i.e. from 92.31 to 146.15 even the current liabilities increased. It followed the next year. The index of the ratio decreased in 2006-2007 by 9.62 percent. It further decreased considerably by 50.00 percent, i.e. from 176.92 to 126.92 during 2007-2008. It followed the next two years. In 2010-2011 it increased by 19.23 percent, i.e. from 84.62 to 103.85. Again in 2011-2012 it decreased by 26.92 percent, as the current liabilities increased sharply. The index of the quick ratio of Mahindra & Mahindra went down to 75.86 in 2011-2012 over 2002-2003 accounting for a decline of 24.14 percent. But, the index of the ratio altered over a period of time, it decreased noticeably by 25.29 percent, i.e. from 100.00 to 74.71 in 2003-2004 due to increase in the current liabilities and decreased liquid assets. In 2004-2005 it increased by 16.09 percent, i.e. from 74.71 to 90.80 because of the sharp rise in the fixed deposits and sundry debtors of the company although the current liabilities went up. It followed the same the next two years. The current liabilities of the Mahindra & Mahindra increased in 2007-2008 which reflected in the index of the quick ratio of the company that decreased by 31.03 percent, i.e. from 116.09 to 85.06. Then, it increased the next two years. In 2010-2011 it decreased by 28.74 percent, i.e. from 98.85 to 70.11 because of the sharp increase in the current liabilities and a gentle decrease in the liquid assets. It increased slightly the next year. There was a decrease in the index of the quick ratio of Maruti Suzuki to 74.17 in 2011-2012 over 2002-2003 accounting for a fall of 25.83 percent, on the other hand, there were certain changes over a period of time. The index of the ratio went down in 2003-2004 by 28.33 percent, i.e. from 100.00 to 71.67. Then it increased in the next year by 32.50 percent, because of the sharp increase in fixed deposits and cash & bank balance also. The index of the ratio fluctuated from 2005-2008. Due to the great increase in fixed deposits and rise in the sundry debtors in Maruti Suzuki the index of the quick ratio increased substantially by 50.00 percent, i.e. from 55.00 to 105.00 in 2008-2009 even the current liabilities increased slightly. However the company decreased its fixed deposits and cash & bank balance which had an impact on the index of the quick ratio that decreased substantially by 48.33 percent, i.e. from 105.00 to 56.67 in 2009-2010. There was a remarkable increase in the index of the quick ratio of Maruti Suzuki by 38.33 percent, i.e. from 56.67 to 95.00 during the year 2010-2011 because of the sharp increase in fixed deposits although the current liabilities increased too. It decreased the next year by 20.83 percent.

DEBT EQUITY RATIO

The debt-to-equity ratio measures a company's financial leverage. It clarifies the relationship between the capital provided by creditors and the capital provided by shareholders It gives an idea of how much borrowed capital can be fulfilled in the event of liquidation using the equity of the shareholders.

