

An Analytical Study of Solvency, Liquidity and Bottom Line, of Listed Indian Automobile Companies

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Abstract: Sustaining concord among bottom line (Net Profitability), solvency and liquidity is acutely necessary for stable and holistic growth and development of every business. Liquidity, Profitability and Solvency (LPS) of every business is significantly afflicted through internal & external environmental factors such as economic fluctuations, ups and downs in business cycle, product life cycle, and pandemic situations of so and so forth. Continuing business, facing all above-mentioned conditions is a herculean task for each business. Marinating sustainable and holistic growth through attuning Liquidity, Profitability and Solvency (LPS) required systematic, professional and ethical approach pursued by management of the business. The basic objective behind this study is to analyze Liquidity, Profitability and Solvency (LPS) of selected automobile companies in India. It can be analyzed by evaluating the various ratios like profitability, liquidity and solvency. For this research study five years data viz. (2015 – 2020) of four giant companies were considered in automobile sector i.e., Maruti Suzuki, Hyundai India, Tata Motors Ltd and Mahindra & Mahindra Ltd. Researcher tried to find out correlation among liquidity, profitability, and solvency. Researcher found that there is strong significant negative relationship between liquidity profitability and solvency.

Keywords: Bottom Line, Solvency, Liquidity, Business Operating Cycle, Working Capital Management, Various Ratios, Sustainable and Holistic development, Indian automobile manufacturing companies etc.

1. Introduction

While assessing business performance, it is vital to consider the Liquidity, Profitability and Solvency (LPS) as necessary indicators along with business strategy, its implementation with ethical means to accomplish business results. Most often either of the above got miss or mess with the tune of time and technology. Gigantic business invests number of years to build up their social image or goodwill without sacrificing social wellbeing. No doubt profitability is the yard stick to measure the economic activity on the other hand it should not compromise the liquidity and solvency and public welfare.

Sustainable performance of a business is described in published documents, as the enhancement in its conducts in terms of conservational contribution and societal contribution while achieving an economic leverage. Naturally while measuring the business performance as sustainable it should preserve, protect and become harmless to the ecological environment. Concurrent consideration of the three bottom lines of a business evidently clarifies the application of the stakeholder theory in its processes. It indicates that addressing the welfares of all stakeholders is similarly vital for sustainable performance.

There is a complete linking among business development and its working capital requirements. Business needed capitalizing supplementary constituents in working capital with increase of its turnover. Consequently, the Chief Finance Officers (CFO's) should be cognizant of such requirements and justify the same in requisite time. The management essentially is speedy enough to found remedial action for to upkeep the balance between Liquidity, Profitability and Solvency (LPS) position of the business. Working capital specifies the liquidity position of the firm and advises the extent to justify the quantum working capital should be maintained. It should be adequate to meet with its existing financial obligations. It would create an edge for maturing financial obligation within the conventional business operating cycle of each business. Funding in quick or liquid assets should be just enough to the exact fund requirements of the business. Immoderate investment in quick or liquid assets should be circumvent as it decreases the firm 's profitability, as indolent investment earns nothing. Contrarily, insufficient amount of working capital can alarm the financial solvency of the firm as of business is incapable to meet its existing financial obligation and make the organization unsafe. Such kind of financial wellbeing may prove injurious to the goodwill of the company. Many business houses get collapsed because of non-maintenance of the balance between it recognize Liquidity, Profitability and Solvency (LPS)

WLB is tied in with making and keeping a strong and sound workplace that causes employees to have harmony among individual and expert life. This will assist with expanding employee dedication and efficiency. In the present living world, both men and women, similarly share the duties of procuring for the better settlement of their day-to-day life. It is hard for women to keep harmony among individual and work life than men with expanded work pressure. An individual life can likewise be requesting if employees have a child or maturing guardian. The work trouble is more on women shoulders regarding family assumptions, dealing with the home,

dealing with kids and guardians. The work-life imbalance or irregularity may prompt non-attendance from work and making pressure. Work and day-to-day life are two of a kind for Women. On one side, the requests of her work give her less an ideal opportunity for her family and on the opposite side, her family obligations influence her enthusiasm for work. Accordingly, the issue of balance between work and life during work from home should be tended to from the two sides i.e., the company or organization point and from the family viewpoint. This research attempts to realize the issues looked at by them and to recognize the activities embraced by the organizations for advancing WLB.

