Growth of BSE Listed Automobile Sector in India

C. Gopalakrishnan[1], Dr.Rajeswarikrishnan[2], Dr.S.Ayyappan[3]

[1]Research Scholar (PhD in Management), Anna University Chennai, Tamil Nadu, India
ems167@gmail.com Ph: (0)99656 58141.
[2]Principal, Sree Narayana Guru Institute of Management Studies, K.G.Chavadi, Coimbatore, Tamil Nadu, India,Contact Number: (0)94436 51978.
[3]Associate Professor – MBA, Sakthi Institute of Information and Management Studies,   Pollachi, Tamil Nadu, India,   Email id: sapacet@gmail.com, Contact Number: (0)99422 20699

Abstract: This study investigates the growth and profitability position of BSE listed automobile sector in India using the Prowess corporate databases developed by CMIE (Centre for Monitoring Indian Economy) and CLP (Capital Line Plus) data from 2001-02 to 20011-12 with reference to two and Three Wheeler Companies, and employ the findings to estimate the growth and the financial performance by using Regression analysis, Analysis of Variance and Linear Growth Model. The growth is estimated by using seven variables such as Net sales, Total Income, Expenses, Raw Material usage, Working Capital, Operating Profit and Net Profit. The sampling technique adopted for this study is Proportionate Sampling. The study selected Seven companies listed in BSE with the Net Sales of 100 crore and above as sample. The selected variables have both positive and negative contribution in variation of profit rate. Therefore, we conclude that the automobile companies led to strong demand due to signs of revival in economy and increasing trend in hiring especially Organizations decisions will describe how the companies are placed within the industry and how they track new opportunities and innovations; ups and downs in growing markets, universal economic trends, and varying customer demand will confront companies to react in novel ways.

Keywords: Automobile; Variables; Profitability; Growth; Two and Three Wheeler.

1. Introduction

India is one of the most attractive investment destinations for most of the biggest global players today, because this sector is contributes a significant share of the total GDP and employment, which is the backbone of country's economic growth and development. Transportation throughout the world has made possible and unprecedented level of mobility across the geographical boundaries. The mobility has broadened access of business to new markets and more choices by increasing the available pool of resources. From the economic point of view, Automobile is a vital factor for steady economic growth and development particularly in road transportation, automobile industry plays a significant role in the GDP of the country.

India's automobile industry, currently estimated to have a turnover of US$ 73 billion, accounts for six per cent of its GDP, and is expected to hit a turnover of US$ 145 billion by 2016. It is contributing 22 per cent to the manufacturing GDP (CEIC Data). It is no doubt that Chennai; a southern city in India is called the "Detroit of Asia" owing to the presence of a huge number of Automobile manufacturers in the city.

1.1 Global and Indian Scenario

The automobile industry has acquired the title of world's largest manufacturing industry (Auto2009, Sovereign Publications; London). The global boom of the 1980's was largely because of the automobile revolution. General Motors, Chrysler and Ford the automotive kings of America, had a massive say on the country's economy. The Auto markets in North America and Japan were sluggish, while those in South America and other parts of Asia grow powerfully. Of the major markets, Russia, Brazil, India and China saw the speediest development.

India has become a fast-growing auto market over the past decade. According to the Society of Indian Automobile Manufacturers (SIAM), the Indian automobile industry has maintained a steady growth of 24% till May 2010. The industry currently contributes about five per cent of the GDP and it is targeted to grow fivefold by 2016 and account for a geographically diversification. The governments play a key role in shaping the growth of the auto industry in emerging economies (Amsden and Kang 1995). The new automobile policy announced in 1993 included exclusion of licensing restrictions on production, automatic approval of foreign investment up to 51% in Indian firms opening the doors for foreign firms to enter the Indian market (Sagar and Chandra, 2004).