$$\text{Debt Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Equity}}$$

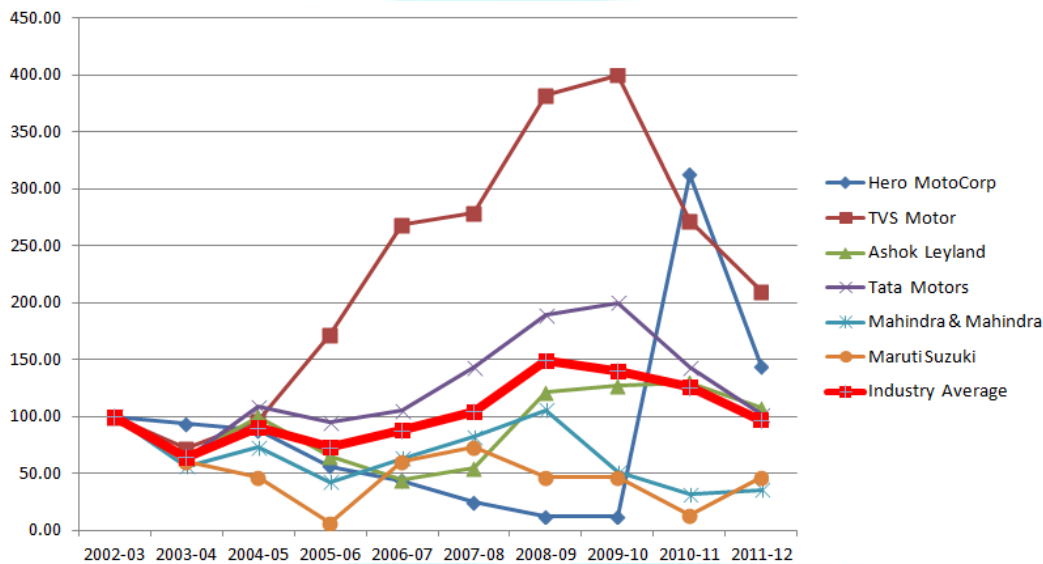
TABLE 1.3: DEBT EQUITY RATIO CHAIN INDICES OF AUTOMOBILE INDUSTRIES IN INDIA

Year	Hero		TVS		Ashok		Tata		Mahindra &		Maruti		Industry	
	MotoCorp		Motor		Leyland		Motors		Mahindra		Suzuki		Average	
	DER	Index	DER	Index	DER	Index	DER	Index	DER	Index	DER	Index	DER	Index
2002-03	0.16	100.00	0.29	100.00	0.77	100.00	0.56	100.00	0.73	100.00	0.15	100.00	0.44	100.00
2003-04	0.15	93.75	0.21	72.41	0.49	63.64	0.35	62.50	0.41	56.16	0.09	60.00	0.28	63.91
2004-05	0.14	87.50	0.28	96.55	0.77	100.00	0.61	108.93	0.53	72.60	0.07	46.67	0.40	90.23
2005-06	0.09	56.25	0.50	172.41	0.50	64.94	0.53	94.64	0.31	42.47	0.01	6.67	0.32	72.93
2006-07	0.07	43.75	0.78	268.97	0.34	44.16	0.59	105.36	0.46	63.01	0.09	60.00	0.39	87.59
2007-08	0.04	25.00	0.81	279.31	0.42	54.55	0.80	142.86	0.60	82.19	0.11	73.33	0.46	104.51
2008-09	0.02	12.50	1.11	382.76	0.93	120.78	1.06	189.29	0.77	105.48	0.07	46.67	0.66	148.87
2009-10	0.02	12.50	1.16	400.00	0.98	127.27	1.12	200.00	0.37	50.68	0.07	46.67	0.62	139.85
2010-11	0.50	312.50	0.79	272.41	1.00	129.87	0.80	142.86	0.23	31.51	0.02	13.33	0.56	125.56
2011-12	0.23	143.75	0.61	210.34	0.83	107.79	0.57	101.79	0.26	35.62	0.07	46.67	0.43	96.62
Company Average	0.14	88.75	0.65	225.52	0.70	91.30	0.70	124.82	0.47	63.97	0.08	50.00	0.46	103.01

Sources: Computed from Annual Reports

The minimum debt equity ratio chain index in Hero MotoCorp was 12.50 in 2008-2010, TVS Motor was 72.41 in 2003-2004, Ashok Leyland was 44.16 in 2006-2007, Tata Motors was 62.50 in 2003-2004, Mahindra & Mahindra was 31.51 in 2010-2011 and Maruti Suzuki was 6.67 in 2005-2006. The maximum debt equity ratio chain index in Hero MotoCorp was 312.50 in 2010 -2011, TVS Motor was 400.00 in 2009-2010, Ashok Leyland was 129.87 in 2010-2011, Tata Motors was 200.00 in 2009-2010, Mahindra & Mahindra was 105.48 in 2008-2009 and Maruti Suzuki was 100.00 in 2002-2003. With reference to the above listed companies the minimum debt equity ratio chain index was founded in Maruti Suzuki that was 6.67 in 2005-2006 and the maximum debt equity ratio chain index was founded in TVS Motor that was 400.00 in 2009-2010.

