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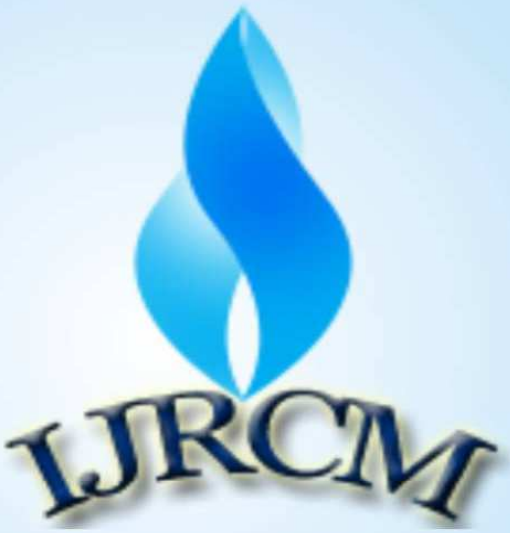

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FINDINGS

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- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

WORKING CAPITAL EFFICIENCY AND CORPORATE PROFITABILITY: EMPIRICAL EVIDENCE FROM INDIAN AUTOMOBILE INDUSTRY

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ABSTRACT

Working capital and its satisfactory provision can lead not only to material savings in the economical use of capital but can also assist in furthering the ultimate aim of a business that of maximizing financial returns on the minimum amount of capital which need to be employed. Hence, the purpose of the present study is to examine the working capital efficiency of Indian Automobile industry by comparison of holding period of different components of working capital. The empirical evidence revealed that two and three wheeler sector was efficient in utilization of working capital components as compared to commercial vehicles sector and passenger cars and multi utility vehicles sector. Consider all the average periods together, it can be seem that cash conversion cycle is negative in the whole Indian Automobile industry which is explained by short storage times of its inventory and receivables

KEYWORDS

working capital, profitability, cash conversion cycle, inventory holding period, receivable period, receivables holding period, auto mobile industry.

INTRODUCTION

Deveoping economies are confronted with the problem of inefficient utilization of resources available to them. Capital is the limited productive resources promotes the rate of growth, cuts down the cost of production and above all improves the efficiency of the productive system. Total capital of a country comprises fixed capital and working capital. Fixed capital investment generates production capacity where as working capital makes the utilization of that capacity where as working capital makes the utilization of that capacity possible. Thus, the study of working capital occupies an important place in financial management. Funds are needed in every business for carrying on day-to-day operations. Working capital funds are regarded as the life-blood of business units. A firm can exist and survive without making profit but can't survive without working capital funds. If a firm is not earning profit it may be termed as 'sick', but not having working capital may cause it bankruptcy and closure over a period of time. In addition, working capital has acquired great significance and sound positions for the twin objects of 'profitability and liquidity'. It consumes great deal of time to increase profitability as well as to maintain proper liquidity at minimum risk. **Leslie R.Howard** rightly pointed out that a deeper understanding of the importance of working capital and its satisfactory provision can lead not only to material savings in the economical use of capital but can also assist in furthering the ultimate aim of a business, namely, that of maximizing financial returns on the minimum amount of capital which need to be employed. Viewed in this perspective, the analysis of working capital efficiency may be a very rewarding one.

PROBLEM STATEMENT

Importance of working capital management stems from two reasons viz., a substantial portion of total invested in current assets and level of current assets and current liabilities will change quickly with the variation in sales. Hence, the purpose of the present part of analysis is to examine the issues how large is the investment in working capital and its various components, how the quality of current assets has evolved over time, and whether working capital and its various components have been utilized efficiently by the selected Indian automobile companies during the period under study. The working capital efficiency of an enterprise should be evaluated by comparison of holding period of different components of working capital. The holding period of different components of working capital of the selected three sectors, individual companies and the whole automobile industry during the study period has been computed and presented in Table 1to Table 4.

SAMPLING SELECTION

Keeping in view the scope of the study, it is decided to include all the companies under automobile industry working before or from the year 1996-97 to 2008-09. There are 26 companies operating in the Indian automobile industry. But, owing to several constraints such as non-availability of financial statements or non-working of a company in a particular year etc., it is compelled to restrict the number of sample companies to 20. Out of 20 selected companies under Indian Automobile Industry, three Multinational Companies (MNC's) namely Hyundai Motors India Ltd, Honda Siel Cars India Ltd and Ford India Private Ltd were omitted because these companies established their operations in India in different accounting years. The companies under automobile industry are classified into three sectors namely; Commercial vehicles, Passenger cars and Multi-utility vehicles and Two and three wheelers. For the purpose of the study all the three sectors have been selected. It accounts for 73.23 per cent of the total companies available in the Indian automobile industry. The selected 20 companies include 5 under commercial vehicles, 3 under passenger cars and multi-utility vehicles and 9 under two and three wheeler sectors. It is inferred that sample company represents 98.74 percentage of market share in commercial vehicles, 79.76 percentage of market share in passenger cars and Multi-utility vehicles and 99.81 percentage of market share in two and three wheelers. Thus, the findings based on the occurrence of such representative sample may be presumed to be true representative of automobile industry in the country.