The way in of foreign automobile manufactures ranging from Mercedez, Ford and General Motors to Daewoo following the government liberalizing the foreign investment limits saw the opening of the next chapter of the progress of the industry. Indian passenger car production, hardly over 200,000 units in 1993-94, increased to just over a half million units in 2000-01. In the subsequent five years, the production virtually doubled yet again, topping one million vehicles in 2004-05, and beating 1.3 million vehicles in 2005-06 including utility vehicles and MPVs (Economic Times April 29, 2006). Annual sales had seen an increase by over a multiple of 5, from around 320,000 units in 1996 to 1.7 million in 2010, thanks to the combination of rising per capita incomes, relatively easier availability of finance and young demographics (SIAM, 2008). This sector as a whole has emerged as a significant engine of growth for the Indian economy.

India is on every vehicle manufacturer's map and the Automotive Mission Plan 2006-2016 has set an ambitious turnover target of $145 billion for the industry from a modest $38 billion today (Narayanan and Vashisht, 2008). So the Indian automobile industry is playing a pivotal role on the Indian Economy and also redefining the lifestyle of Indian consumers. At present there are about 15 manufacturers of passenger cars & multi utility vehicles, around 10 manufacturers of commercial vehicles, around 15 manufacturers of 2/3 wheelers, further five manufacturers of engines. It is anticipated that the Indian automotive industry contributes more than five per cent of the national GDP, and tax payment from the sector is likely to be Rs. 25,000 crores. The Automobile industry provides direct and indirect employment to over 1.4 crore people.

Over the last seven years there has been an increasing trend in the production of vehicles, both in value and quantity terms even that there is a fluctuation. The recent trend in the Production, Domestic Sales and Exports are given in the Table No.1.1.

Table No: 1.1 Production, Domestic Sales And Export

						(In Numbers)
Year	**Production**		**Domestic Sales**		**Export**	
	Three Wheelers	**Two Wheelers**	**Three Wheelers**	**Two Wheelers**	**Three Wheelers**	**Two Wheelers**
2004-05	374445	6529829	307862	6209765	66765	366407
2005-06	434423	7608697	359920	7052391	76881	513169
2006-07	556126	8466666	403910	7872334	1437896	619644
2007-08	500660	8026681	364781	7249278	141225	819713
2008-09	497020	8419792	349194	7437619	148066	1004174
2009-10	619914	10512903	440392	9370951	173214	1140058
2010-11	799553	13376451	526022	11790305	269967	1539590

Source: SIAM

Note: The table shows the Production, Domestic Sales and Exports of Two Wheelers and Four Wheelers companies in India for the period2004-05 to 2010-11.

1.2 Literature Review

(Tay, 2003) conducted the study, which concluded that the Cost and value refers to the relationship between providing a high value product to consumers and dropping costs both linked with product design as well as with maintenance and service costs. The study conducted by (ICRA 2004), revealed that labour rate is low in India, but the rigorous labour regulations wear away this benefit. The study concluded that there is a huge excess capacity in ASEAN countries, in association with that in India, which will help them to manage the excess demand that may arise in near future. (McKinsey 2005) identified strong engineering skills and a budding culture of cost-competitiveness as the major strengths of the Indian auto component manufacturing sector, while its weaknesses include slow growth in domestic demand and structural disadvantages such as power tariffs and indirect taxes. The study made by (Sharma 2006) concluded that the partial factor productivity indices only labour productivity has seen a significant improvement, while the productivity of other three inputs (capital, energy and materials) haven't shown any significant improvement and Labour productivity has increased mainly due to the increase in the capital intensity, which has grown-up at a rate of 0.14 per cent per annum from 1990-91 to 2003-04. (Orsto and Wells 2007) studied the liking of buying the vehicles greatly depends on know-how and design of the vehicles, which makes the distinction between the competitors. The study made by (Dr. A. Vijayakumar 2011) found that size, growth and GDP growth variables have positive relationship with profitability, whereas leverage have negative relationship with firms' profitability. (Nataraj.S 2012) studied that the Internet is gradually hitting the core of every industry including the car industry. It created a greater awareness of the vehicle and influences the buyer to purchase and the Internet is believed to have a greater

impact on the sales process and will definitely give higher level of sales satisfaction. (Sachin Maheshwari 2012) studied the status of HR department reporting structure in auto component industry in Haryana reviewed the organization structure of various Indian and multinational auto component companies and examined the significance of HR department in the organization.