GRAPH 1.3: DEBT EQUITY RATIO



Hero MotoCorp's index of the debt equity ratio rose to 143.75 in 2011-2012 over 2002-2003 accounting for an increase of 43.75 percent, Whereas, there were certain changes in the due course of 10 years, the index of the ratio decreased continuously from 2003-2008. It further decreased by 12.50 percent, i.e. from 25.00 to 12.50 in 2008-2009 as the total liabilities decreased and total equity increased. In the year 2009-2010 it remained constant even though the total liabilities and total equity decreased accordingly. Simultaneously in 2010-2011 the index of the debt equity ratio increased enormously by 300.00 percent, i.e. from 12.50 to 312.50 because of the sharp increase in secured loans which resulted in the increase of total liabilities and the total equity decreased. Then it decreased significantly in the next year by 168.75 percent. Tvs Motor had an increase in the index of the debt equity ratio of 210.34 in 2011-2012 over 2002-2003 accounting for an increase of 110.34 percent, however, there were some alterations in a decade. The index of the ratio decreased by 27.59 percent, i.e. from 100.00 to 72.41 during the year 2003-2004 because total liabilities decreased and the total equity increased. In the following year there was an increase in the index of the ratio by 24.14 percent. It continued through the next three years. In 2008-2009 the index of the ratio increased significantly by 103.45 percent, i.e. from 279.31 to 382.76 as both the secured and unsecured loans increased even the total equity increased. It followed the next year. As the total liabilities decreased and total equity increased the index of the ratio decreased by 127.59 percent, i.e. from 400.00 to 272.41 in 2010-2011 and it followed the next year. The index of the debt equity ratio of Ashok Leyland had increased to 107.79 in 2011-2012 over 2002-2003 accounting for a rise of 7.79 percent. Although, the index of the ratio altered over the period of time, it decreased by 36.36 percent, i.e. from 100.00 to 63.64 in during the year 2003-2004. It increased marginally by 36.36 percent, i.e. from 63.64 to 100.00 in 2004-2005 because of the increase in unsecured loans which effected for the increase in total liabilities in spite of the total equity being increased. In 2005-2006 the index of the ratio decreased by 35.06 percent, i.e. from 100.00 to 64.94 as the total liabilities decreased and total equity increased. During the year 2008-2009 there was a sharp increase in the index of the ratio by 66.23 percent, i.e. from 54.55 to 120.78 as the secured and unsecured loans increased sharply and also there was a slight increase in the total equity. It continued to increase the next two years, but in 2011-2012 the ratio decreased by 22.08 percent, i.e. from 129.87 to 107.79. There was an increase in the index of the debt equity ratio of Tata Motors to 101.79 in 2011-2012 over 2002-2003 accounting for an increase of 1.79 percent, despite the fact that, there were some changes all through the decade. As the total liabilities fell down and total equity went up the index of the debt equity ratio of Tata Motors decreased by 37.50 percent, i.e. from 100.00 to 62.50 in 2003-2004. The next year it increased significantly by 46.43 percent, i.e. from 62.50 to 108.93 due to the increased in unsecured loans which effected the total liabilities that rise sharply. From 2006 to 2010 it continued to increase then in 2010-2011 it decreased significantly by 57.14 percent, i.e. from 200.00 to 142.86 and it continued to follow the next year. The Mahindra & Mahindra's index of the debt equity ratio decreased to 35.62 in 2011-2012 over 2002-2003 accounting for a decline of 64.38 percent, though, the index of the ratio changed in the due course of 10 years. It decreased by 43.84 percent, i.e. from 100.00 to 56.16 in 2003-2004 as the total liabilities decreased and total equity increased. There was an increase in 2004-2005 by 16.44 percent. It decreased the following year by 30.14 percent, i.e. from 72.60 to 42.47. As the unsecured loans increased the index of the ratio also increased by 20.55 percent, in 2006-2007 and it continued the next two years. It decreased by 54.79 percent, i.e. from 105.48 to 50.68 during 2009-2010 because of the deceased in total liabilities and increased in total equity. It followed the next year, then it increased slightly in 2011-2012 by 4.11 percent. Maruti Suzuki had a fall in the index of the debt equity ratio of 46.67 in 2011-2012 over 2002-2003 accounting for a fall of 53.33 percent. But, the index of the ratio altered over a period of time, it decreased by 40.00 percent, i.e. from 100.00 to

60.00 during the year 2003-2004 and it continued the next two years. It increased tremendously by 53.33 percent, i.e. from 6.67 to 60.00 during the year 2006-2007 due to the sharp increase in unsecured loans even the total equity also increased. It followed the next year. It decreased by 26.67 percent, i.e. from 73.33 to 46.67 during 2008-2009. The next year it remained stable. During the year 2010-2011 it decreased by 33.33 percent, i.e. from 46.67 to 13.33. In 2011-2012 it increased enormously by 33.33 percent, i.e. from 13.33 to 46.67 as the unsecured loans increased sharply, which resulted in the increase of total liabilities even total equity too increased. Then it increased the next year.