METHODS OF DATA COLLECTION

The study is mainly based on secondary data. The major source of data analyzed and interpreted in this study related to all those companies selected is collected from "PROWESS" database, which is the most reliable on the empowered corporate database of Centre for Monitoring Indian Economy (CMIE). Besides prowess database, relevant secondary data have also been collected from BSE Stock Exchange Official Directory, CMIE Publications, Annual Survey of Industry, Business newspapers, Reports on Currency and Finance, Libraries of various Research Institutions, through Internet etc.

DATA ANALYSIS

The financial and statistical analysis approach plays a vital role in the financial environment. To enjoy the benefit of financial and statistical analysis researcher has collected, assembled and correlated the data, classified the data appropriately and condensed them in to a related data series; stated the resultant information in a comprehensive form, text, tables and analyzed and interpreted the reported data. It is well known that management is concerned with assets utilization towards profitability performance. For this purpose it has to study certain specific ratios which are concerned with working capital of the enterprises. For the purpose of this study, ratios namely, Raw material period, work-in-holding period, finished goods holding period, inventory holding period, receivables holding period, payables holding period and cash conversion cycle has been used. The role of statistical tools is important in analyzing the data and drawing inferences there from. In order to derive the open handed results from the information collected through secondary data, various statistical tools like mean, standard deviation, variance, compound annual growth rate, t-test ANOVA, and factor analysis have been used to interpret the sense of mathematical relationship amongst values of different variables so computed in the study.

RAW MATERIALS HOLDING PERIOD

It is evident from the Table 1that the lowest average raw material holding period was 26 days for two and three wheelers sector, followed by commercial vehicles (34 days) and passenger cars and multiutility vehicles (38 days), as against 53 days for whole automobile industry. Further, this period registered very high fluctuations throughout the study period. Further, all selected sectors and whole automobile industry registered negative growth rate which showed efficient utilization of raw materials by the selected companies. It varies from 26 days to 83 days for commercial vehicles sector companies, 18 days to 75 days for passenger cars and multiutility vehicles sector companies and 18 days to 141 days for two and three wheelers sectors. All the selected companies except LML Ltd, Maharstra Scooters Ltd, TVS Motor Company Ltd, Kinetic Motor Company Ltd and Kinetic Engineering Ltd under two and three wheelers sector showed improved performance in this regard (Table 2 to Table 4).

The results of analysis of variance presented in Table 5 showed that differences in the mean raw materials holding period were significant between the companies and between the years in commercial vehicle sector as the calculated value of F were more than the table value of F at 5 per cent level of significance. Hence, the null hypothesis was rejected. However, no such significant difference was observed between the years in the case of passenger cars and multiutility vehicles sector and two and three wheelers sector.

WORKING-IN-PROGRESS HOLDING PERIOD

Table 1 demonstrated that the average work-in-progress holding period was lowest in two and three wheelers sector and passenger cars and multiutility vehicles sector (4 days) followed by commercial vehicles sector (10 days), as against 30 days for whole Indian automobile industry. WIP holding period registered very high fluctuations and negative compound annual growth rate in all the three sectors of Indian automobile industry. Among the commercial vehicles sector companies, it ranged between 3 days to 16 days, 1 day to 11 days for passenger cars and multiutility vehicles sector and 2 days to 17 days for two and three wheelers sector companies during the study period. Majority of the selected companies WIP holding period were significantly differ from sector mean and industry mean. All the selected companies except Bajaj Tempo Ltd, Eicher Motors Ltd and Swaraj Mazda Ltd under commercial vehicles, Ford India Private Ltd under passenger cars and multiutility vehicles sector and LML Ltd, Maharashtra Scooters Ltd, Kinetic Motors Company Ltd, Kinetic Engineering Ltd, Majestic Auto Ltd and Scooters India Ltd under two and three wheelers sector registered improved performance with regard to WIP holding period.

Table 5 represents that the differences in the WIP holding period were significant in between the sectors and the years during the study period. It is also evident from the table that WIP holding period were significant in between the companies and the years in commercial vehicles and two and three wheelers sector. However, in case of passenger cars and multiutility vehicles sector, these holding period were insignificant between the years.