1.3 Statement of the Problem

Today's global automotive industry is full of opportunities and risks which are everywhere - in emerging and mature markets alike. However, profitable growth is becoming more difficult to achieve due to challenges prevailed from the retail environment. Presently, the automotive industry has too much in capacity, in competitors and in joblessness and overlap. Pricing of automobiles is a complex issue as it is dependent on fixed cost, economies of scale, technology and other aspects. Price is one of the factors that influence sales variability of products and services significantly. Companies require appropriate policies to be played intelligently for managing the series of decisions. As a result of this, in the long run, most of the players earn zero standard profit and in the short run super-normal profit. Hence, competition in the short run is intense particularly when product life-cycle is very short. Moreover, within segment the nature of competition sometimes is oligopolistic as the number of models under one segment may be limited in a model year. At this moment, the study taken into account the important items like Sales, Income, Expenditure, Use of Raw Materials, Working Capital, Operating Profit and Net Profit of Selected Automobile manufactures BSE listed Two and Three Wheelers Companies and also raises the following question: Why the Profitability is the important criteria to assess the company's Growth?

1.4. Objectives of the Study
- To measure the growth position of Indian Automobile Sector with reference to BSE Listed Two and Three Wheeler Companies.
- The suggestion to improve the Profitability of Indian Automobile Sector.

1.5 Hypothesis of the Study

- H_o There is no significant difference between the actual and trend values of selected variable in the Automobile Sector especially for two and Three Wheeler Companies.
- H_A There is a significant difference between the actual and trend values of selected variable in the Automobile Sector especially for two and Three Wheeler Companies.

1.6 Research Methodology

1.6.1 Data Collection

The financial data and information required for the study are drawn from the secondary source. The Prowess' corporate databases developed by CMIE (Centre for Monitoring Indian Economy) and CLP (Capital Line Plus) have been used as principal sources. The other relevant data are collected from Journals, Magazines, Dailies like The Financial Express and The Economic Times.

1.6.2 Sampling Design

The sampling technique adopted for this study is Proportionate Sampling. According to the prowess corporate database developed by CMIE, (Centre for Monitoring Indian Economy) there are only seven companies listed in BSE with the Net Sales of 100 crore and above in the last three consecutive financial years. So the study taken into account all seven companies which is having a net sales of more than 100 crores. The companies were taken is Hero Motocorp, Bajaj Auto, TVS Motors, LML, Atul Auto, Scooters India and Majestic Auto. The study period is 11 financial years from 2001-02 to 2012-12.The tools used for the analysis were Regression Analysis (Fitted Trend), Analysis of Variances and Linear Growth Model.

1.7 Analysis and Interpretation

The financial performance of the selected Two and Three Wheeler Companies during the study period has been measured by studying the behavior of net sales of the study units. The actual values and the computed the trend values of the net sales, Total Income, Raw Material, Working Capital, Operating Profit and Net Profit of the selected Two and Three Wheeler Companies has been presented in Tables1.2 to 1.8 and 1.10.

Table No.1.3 - Actual And Trend Value For Total Income Of Two &Three Wheelers Companies In India
(Rs. In Crores)

Variables	Year	Hero Motocorp		Bajaj Auto		TVS Motor		LML		Atul Auto		Scooters India		Majestic Auto	
		Actual value	Trend value	Actual value	Trend value	Actual value	Trend value	Actual	Trend value	Actual	Trend value	Actual	Trend value	Actual	Trend value
N	2001-02	4,469.09	3552.2	4012.35	3517.8	1930.48	1854.62	-34.5	-47.43	27.69	24.664	96.52	116.866	224.81	179.107