10. CONCLUSION AND RECOMMENDATION

CONCLUSION

In the analysis of working capital management and its components six India Auto manufacturing companies have been selected. The major objective and analysis made here was the relation between working capital management and liquidity ratios. In liquidity ratio there were three ratios analyzed for working capital, namely current ratio, quick ratio and debt equity ratio. Hero MotoCorp recorded the lowest actual average current ratio when compared to the actual average industry. Mahindra & Mahindra, Maruti Suzuki and Ashok Leyland also had a high actual average current ratio when compared to the average industrial ratio and its decreased further over a period of 10 years. In accordance with the average current assets of Mahindra & Mahindra, Maruti Suzuki, TVS Motor and Ashok Leyland were higher than the average of current liabilities, which lead to the higher actual average current ratio. TVS Motor was marked by a close to the actual average current ratio when compared to the average industrial ratio. It went down up a period of 10 years. Tata Motors had a low actual average current ratio when compared to the average industrial ratio and its decreased further over a period of 10 years. As per to the average current assets of Tata Motors and Hero MotoCorp were lower than the average of current liabilities, which resulted the lower actual average current ratio. The actual average quick ratio of Hero MotoCorp was the lowest when compared to the actual average industrial ratio. The company faced issues with regard to low the average debtors and average cash and the company had more average current liabilities when compared to the average quick assets. Therefore, it reflected on quick ratio, which was very low. The actual average quick ratio of Tvs Motor and Tata Motors was lower than the actual average of the industry. Tvs Motor had the problems with consider low the average debtors and average cash and the company had more average current liabilities when compared to the average quick assets. The actual average quick ratio of Ashok Leyland was similar to the Mahindra & Mahindra and it was higher than the actual average of the industry. Maruti Suzuki was marked by the highest actual average quick ratio when compared to the actual average industrial ratio. It went down a period of 10 years. Mahindra & Mahindra, Ashok Leyland and Tata Motors had a high the average debtors and average cash. In accordance with the average quick assets of Hero MotoCorp, Tvs Motor and Tata Motors were lower than the average current liabilities, which lead to the lower actual ratio of average quick ratio. On the other hand, with reference the average quick assets of Mahindra & Mahindra, Ashok Leyland and Maruti Suzuki were higher than the average current liabilities, which reflected in the higher actual ratio of average quick ratio. The actual average total debt equity of Hero MotoCorp was less than the actual average industry, but when compared to the average total liabilities, it was more which reflected in a low average debt equity ratio. It decreased over a period of time. The actual average debt equity ratio of Tvs Motor was high when compared to the actual average industrial ratio. It continued to increase the next ten years. The average total liabilities of the company were higher than the average total equity, which resulted in the higher ratio. Ashok Leyland's actual average debt equity ratio was higher than the actual average industry due to the rise in average total liabilities when compared to the average total equity. The ratio decreased over a period of time. Tata Motors and Ashok Leyland had a similar ratio, but the Tata Motors's ratio increased over a period of time. The average total liabilities and the average total equity were higher than the average industrial ratio, but as the average total liabilities were more than average total equity it leads to a higher ratio. The actual average debt equity ratio of Mahindra & Mahindra was close to the actual average industrial ratio. It decreased over a period of ten years. Maruti Suzuki recorded the lowest actual average debt equity ratio in comparison with the actual average industry. As the average total equity was greater than the average industry and the average total liabilities this reflected in the lower ratio. The ratio decreased over a period of time.

RECOMMENDATION

Hero Motorcorp is unable to meet its short term financial obligations, hence it needs to increase its current assets. Ashok Leyland has a weak liquidity position so it is required to decrease its current liabilities. The resources of Mahindra & Mahindra tied up in the current assets which must be diverted in other segments which may enhance its profits. Maruti Suzuki too has underutilized its resources. The company must utilize its resources by diverting it proficiently to increase its ratio. A Company that has been facing issues with long inventory and receivable collection can consequently run into liquidity problem because of which it will be unable to fulfil its obligation. Needs to implement a more conservative approach in current asset management to enhance its liquidity. Hero MotoCorp and Maruti Suzuki have low amount of debts as the companies are not proficiently utilizing the cheaper source of finance hence it needs to utilize the cheaper source of finance. Tata Motors has an aggressive growth due to its debts which can lead to additional interest expenses. Leveraging a large amount of debts Tvs Motor might not able to make its payment obligation. Ashok Leyland is bearing less risk in its company than the external creditors, which may unable them to attract additional capital. So Tvs Motor, Tata Motors and Ashok Leyland require to reduce their total liabilities.

11. ACKNOWLEDGEMENT

The present manuscript is prepared under the supervision of Prof. D. Prabhakar Rao, Department of Commerce and Management, Andhra University, Vishakapatnam.

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