2. Literature Review

A considerable amount of research in finances is concerned with judging the overall performance of the companies from Indian automobile sector. Following are representative samples of the research done by the research scholars examining the above such issue conceptually and empirically.

Joji Abey and R. Velmurugan (Velmurugan, 2018) highlighted the analysis of leverage, size of the company, growth in sales, asset turnover ratio, index of industrial and production: factors determines profitability of automobile companies. Indian automobile companies occupy an important position by contributing generating employment. Maintaining sustainability automobile companies have to cortile their expenditure to an extreme extent, best utilization of tangible non-current assets should be at optimum level. Government has to offer essential monetary and root level frame wok for the survival of automobile companies.

Snehlata (Snehlata, 2016) in her Ph D. thesis explained, the automobile sector and its current trends, evaluated the liquidity position of companies in automobile industry, measured the profitability of companies in automobile industry and evaluated the financial strength of companies.

Dr. G. Kanagavalli and R.Saroja Devi (G., 2018), stated in their research article that ratio analysis helps to out that there is the positive strong relationship of liquidity ratio involving effective inventory management to higher liquidity. There are some significant changes to meet their liabilities. Automobile companies face a small risk to for payment of long-term obligations.

Garg, Vikas & Tewari, & Srivastav, Shalini (Garg, 2018), stated in their article, Management of liquidity and profitability is significant in financial decision making. Financial performance is achieved by balancing between Profitability and liquidity performance indicators. It deals with the monetary concern, monetary variables and the company's shareholders wealth.

2.1 Indian Automobile Industry

The Indian auto business is one of the biggest in the world. The industry accounts for 7.1 per cent of the country's Gross Domestic Product (GDP). The two wheelers division with 81% market share is the lead of the Indian Automobile market due to an increasing middle class and a youthful population. Furthermore, the increasing attention of the businesses in discovering the rural markets additional assisted the progress of the sector. The overall Passenger Vehicle (PV) segment has 13% market share.

Indian auto industry is also a protruding auto exporter and has robust export progression for the near future. In April-March 2016, general, automobile exports grew by 1.91% of Passenger Vehicles, Commercial Vehicles, and Two Wheelers, recorded a progression of 5.24 %, 16.97 %, and 0.97 % respectively in 2016 over 2015. In adding, numerous ingenuities by the Government of India and the key automobile companies in the Indian auto market are probable to make Indian auto industry a leader in the two and four-wheeler market in the world by 2021. In order to retain up with the increasing demand, several auto manufacturers have underway capitalizing profoundly in several segments of the auto industry during the last few months. Indian auto industry has captivated Foreign Direct Investment (FDI), according to data released by Department of Industrial Policy and Promotion (DIPP).

2.2 Statement of the Problem

The purpose of this research is to understand the correlation among liquidity, profitability and solvency with the help of justifiable significant ratios and statistical tests. It will certainly help in understanding the effects of the above on functioning of Indian auto manufacturing companies.

3. Research Methodology

For this research study Secondary data is collected from the sample auto manufacturing companies from Indian auto industry. The accounting and financial data of sample companies is collected from financial statements and related annexure to study the effects of liquidity, profitability and solvency on the conduct of the business.

Research scholar used inter and intra firm comparison a technique where the performance of the companies is compared. Below stated financial parameters were used viz: Quick Ratio, Return on Capital Employed, Solvency and Liquidity Ratios.

3.1 Data Set & Sample

The statistics used in this research study was adapted from official websites of auto manufacturing companies for a period of last four financial years from 2016 to 2020. Variables applied to examine the data were predisposed by the previous research studies on the above topic. Dependent, independent variables have been applied to test the hypotheses of this research study.