FINISHED GOODS HOLDING PERIOD

This indicates how quickly a company is turning over its finished goods. When deciding the appropriate level of finished goods, a company should strike a balance between the cost of tying up capital and the demands from the customers. Generally, short finished goods holding period is preferred. An unreasonably long inventory holding period may indicate an economic recession, obsolete inventory, poor sales and marketing, a change of customer taste or bad inventory management. It is evident from the Table 42 that two and three wheeler sector had shorter mean finished goods holding period (8 days), followed by passenger cars and multiutility vehicles sector (11 days), commercial vehicles sector (19 days), as against 14 days for whole Indian automobile industry. It ranged between 11 days to 30 days for commercial vehicles sector, 5 days to 29 days for passenger cars and multiutility vehicles sector and 3 days to 33 days for two and three wheelers sector during the study period. The finished goods holding period of all the selected companies registered very high fluctuations during the study period. Majority of the selected passenger cars and multiutility vehicles companies and two and three wheeler sector companies showed better performance in this regard when compared to commercial vehicle sector companies.

The results of analysis of variance presented in Table 5 showed that the differences between finished goods holding period were significant in between the companies and the years in case of commercial vehicles and two and three wheelers sector as the calculated value of F exceeds the table value of F at 5 per cent level of significance. However, such a significant differences was not observed in between the years in passenger cars and multiutility vehicles sector during the study period.

RECEIVABLES HOLDING PERIOD

This ratio measures a company's ability to collect cash from its credit customers. Most companies offer their customers credit in order to boost their sales. However, there are opportunity costs in holding cash for financing receivables and there is also the risk of bad debts. A long receivables collection period may be an indication of worsening credit control. Receivables holding period of all three selected sectors, individual companies and the whole automobile industry were computed and presented in Table 1 to Table 4. Table 1 indicated that the mean receivables collection period was the lowest in two and three wheelers sector (16 days), when compared to 22 days for passenger cars and multiutility vehicles sector and 45 days for commercial vehicles sector as against 35 days for whole Indian automobile industry. It ranged between 28 days to 74 days for commercial vehicles sector companies (Table 2), 8 days to 35 days for passenger cars and multiutiltiy vehicles sector companies (Table 3) and 7 days to 107 days for two and three wheelers sector companies (Table 4) during the study period. All the selected companies registered very high fluctuations in this ratio during the study period. This was due to the differences among the credit and collection policy adopted by the respective companies.

Table 5 refers that the differences in the receivables holding period was significant in between the companies and insignificant between the years in commercial vehicles and two and three wheelers sector as per the calculated value of F. However, in case of passenger cars and multiutility vehicles sector, these ratio were significant both between the companies and between the years as the calculated value of F exceeds the table value of F at 5 per cent level of significance.

PAYABLES PAYMENT PERIOD

This ratio links the value of accounts payables with the amount of goods and services that a company is purchasing on credit. If the payables payment period is short, creditors are being paid relatively early. However, if the payables payment period is too long, the company may have liquidity problems; this can also be harmful to its relationship with suppliers. The payables payment period were computed for all the selected companies, sectors and whole Indian automobile industry and presented in Table 1 to Table 4. Table 1 explaining a fluctuating trend in the payables payment period of the selected sectors and individual companies of the Indian automobile industry. The average payables payment period was the lowest in passenger cars and multiutility vehicles sector (59 days), followed by two and three wheelers (61 days) and commercial vehicles sector (96 days), as against 158 days for whole Indian automobile industry. The company wise analysis revealed that the mean payables payment period ranged between 61 days to 104 days in commercial vehicles sector, 21 days to 86 days in passenger cars and multiutility vehicles and 40 days to 210 days in two and three wheelers sector companies during the study period. Majority of the selected companies mean payables payment periods were significantly differ from the sector mean and industry mean.

Table 5 showed that the differences in the payables payment period between the sector, between the companies under commercial vehicles sector and two and three wheelers sector were significant and insignificant between the years. However, the payables holding period between the companies and the year were insignificant in passenger cars and multiutility vehicles sector because the calculated value of F is lower than the table value of F.

CASH CONVERSION CYCLE (CCC)

The cash conversion cycle period of all the selected companies, three sectors and the whole automobile industry were computed and presented in Table 1 to Table 4. It is evident from the Table 1 that the lowest mean value of the CCC is found in the two and three wheelers sector with an average of 7 days, followed by the commercial vehicles sector (13 days) and two and three wheelers sector (17 days), as against 28 days for whole Indian automobile industry. Considering all the average periods together, it can be seen that the cash conversion cycle is negative in two and three wheelers sector and the whole Indian automobile industry. This is explained by the short storage times of its inventory and receivables. Further, cash conversion cycle period ranged between – 8 days to 95 days in commercial vehicles sector companies, 13 days to 48 days in passenger cars and multiutility vehicles sector companies and – 4 days to 125 days in two and three wheelers sector companies during the study period. Further, tables reveal that there was an erratic fluctuation noticed in cash conversion cycle period in all the selected companies. Further, all the companies mean cash conversion cycle period was significantly differ from the sector mean and industry mean.