								7	2						
	2011-12	23,586.80	19355.2	19516.65	15777.3	7126.20	5844.58	-470.19	-347.685	298.05	214.517	161.3	152.013	152.27	107.199
	R.E	0 + 1.00 FITS1		0 + 1.00 FITS1		0 + 1.00 FITS1		- 0.0 + 1.00 FITS1		0.0 + 1.00 FITS1		0.0 + 1.00 FITS1		- 0.0 + 1.00 FITS1	
Income	**2001-02**	4,538.21	3621.40	4025.39	3499.1	1952.88	1900.81	518.39	587.984	28.44	25.754	109.34	123.247	229.9	185.78
	2011-12	24,028.29	19702.4	20024.46	16385.8	7163.05	5959.51	308.92	148.215	303.04	216.749	168.45	153.137	161.06	115.27
	R.E	0 + 1.00 FITS2		0 + 1.00 FITS2		0 + 1.00 FITS2		- 0 + 1.00 FITS2		0.0 + 1.00 FITS2		0.0 + 1.00 FITS2		- 0.0 + 1.00 FITS2	
Expenses	**2001-02**	3,749.92	2994.30	3500.32	3245.70	1803.04	1710.31	543.36	588.783	26.07	25.20	102.67	114.64	209.74	177.145
	2011-12	20,032.81	16517.4	15874.89	12968.4	6671.97	5596.08	317.52	152.269	274.77	197.095	173.16	169.11	136.19	96.698
	R.E	0 + 1.00 FITS3		0 + 1.00 FITS3		0 + 1.00 FITS3		- 0 + 1.00 FITS3		0.0 + 1.00 FITS3		0.0 + 1.00 FITS3		0.0 + 1.00 FITS3	
Raw	**2001-02**	3,131.14	2480.1	4852.35	3484.7	1415.78	1303.61	526.14	590.537	20.53	20.43	65.08	72.00	151.86	125.562
	2011-12	17,485.65	14017.8	14580.24	11281.9	5292.29	4414.33	313.93	181.038	239.72	170.905	127.47	116.30	100.2	68.261
	R.E	0 + 1.00 FITS4		0 + 1.00 FITS4		0 + 1.00 FITS4		- 0 + 1.00 FITS4		0.0 + 1.00 FITS4		0.0 + 1.00 FITS4		- 0.0 + 1.00 FITS4	
Working Capital	**2001-02**	-383.24	-158.04	-580.65	-504.53	-92.57	-128.294	-30.56	-85.989	3.73	5.459 11	26.09	25.5081	-8.67	-6.70148
	2011-12	-2516.68	-2515.96	-1377.31	-1262.68	-317.81	-332.009	-43.52	-150.928	12.13	9.7259	-4.37	-2.3488	4.49	-0.45551
	R.E	- 0 + 1.00 FITS5		- 0 + 1.00 FITS5		- 0.0 + 1.00 FITS5		- 0 + 1.00 FITS5		0.00 + 1.00 FITS5		- 0.00 + 1.00 FITS5		- 0.00 + 1.00 FITS5	
Operating Profit	**2001-02**	713.36	559.63	745.82	443.14	130.71	150.607	10.45	-18.0266	1.78	-0.097	1.76	3.6741	13.49	2.5973
	2011-12	3648.02	2868.43	3735.91	2875	469.37	277.968	1.68	-43.6378	27.58	18.2037	-5.30	-17.7332	18.05	10.4959
	R.E	- 0 + 1.00 FITS7		23 + 0.821 FITS7		0.0 + 1.00 FITS7		- 0 + 1.00 FITS7		- 0.05 + 0.480 FITS7		- 0.00 + 1.00 FITS7		- 0.00 + 1.00 FITS7	
Net Profit	**2001-02**	694.38	596.03	650.38	385.60	53.91	74.83	-41.01	-60.35	1.1	-0.09	5.08	7.44	-3.99	-10.67
	2011-12	2864.71	2660.03	3004.05	2382.04	249.07	149.165	-45.2	-95.7433	15.59	8.68423	17.11	-26.5997	7.09	-10.6095
	R.E	- 0 + 1.00 FITS7		23 + 0.821 FITS7		0.0 + 1.00 FITS7		- 0 + 1.00 FITS7		- 0.05 + 0.480 FITS7		- 0.00 + 1.00 FITS7		- 0.00 + 1.00 FITS7	

Source: Computed & CMIE Report

R.E - Regression Equation

Note: The above Tables No. 1.2 presented the result of Actual and Trend Value of the selected variables separately for the period from 2001-02 & 2011-12.