3.2 Research Hypothesis

In connection with the objectives of this research study following are the set of testable hypotheses which is tested by correlation analysis

Hypothesis 1

H0: The solvency of the automobile companies is not at stake

H1: The solvency of the automobile companies is at stake

Hypothesis 2

H0: Liquidity, profitability and solvency makes a significant impact on financial viability of the automobile manufacturing companies in India.

H1: Liquidity, profitability and solvency makes an insignificant impact on financial viability of the automobile manufacturing companies in India.

Hypothesis 3

H0: Sustainable growth and development are essentially depending upon the harmonized interrelationship between the liquidity, profitability and solvency of automobile manufacturing companies in India.

H1: Sustainable growth and development are essentially not depending upon the harmonized interrelationship between the liquidity, profitability and solvency of automobile manufacturing companies in India.

4 Analysis and Interpretation of Data

Table 1. Financials of Mahindra & Mahindra Ltd (MML)

Particulars	MAR'20	MAR'19	MAR'18	MAR'17	Average
	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)
Total Revenue	951790.90	1047206.80	932647.70	889830.30	955368.93
Operating Income	56140.90	114400.60	125743.20	83692.20	94994.23
Current Assets	640454.30	694060.40	590760.20	487877.60	603288.13
Current Liabilities	54009.52	58743.33	49149.54	39832.47	50433.72
Working Capital	586444.78	635317.07	541610.66	448045.13	552854.41
Total Assets	1670066.60	1633915.70	1372109.10	1147421.50	1455878.23
Total Liabilities	1670066.60	1633915.70	1372109.10	1147421.50	1455878.23
Retained Earnings	7,562.21	11,270.77	9,870.04	7,816.47	9129.87
Market value of Equity	284.95	673.90	738.90	643.45	585.30
Book value of Equity	358.16	365.37	336.44	272.45	333.11
EBIT / PBT	2585.92	7280.00	6590.14	5003.75	

Table 2.Data for Altman Z-Score of Mahindra & Mahindra Ltd (MML)

WC/TA	X 1	0. 35	0. 39	0. 39	0. 39
RE/TA	X 2	0. 00	0. 01	0. 01	0. 01
EBIT/TA	X 3	0. 00	0. 00	0. 00	0. 00
Market value / Total Liabilities	X 4	0. 00	0. 00	0. 00	0. 00
Book value / Total Liabilities	X 4A	0. 00	0. 00	0. 00	0. 00
Net sales / Total assets	X 5	0. 57	0. 64	0. 68	0. 78

Table 3. Result of Altman Z-Score of Mahindra & Mahindra Ltd (MML)

Ratios	Average	Weightage	Value
WC/TA	0.38	1.20	0.46
RE/TA	0.01	1.40	0.01
EBIT/TA	0.00	3.30	0.01
Market value / Total Liabilities	0.00	0.60	0.00
Net sales / Total assets	0.67	1.00	0.67
Altman Z-Score			1.15

Table 4.Financials of Tata Motors Ltd (TML)

Particulars	MAR'20	MAR'19	MAR'18	MAR'17	Average
	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)
Total Revenue	2,61,067.97	3,01,938	2,91,550.48	2,69,692.50	281062.34
Operating Income	20,960.22	27,629.64	35,415.27	30,343.23	28587.09
Current Assets	1,19,587.25	1,23,431.16	1,35,972.84	1,16,119.75	123777.75
Current Liabilities	140454.05	145457.43	143219.47	115629.52	136190.12
Working Capital	-20866.80	-22026.27	-7246.63	490.23	-12412.37
Total Assets	3,20,179.39	3,05,703.49	3,27,191.81	2,72,580.36	306413.76
Total Liabilities	3,20,179.39	3,05,703.49	3,27,191.81	2,72,580.36	306413.76
Retained Earnings	13,716.89	21,871.04	30,733.48	26,105.22	23106.66
Market value of Equity	191.00	253.40	437.10	436.85	329.59
Book value of Equity	270.00	298.00	300.00	390.00	314.50
EBIT / PBT	10579.98	-31371.15	11155.03	9314.79	-80.34