It can be seen from the results of analysis of variance presented in Table 5 that the differences in the cash conversion cycle period in between the companies and between the years were significant in commercial vehicles sector and two and three wheelers sector. But such significant differences were not found between the companies and between the years in passenger cars and multiutility vehicles sector during the study period.

On the whole it can be concluded that two and three wheelers sector was efficient in utilization of working capital components as compared to commercial vehicles sector and passenger cars and multiutility vehicles sector . Among the individual companies, Tata Motors Ltd under commercial vehicles sector and LML Ltd, Maharastra Scooters Ltd, TVS Motor Company Ltd and Hero Honda Motors Ltd under two and three wheelers sector were efficient in managing their working capital during the study period.

WORKING CAPITAL- FACTOR ANALYSIS

Holding period of different components of working capital such as raw materials, work-in-Progress, finished goods, receivables and payables have been considered for the study to analyze the working capital management efficiency to selected Indian automobile companies during the period under study. In order to disclose which among these factors contribute much towards working capital efficiency, factor analysis has been done. Table 6 showed that the principal component analysis and varimax rotation results for whole industry and all the three sectors. In whole industry, raw materials, WIP, finished goods and receivables holding period were cluster together as Factor I and accounts 40.818 per cent of the total variations and payables holding period describes as Factor II which accounts 21.065 per cent of the total variations. Both these factor explain 61.883 per cent of the total variations. WIP holding period and payables holding period are found to have a stronger relationship.

In commercial vehicles sector, two factors are identified by the rotation method and explained 71.175 per cent of total variations. Factor I consists of four variables such as raw materials, WIP, finished goods and receivables holding period and accounted for 49.722 per cent of total variations. The remaining variable such as payables holding period constituted as Factor II which accounts 21.453 per cent of the total variations. Raw materials holding period and finished goods holding period are found to have a stronger relationship. The same picture was reflected in passenger cars and multiutility vehicles sector, where by Factor I account 46.042 per cent and Factor II accounts 25.510 per cent of the total variations. Both these factors explained 71.552 per cent of the total variations. Further, raw materials holding period and WIP holding period are found to have a stronger relationship in passenger cars and multiutility vehicles sector.

In two and three wheelers sector also two factors are identified by the rotation method and accounts 78.844 per cent of the total variations. Raw materials WIP and payables holding period were clustered together as Factor I and accounts 54.329 percent of the total variations. Variables viz., finished goods and receivables holding periods are constituted as Factor II and accounts 24.515 per cent of the total variations. Stronger relationships between variables are noticed with regard to raw materials and payables holding period. Further, the results of KMO test and Bartlett's Test of sphericity (sig.0.000) confirms that factor analysis can be carried out appropriately for the variables selected for the study.

CONCLUSION

The working capital efficiency of the selected companies in the Indian automobile industry should be evaluated by comparison of holding period of different components of working capital. The analysis showed that two and three wheeler sectors were efficient in utilization of working capital components as compared to commercial vehicles sectors and passenger cars and multiutility vehicles sector. Among the individual companies, Tata Motors Ltd under commercial vehicles sector and LML Ltd, Maharastra Scooters Ltd, TVS Motor Company Ltd and Hero Honda Motors Ltd under two and three wheeler sector were efficient in managing their working capital during the study period. The results of analysis of variance showed that there were significant differences in the different holding period between the companies during the study period. This was due to the differences among the inventory and credit and collection policy adopted by the respective companies. Considering all the average periods together, it can be seen that cash conversion cycle is negative in the whole Indian automobile industry. This is explained by short storage times of its inventory and receivables. Factor analysis demonstrated that all the components of working capital contributed much towards the efficiency of working capital management in all selected companies.

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TABLES

TABLE 1: STATISTICAL VALUES OF RATIOS RELATING TO THE WORKING CAPITAL (For the period 1996-97 to 2008-2009)

Particulars	Statistics	Commercial Vehicles	Passenger Cars and Multiutility Vehicles	Two and Three Wheelers	Industry Average
Raw Materials Holding period (in days)	**Mean**	34.37	38.19	25.58	52.67
	CV	0.38	0.42	0.36	0.32
	CAGR	-3.35	-10.13	-8.87	-2.63
	t Value	10.61*	5.71*	9.60*	
Work-In-Progress Holding Period (in days)	**Mean**	9.73	3.98	3.97	29.63
	CV	0.42	0.51	0.42	0.43
	CAGR	-6.93	-10.88	-10.54	-4.72
	t Value	7.30*	8.31*	8.16*	
Finished Goods Holding Period (in days)	**Mean**	19.00	11.04	8.13	14.04
	CV	0.29	0.10	0.15	0.18
	CAGR	4.07	0.86	-1.17	3.27
	t Value	3.58*	4.02*	9.00*	
Receivables Holding Period (in days)	**Mean**	45.27	22.34	16.39	34.66
	CV	0.77	0.29	0.34	0.42
	CAGR	–9.61	–0.48	–4.52	–6.61
	t Value	1.82**	3.61*	6.63*	
Payables Payment Period (in days)	**Mean**	95.59	58.99	60.64	158.34
	CV	0.18	0.13	0.15	0.13
	CAGR	3.80	-0.37	-3.59	2.61
	t Value	12.45*	16.93*	13.75*	
Cash Conversion Cycle (CCC) (in days)	**Mean**	12.79	16.57	-6.57	-27.34
	CV	4.40	1.19	1.60	1.72
	CAGR	-	-	11.92	-
	t Value	6.00*	4.81*	1.94**	