Table 5.Data for Altman Z-Score of Tata Motors Ltd (TML)

WC/TA	X1	-0.07	-0.07	-0.02	0.00
RE/TA	X2	0.04	0.07	0.09	0.10
EBIT/TA	X3	0.03	-0.10	0.03	0.03
Market value / Total Liabilities	X4	0.00	0.00	0.00	0.00
Book value / Total Liabilities	X4A	0.00	0.00	0.00	0.00
Net sales / Total assets	X5	0.82	0.99	0.89	0.99

Table 6. Result of Altman Z-Score of Tata Motors Ltd (TML)

Ratios	Average	Weightage	Value
WC/TA	-0.04	1.20	-0.05
RE/TA	0.08	1.40	0.11
EBIT/TA	0.00	3.30	0.00
Market value / Total Liabilities	0.00	0.60	0.00
Net sales / Total assets	0.92	1.00	0.92
Altman Z-Score			0.98

Table 7.Financials of Maruti Suzuki India Ltd (MSIL)

Particulars	MAR'20	MAR'19	MAR'18	MAR'17	Average
	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)	(Rs Cr.)
Total Revenue	7,56,600	8,60,685	8,20,411	7,73,164	802715.00
Operating Income	38,266	82,139	94,490	78,174	73267.25
Current Assets	89,888	84,406	95,627	90,141	90015.50
Current Liabilities	11,305	14,161	15,449	13,237	13537.80
Working Capital	-78,583	-70,246	-80,179	-76,904	-76477.70
Total Assets	6,36,277	6,39,687	6,02,484	5,19,605	599513.25
Total Liabilities	6,36,277	6,39,687	6,02,484	5,19,605	599513.25
Retained Earnings	10647.00	13564.80	14109.20	12647.70	12742.18
Market value of Equity	4288.30	6672.55	8861.10	6015.70	6459.41
Book value of Equity	1,636.19	1,559.34	1,409.25	1,227.65	1458.11
EBIT	6984.40	10468.10	11003.60	9954.4	9602.63

Table 8. Data for Altman Z-Score of Maruti Suzuki India Ltd (MSIL)

WC/TA	X1	-0.12	-0.11	-0.13	-0.15
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RE/TA	X2	0.02	0.02	0.02	0.02
EBIT/TA	X3	0.01	0.02	0.02	0.02
Market value / Total Liabilities	X4	0.01	0.01	0.01	0.01
Book value / Total Liabilities	X4 A	0.00	0.00	0.00	0.00
Net sales / Total assets	X5	1.19	1.35	1.36	1.49

Table 9.Result of Altman Z-Score of Maruti Suzuki India Ltd (MSIL)

Ratios	Average	Weightage	Value
WC/TA	-0.13	1.20	-0.15
RE/TA	0.02	1.40	0.03
EBIT/TA	0.02	3.30	0.05
Market value / Total Liabilities	0.01	0.60	0.01
Net sales / Total assets	1.35	1.00	1.34
Altman Z-Score			1.28

4.1 Testing of Hypothesis 1

Table 10. Comparative Result of Altman Z-Score

Companies	Mahindra & Mahindra Ltd	Tata Motors Ltd	Maruti Suzuki India Ltd
	MML	TML	MSIL
Altman Z-Score	1.15	0.98	1.28
Standard reading	<1.81	<1.81	<1.81
Interpretation	Financial Distress	Financial Distress	Financial Distress

It shows that the ‘Z’ score is 1.15 for (MML), 0.98 for (TML) and 1.28 (for MSIL) respectively which is less than ‘standard reading’ Value i.e. (<1.81) which means that solvency of the automobile companies is at stake. The Researcher fails to accept H0, H0 is rejected, hence, H1 is accepted.