* - Significant at 5 per cent level

** - Significant at 10 per cent level

Source : Computed from the Annual Reports of the respective units.

TABLE 2: STATISTICAL VALUES OF RATIOS RELATING TO THE WORKING CAPITAL (Commercial vehicles: For the period 1996-97 to 2008-2009)

Particulars	Statistics	ALL	TML	BTL	EML	SML	Sector Average	Industry Average
Raw Materials Holding period (in days)	**Mean**	51.95	25.80	82.85	27.14	51.43	34.37	52.67
	CV	0.53	0.33	0.37	0.35	0.48	0.38	0.32
	CAGR	-3.74	-3.84	-2.87	-1.58	-2.83	-3.35	-2.63
	t Value[1]	4.33*	6.14*	9.07*	2.82*	4.64*		
	t Value[2]	0.20	9.75*	6.88*	7.40*	0.42		
Work-In-Progress Holding Period (in days)	**Mean**	11.18	8.01	15.54	2.90	5.25	9.73	29.63
	CV	0.34	0.43	0.17	0.44	0.39	0.42	0.43
	CAGR	-4.52	-7.53	2.15	1.09	7.25	-6.93	-4.72
	t Value[1]	4.50*	5.50*	5.34*	6.60*	3.61*		
	t Value[2]	6.64*	7.39*	4.56*	7.68*	6.94*		
Finished Goods Holding Period (in days)	**Mean**	29.54	19.45	27.24	11.02	29.13	19.00	14.04
	CV	0.34	0.40	0.42	0.53	0.43	0.29	0.18
	CAGR	3.77	1.81	3.39	11.07	-3.72	4.07	3.27
	t Value[1]	6.19*	0.48	4.07*	3.40*	2.92*		
	t Value[2]	5.98*	2.82*	4.23*	1.71	4.12*		
Receivables Holding Period (in days)	**Mean**	73.28	37.31	28.20	31.16	74.24	45.27	34.66
	CV	0.69	0.95	0.46	0.26	0.32	0.77	0.42
	CAGR	-10.05	-11.45	15.83	-2.14	6.52	-9.61	-6.61
	t Value[1]	5.58*	11.28*	1.33	1.81**	1.96**		
	t Value[2]	3.77*	0.44	0.89	1.44	3.98*		
Payables Payment Period (in days)	**Mean**	70.92	98.23	94.68	60.82	103.97	95.59	158.34
	CV	0.18	0.18	0.17	0.19	0.11	0.18	0.13
	CAGR	3.48	4.75	2.40	-6.40	-3.26	3.80	2.61
	t Value[1]	4.84*	0.55	0.17	5.01*	1.28		
	t Value[2]	15.05*	8.52*	9.05*	12.91*	7.57*		
Cash Conversion Cycle(CCC) (in days)	**Mean**	95.02	-7.66	59.14	11.41	56.07	12.79	-27.34
	CV	0.94	7.99	0.40	1.84	0.65	4.40	-1.72
	CAGR	-15.93	-	-1.44	10.33	5.53	-	-
	t Value[1]	7.28*	4.66*	3.76*	0.09	2.99*		
	t Value[2]	8.94*	2.51*	10.07*	2.77*	5.70*		

* - Significant at 5 per cent level

** - Significant at 10 per cent level

t value[1] - With the sector average

t value[2] - With the Industry average

ALL- Ashok Leyland Ltd; TML- Tata Motors Ltd; BTL- Bajaj Tempo Ltd; EML- Eicher Motors Ltd; SML- Swaraj Mazda Ltd

Source : Computed from the Annual Reports of the respective units.

TABLE 3: STATISTICAL VALUES OF RATIOS RELATING TO THE WORKING CAPITAL (Passenger cars and multiutility vehicles: For the period 1996-97 to 2008-2009)

Particulars	Statistics	HML	MML	MUL	HYML	HSL	FIL	Sector Average	Industry Average
Raw Materials Holding period (in days)	**Mean**	74.81	28.70	28.80	23.56	17.89	25.18	38.19	52.67
	CV	0.44	0.29	0.52	0.76	0.86	0.89	0.42	0.32
	CAGR	-6.27	-6.67	-9.82	-6.82	-6.99	-10.31	-10.13	-2.63
	t Value[1]	6.49*	4.10*	6.12*	1.04	2.12**	1.78		
	t Value[2]	3.49*	7.23*	7.80*	4.85*	4.73*	1.37		
Work-In-Progress Holding Period (in days)	**Mean**	11.43	3.28	1.47	2.97	1.13	0.96	3.98	29.63
	CV	0.40	0.43	0.29	0.88	0.86	0.89	0.51	0.43
	CAGR	-3.94	-5.47	-6.40	-6.89	-6.92	14.13	-10.88	-4.72
	t Value[1]	17.23*	2.72*	5.41*	1.37	4.07*	3.36*		
	t Value[2]	5.44*	8.16*	8.21*	6.06*	7.21*	7.01*		
Finished Goods Holding Period (in days)	**Mean**	12.37	28.51	5.47	23.56	17.89	25.18	11.04	14.04
	CV	0.40	0.30	0.45	0.76	0.86	0.89	0.10	0.18
	CAGR	-4.44	-7.85	4.48	-6.82	-6.99	-10.31	0.86	3.27
	t Value[1]	1.98**	7.35*	8.64*	7.80*	8.61*	7.71*		
	t Value[2]	0.79	5.61*	9.49*	5.92*	5.86*	5.82*		
Receivables Holding Period (in days)	**Mean**	35.37	34.74	17.40	8.73	8.21	8.79	22.34	34.66
	CV	0.45	0.37	0.40	1.73	1.47	0.88	0.29	0.42
	CAGR	-7.65	2.60	2.60	-16.25	-36.71	2.87	-0.48	-6.61
	t Value[1]	6.43*	6.25*	3.12*	2.15**	4.43*	4.10*		
	t Value[2]	0.71	0.02	3.60*	5.03*	5.07*	6.22*		
Payables Payment Period (in days)	**Mean**	85.93	79.77	30.09	46.63	21.24	47.01	58.99	158.34
	CV	0.37	0.13	0.40	3.52	0.78	0.88	0.13	0.13
	CAGR	-0.50	1.24	6.76	-47.84	2.48	-4.99	3.80	2.61
	t Value[1]	4.82*	7.04*	6.33*	0.99	6.39*	3.13*		
	t Value[2]	8.18*	11.50*	23.03*	0.94	15.24*	10.30*		
Cash Conversion Cycle (CCC) (in days)	**Mean**	48.06	15.46	23.08	12.19	23.88	13.10	16.57	-27.34
	CV	0.83	1.96	1.14	3.62	1.95	4.74	1.19	-1.72
	CAGR	-24.72	-	-	-14.17	-	10.26	-	-
	t Value[1]	4.54*	3.69*	2.98*	1.01	0.36	5.55*		
	t Value[2]	8.68*	3.74*	5.96*	0.98	2.83*	2.74*		

* - Significant at 5 per cent level

** - Significant at 10 per cent level

t value[1] - With the sector average

t value[2] - With the Industry average

HML - Hindustan Motors Ltd; MML - Mahindra and Mahindra Ltd; MUL - Maruti Udyog Ltd; HYML - Hyundai Motors India Ltd., HSL- Honda Siel Cars India Ltd; FIL- Ford India Private Ltd

Source : Computed from the Annual Reports of the respective units.

TABLE 4: STATISTICAL VALUES OF RATIOS RELATING TO THE WORKING CAPITAL (Two and Three wheelers: For the period 1996-97 to 2008-2009)

Particulars	Statistics	BAL	LML	MSC	TVS	KMC	HHM	KEL	MAL	SIL	Sector Average	Industry Average
Raw Materials Holding period (in days)	Mean	20.81	141.11	25.36	18.79	41.10	18.03	43.15	37.51	73.45	25.58	52.67
	CV	0.57	1.29	1.17	0.26	0.48	0.49	0.56	0.45	0.34	0.36	0.32
	CAGR	-13.67	15.01	11.38	1.19	0.02	-9.69	2.45	-4.06	-4.89	-8.87	-2.63
	t Value[1]	1.75	2.42*	0.02	2.02**	6.06*	11.71*	3.70*	2.84*	9.91*		
	t Value[2]	7.78*	1.91**	2.53*	6.34*	1.19	12.58*	0.38	1.81**	5.05*		
Work-In-Progress Holding Period (in days)	Mean	4.81	14.31	10.87	3.98	5.06	1.54	14.02	11.25	16.68	3.97	29.63
	CV	1.02	1.27	0.97	0.36	0.76	0.68	0.68	0.97	0.31	0.42	0.43
	CAGR	-11.13	12.22	21.89	-6.04	10.53	-11.42	8.42	4.28	0.93	-10.54	-4.72
	t Value[1]	0.31	2.15**	2.10**	0.11	1.24	11.47*	4.36*	2.37*	9.06*		
	t Value[2]	6.18*	1.69	3.23*	8.13*	5.65*	8.56*	2.49*	3.18*	3.76*		
Finished Goods Holding Period (in days)	Mean	6.80	13.59	15.97	12.31	19.59	2.98	22.51	6.44	32.70	8.13	14.04
	CV	0.62	0.63	0.80	0.31	0.75	0.37	0.75	0.59	0.50	0.15	0.18
	CAGR	2.23	-0.07	20.64	7.65	-0.90	-9.67	-12.51	-6.80	15.49	-1.17	3.27
	t Value[1]	0.89	4.56*	2.19*	3.72*	4.02*	18.93*	4.20*	1.44	5.59*		
	t Value[2]	6.43*	1.11	0.51	1.76**	2.70*	14.68*	3.10*	6.30*	4.21*		