Table 11.Piotroski F-Score of Mahindra & Mahindra Ltd (MML)

S. No.	Parameter	Value		Score
		2020	2019	
1	Net Income	1270.40	53154.60	1
2	Operating Cash Flow	-1,450.93	-4,347.29	0
3	Return on Assets	7.00%	3.25%	1
4	Earnings Quality	-1.14	-0.08	0
5	Long-term Debt-to-Assets Ratio	2.08	1.78	0
6	Current Ratio	1.19	1.18	1
7	Average Shares Outstanding	1243190000	1243190000	1
8	Gross Margin	7.86	8.14	0
9	Asset Turnover	0.58	0.70	0

	Piotroski F-Score			4
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Table 12. Piotroski F-Score of Tata Motors Ltd (TML)

S. No.	Parameter	Value		Score
		2020	2019	
1	Net Income	120708.50	288262.30	0
2	Operating Cash Flow	26,632.94	18,890.75	1
3	Return on Assets	-355.00%	-920.00%	0
4	Earnings Quality	-0.22	-0.07	0
5	Long-term Debt-to-Assets Ratio	1.91	1.76	0
6	Current Ratio	0.85	0.85	0
7	Average Shares Outstanding	719490000	719490000	1
8	Gross Margin	13.50	12.90	1
9	Asset Turnover	0.84	0.96	0
	Piotroski F-Score			3

Table 13. Piotroski F-Score of Maruti Suzuki India Ltd (MSIL)

S. No.	Parameter	Value		Score
		2020	2019	
1	Net Income	56,760	76,491	1
2	Operating Cash Flow	3,495.80	6,600.90	1
3	Return on Assets	871.00%	1207.00%	1
4	Earnings Quality	0.06	0.09	0
5	Long-term Debt-to-Assets Ratio	0.00	0.00	1
6	Current Ratio	0.75	0.87	0
7	Average Shares Outstanding	302080000	302080000	1
8	Gross Margin	14.99	17.27	0
9	Asset Turnover	1.19	1.39	1
	Piotroski F-Score			6

4.2 Testing of Hypothesis 2

Table 14. Comparative Result of Piotroski F-Score

Companies	Mahindra & Mahindra Ltd	Tata Motors Ltd	Maruti Suzuki India Ltd
	MML	TML	MSIL
Piotroski F-Score	4	3	6
Standard reading	1 to 4	1 to 4	5 to 6
Interpretation	Bad	Bad	Good

It shows that the 'F' score is 4 for (MML), 3 for (TML) and 6 (for MSIL) respectively which denotes bad (Fundamental Financial Strength) for MML and TML companies and 'good' for MSIL. It means averagely companies were suffering badly on account of Liquidity, Solvency and Profitability. The Researcher fails to accept H1, H1 is rejected, hence, H0 is accepted

Table 15. Comparative Key Average Ratios of the Sample Companies

	Compa nies	Mahindra & Mahindra Ltd	Tata Motors Ltd	Maruti Suzuki India Ltd
Ratios	Standar d	MML	TML	MSIL
Avg. Debt/ Equity	1:1.5	1.35	1.58	0.00
Avg. Inventory turnover	2	8.57	10.38	22.24
Avg. ROE	16	-3.43	2.06	16.64

Table 16.t – Test - Mahindra & Mahindra Ltd

t-Test: Paired Two Sample for Means	1:1.5	1
Mean	9	.35
Variance	98	2
Observations	2	7
Pearson Correlation	-1	2
Hypothesized Mean Difference	0	
Df	1	
t Stat	0.49	
P(T<=t) one-tail	0.35	
t Critical one-tail	6.31	
P(T<=t) two-tail	0.71	
t Critical two-tail	12.71	

Table 17.t – Test - Tata Motors Ltd

t-Test: Paired Two Sample for Means	1:1.5	1.58
Mean	9	6.22
Variance	98	34.61
Observations	2	12
Pearson Correlation	-1	2
Hypothesized Mean Difference	0	
df	1	
t Stat	0.25	
P(T<=t) one-tail	0.42	
t Critical one-tail	6.31	
P(T<=t) two-tail	0.84	
t Critical two-tail	12.71	