Cont.

Particulars	Statistics	BAL	LML	MSC	TVS	KMC	HHM	KEL	MAL	SIL	Sector Average	Industry Average
Receivables Holding Period (in days)	Mean	14.85	17.20	31.31	11.82	39.35	6.67	106.93	59.49	26.92	16.39	34.66
	CV	0.37	0.69	0.68	0.45	0.55	0.36	0.79	0.50	0.46	0.34	0.42
	CAGR	-1.67	2.59	7.15	-0.82	8.12	-4.92	20.93	0.48	15.69	-4.52	-6.61
	t Value[1]	0.30	1.00	2.15*	5.80*	5.25*	6.79*	4.50*	5.90*	2.39*		
	t Value[2]	4.68*	2.63*	0.38	7.16*	1.23	7.41*	3.38*	2.98*	1.15		
Payables Payment Period (in days)	Mean	36.99	210.29	141.09	51.30	66.95	40.13	61.99	64.65	59.25	60.64	158.34
	CV	0.40	1.45	0.94	0.08	0.73	0.13	0.80	0.63	0.33	0.15	0.13
	CAGR	2.57	18.14	17.05	-0.58	12.87	-0.28	10.18	0.05	2.28	-3.59	2.61
	t Value[1]	6.43*	1.92**	2.08**	3.60*	1.13	7.09*	0.72	0.83	0.20		
	t Value[2]	16.72*	0.99	0.49	18.07*	6.98*	21.94*	6.11*	6.77*	14.00*		
Cash Conversion Cycle (CCC) (in days)	Mean	10.28	-24.08	-57.59	-4.43	38.15	-10.90	124.61	50.07	90.50	-6.57	-27.34
	CV	2.05	4.23	-1.55	1.94	1.05	1.26	0.69	0.63	0.36	1.60	1.72
	CAGR	-	-	25.96	-	-	-	12.04	-3.59	-4.88	11.92	-
	t Value[1]	3.08*	0.72	2.13*	0.76	4.28*	2.13	6.61*	5.92*	13.85*		
	t Value[2]	2.55*	0.34	1.48	1.80**	4.38*	1.67	5.22*	4.08*	15.13*		

* - Significant at 5 per cent level
** - Significant at 10 per cent level
t value[1] - With the sector average
t value[2] - With the Industry average

BAL- Bajaj Auto Ltd LML- LML Ltd MSC- Maharashtra Scooters Ltd TVS- TVS Motor Company Ltd KMC- Kinetic Motor Company Ltd HHM- Hero Honda Motors Ltd KEL- Kinetic Engineering Ltd MAL- Majestic Auto Ltd SIL- Scooters India Ltd

Source : Computed from the Annual Reports of the respective units.

TABLE 5: ANOVA RESULTS- RATIOS RELATING TO WORKING CAPITAL – COMPARISON

S.No	Working capital ratios	Between the sectors		Between the years	
		F ratio	H_o	F ratio	H_o
1.	Raw materials Holding Period	19.25	Rejected	16.31	Rejected
2.	WIP Holding period	73.94	Rejected	10.20	Rejected
3.	Finished Goods Holding Period	47.06	Rejected	1.79	Accepted
4.	Receivables Holding Period	9.07	Rejected	1.89	Accepted
5.	Payables Payment Period	39.72	Rejected	1.05	Accepted
6.	Cash Conversion Cycle (CCC)	2.68	Accepted	2.90	Rejected

Critical Value of 'F' at 5 per cent level: 3.40 and 2.18

COMMERCIAL VEHICLES

S.No	Working capital ratios	Between the companies		Between the years	
		F ratio	H_o	F ratio	H_o
1.	Raw materials Holding Period	42.20	Rejected	10.65	Rejected
2.	WIP Holding period	64.03	Rejected	3.72	Rejected
3.	Finished Goods Holding Period	11.78	Rejected	2.87	Rejected
4.	Receivables Holding Period	7.46	Rejected	1.05	Accepted
5.	Payables Payment Period	20.22	Rejected	0.40	Accepted
6.	Cash Conversion Cycle (CCC)	13.04	Rejected	4.35	Rejected

Critical Value of 'F' at 5 per cent level: 2.57 and 1.96

PASSENGER CARS AND MULTIUTILITY VEHICLES

S.No.	Working capital ratios	Between the companies		Between the years	
		F ratio	H_o	F ratio	H_o
1.	Raw materials Holding Period	25.57	Rejected	1.64	Accepted
2.	WIP Holding period	61.81	Rejected	0.53	Accepted
3.	Finished Goods Holding Period	10.29	Rejected	1.79	Accepted
4.	Receivables Holding Period	21.73	Rejected	2.44	Rejected
5.	Payables Payment Period	0.98	Accepted	0.98	Accepted
6.	Cash Conversion Cycle (CCC)	1.01	Accepted	0.99	Accepted

Critical Value of 'F' at 5 per cent level: 2.37 and 1.92

TWO AND THREE WHEELERS

S.No.	Working capital ratios	Between the companies		Between the years	
		F ratio	H_o	F ratio	H_o
1.	Raw materials Holding Period	7.24	Rejected	1.26	Accepted
2.	WIP Holding period	8.17	Rejected	2.93	Rejected
3.	Finished Goods Holding Period	13.38	Rejected	2.23	Rejected
4.	Receivables Holding Period	28.51	Rejected	1.63	Accepted
5.	Payables Payment Period	4.65	Rejected	2.47	Rejected
6.	Cash Conversion Cycle (CCC)	20.12	Rejected	2.32	Rejected

Critical Value 'F' at 5 per cent level: 2.04 and 1.85

Source: Computed

TABLE 6: WORKING CAPITAL-SUMMARY OF FACTOR ANALYSIS RESULTS-ROTATED FACTOR LOADINGS (Whole Industry)

Variables	Factors		Communality
	1	2	
Raw Materials Holding period	**0.807**	- 0.067	0.656
WIP Holding period	**0.923**	- 0.075	0.858
Finished Goods Holding Period	**0.284**	- 0.580	0.417
Receivables Holding period	**0.634**	- 0.026	0.402
Payables Holding period	0.153	**0.859**	0.761
Eigen Value	**2.041**	**1.053**	**2.094**
% of Variance	**40.818**	**21.065**	**61.883**
Cum.% variance	**40.818**	**61.883**	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy -			**0.464**
Bartlett's Test of Sphericity -			**310.688 (Sig.0.000)**

COMMERCIAL VEHICLES

Variables (as % of Gross Sales)	Factors		Communality
	1	2	
Raw Materials Holding period	**0.895**	0.052	0.803
WIP Holding period	**0.822**	-0.113	0.688
Finished Goods Holding Period	**0.823**	0.116	0.691
Receivables Holding period	**0.439**	-0.664	0.633
Payables Holding period	0.373	**0.778**	0.744
Eigen Value	**2.486**	**1.073**	**3.559**
% of Variance	**49.722**	**21.453**	**71.175**
Cum.% variance	**49.722**	**71.175**	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	-		**0.669**
Bartlett's Test of Sphericity	-		**97.738 (Sig.0.000)**

PASSENGER CARS AND MULTIUTILITY VEHICLES

Variables (as % of Gross Sales)	Factors		Communality
	1	2	
Raw Materials Holding period	**0.914**	- 0.250	0.898
WIP Holding period	**0.899**	- 0.143	0.829
Finished Goods Holding Period	**0.102**	- 0.603	0.374
Receivables Holding period	**0.795**	0.339	0.749
Payables Holding period	0.049	**0.852**	0.728
Eigen Value	**2.302**	**1.276**	**3.578**
% of Variance	**46.042**	**25.510**	**71.552**
Cum.% variance	**46.042**	**71.552**	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	-		**0.580**
Bartlett's Test of Sphericity	-		**142.403 (Sig.0.000)**

TWO AND THREE WHEELERS SECTOR

Variables(as % of Gross Sales)	Factors		Communality
	1	2	
Raw Materials Holding period	**0.952**	0.025	0.906
WIP Holding period	**0.815**	0.460	0.876
Finished Goods Holding Period	0.003	**0.752**	0.566
Receivables Holding period	0.145	**0.806**	0.671
Payables Holding period	**0.961**	- 0.008	0.924
Eigen Value	**2.716**	**1.226**	**3.942**
% of Variance	**54.329**	**24.515**	**78.844**
Cum.% variance	**54.329**	**78.844**	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	-		**0.646**
Bartlett's Test of Sphericity	-		**340.412 (Sig.0.000)**

Source: Computed from the Annual Reports

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Co-ordinator

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