Table 18. t – Test - Maruti Suzuki India Ltd

t-Test: Paired Two Sample for Means	1:1.5	0
Mean	9	19.44
Variance	98	15.68
Observations	2	2
Pearson Correlation	-1	
Hypothesized Mean Difference	0	
df	1	
t Stat	-1.07	
P(T<=t) one-tail	0.24	
t Critical one-tail	6.31	
P(T<=t) two-tail	0.48	
t Critical two-tail	12.71	

4.3 Testing of Hypothesis 3

Table 19. Comparative Key finding of the t – Test of the Sample Companies

Companies	Mahindra & Mahindra Ltd	Tata Motors Ltd	Maruti Suzuki India Ltd
T test values	MML	TML	MSIL
P value	0.7	0.8	0.5
t value	12.7	12.7	12.7
Interpretation	H0 Rejected	H0 Rejected	H0 Rejected

It shows that the ‘t’ value is 12.7 for (MML), (TML) and (MSIL) denotes that company’s liquidity, profitability and solvency is in serious phase means companies were suffering very badly in short term as well as in long term. It means for sustainable growth and development of automobile manufacturing companies in India, harmonized interrelationship between the liquidity, profitability and solvency were essential. The Researcher fails to accept H0, H0 is rejected, hence, H1 is accepted.

5. Findings

- Operating profit and working capital was averagely declining and sometimes negative denotes futile working capital management by the companies.
- Deployment current asset as well as non-current assets was inefficient to gear up income.
- Negative working capital ratio signifies that liquidity and solvency of the automobile companies is at stake.
- Disproportionate rise/decrease in turnover and working capital showed into partial growth of the business.
- Lopsided current assets composition results into impolite inventory and cash management by the companies.
- Consistently rise in the loans and advances from Current assets, showed willful diversion of funds from one business entity to other subsidiary business unit.
- Adverse liquidity and solvency ratios against industry standards showed hasty and inadvisable usage of working capital by the companies.
- Efficiency ratios of the companies are well, but it doesn’t justify whether the business is following morality and ethics.

5. Conclusion

This research paper has investigated the essential harmonized interrelationship between liquidity, profitability and solvency interrelationship of automobile industry in India. Financial competency and viability of the automobile manufacturing companies greatly affected by the liquidity and profitability conditions. Data analysis discovered that, there is a substantial optimistic interrelationship found from observed variables (liquidity, profitability, solvency).

The results had showed that the working capital requirements of business had change over time to ensures income generation rate. Similarly, the companies must ensure value creation and harmonization of its all functions. There is vital requirement for experimental studies to be carried out on financial sustainability of SMES. Such studies should focus to observe three “e” i.e. effectiveness, efficiency and economy in working capital management of the substantial sample size of the automobile companies to ensure intra- firm and inter-firm comparison for holistic and sustainable growth and development of the sample companies under Indian automobile industry. Finally, it can conclude that the outcomes of this research study can be furthermore strengthened if business units survived with Indian management philosophy.

Researcher has followed descriptive case study method and convenient sampling technique. Giants of Indian auto industry viz. Maruti Suzuki, Tata Motors Ltd and Mahindra & Mahindra Ltd. were the companies selected as sample. Data set is observed for four financial years i.e. 2016 to 2020. From the compounded average result and industry standard independent T-test is carried out. Altman Z-Score test and Piotroski F-Score test is also carried out to check the financial wellbeing of the selected as sample companies.

6. Objectives of the Study

The primary objective of this research study is to observe the connection among the liquidity, profitability and solvency and its effect on growth and development of the automobile manufacturing companies in India. Following are the specific objectives

- To study the competency of Indian auto manufacturing companies in maintaining the tradeoff among liquidity, profitability and solvency.
- To evaluate the impact of liquidity, profitability and solvency on the overall working of the automobile manufacturing companies in India

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