Table No.1.3:Analysis Of Variance (Anova) Of Two And Three Wheeler Companies

Sl.No.	Name of the Company	Table No. 1.3.1 NET SALES				Table No. 1.3.2 TOTAL INCOME				Table No. 1.3.3 TOTAL EXPENSES				Table No. 1.3.4 RAW MATERIAL			
		R^2	F-value	p-value	S/NS	R^2	F-value	p-value	S/NS	R^2	F-value	p-value	S/NS	R^2	F-value	p-value	S/NS
1	Hero Motocorp	90.8	89.20	0.000*	S	90.9	89.70	0.000*	S	91.3	93.97	0.000*	S	89.6	77.57	0.000*	S
2	Bajaj Auto	82.9	43.78	0.000*	S	82.3	41.86	0.000*	S	83.6	45.98	0.000*	S	72.8	24.03	0.001*	S
3	TVS Motor	81.7	44.56	0.000*	S	81.6	44.45	0.000*	S	83.6	50.97	0.000*	S	82.6	47.33	0.000*	S
4	LML	79.	39.55	0.000*	S	39.4	6.50	0.029*	S	37.4	5.98	0.035*	S	33.6	5.06	0.048*	S

		8			*				*				*				*	
5	Atul Auto	75.9	31.43	0.000*	S	75.0	29.97	0.000*	S	74.4	29.05	0.000*	S	73.6	27.86	0.000*	S
6	Scooters India	40.5	6.79	0.026**	S	25.4	3.40	0.095	NS	67.2	20.48	0.001*	S	59.3	14.56	0.003*	S
7	Majestic Auto	33.3	5.00	0.049**	S	31.8	4.66	0.056	NS	42.5	7.39	0.022**	S	44.9	8.16	0.017**	S

Source: Computed

Sl.No.	Name of the Company	Table No. 1.3.5 WORKING CAPITAL				Table No. 1.3.6 OPERATING PROFIT				Table No. 1.3.7 NET PROFIT			
		R^2	F-value	p-value	S/NS	R^2	F-value	p-value	S/NS	R^2	F-value	p-value	S/NS
1	Hero Motocorp	51.3	9.50	0.013**	S	82.7	42.89	0.000*	S	86.2	56.04	0.000*	S
2	Bajaj Auto	52.2	9.84	0.012**	S	72.5	3.70	0.001*	S	58.8	12.84	0.006*	S
3	TVS Motor	44.5	8.02	0.018**	S	17.3	2.09	0.179	NS	16.3	1.95	0.193	NS
4	LML	2.9	0.30	0.594	NS	2.4	0.25	0.629	NS	3.8	0.39	0.546	NS
5	Atul Auto	15.3	1.81	0.209	NS	66.9	20.22	0.001*	S	50.3	10.14	0.010*	S
6	Scooters India	54.4	11.94	0.006*	S	59.8	14.87	0.003*	S	75.1	30.18	0.000*	S
7	Majestic Auto	6.5	0.69	0.425	NS	10.2	1.14	0.310	NS	37.8	6.08	0.033**	S

Source: Computed   *p<0.01 **p<0.05 **S**-Significant   **NS**-Not Significant

Note: The table presents the results of the Analysis of Variance of Selected Two and Three Wheeler Companies by using the important variables, these are Net sales, Total Income, Total Expenses, Raw Material Consumption, Working capital, Operating Profit and Net Profit for the Study Period.

Table No.1.4: Linear Growth Model During The Period 2012-13 To 2017-18(Rs. Crore)

	Table No. 1.4.1 NET SALES					Table No. 1.4.2 TOTAL INCOME				
Year	2012-13	2013-14	2014-15	2016-17	2017-18	2012-13	2013-14	2014-15	2016-17	2017-18
Hero Motocorp	20935.5	22515.8	24096.1	25676.4	27256.7	21310.5	22918.6	24526.7	26134.8	27742.9
Bajaj Auto	17003.3	18229.2	19455.2	20681.2	21907.1	17674.4	18963.1	20251.8	21540.5	22829.1
TVS Motor	6243.58	6642.57	7041.57	7440.56	7839.56	6365.38	6771.25	7177.12	7582.99	7988.86
LML	-377.71	-407.735	-437.761	-467.786	-497.811	104.238	60.261	16.284	-27.692	-71.669
Atul Auto	233.502	252.487	271.472	290.458	309.443	235.848	254.948	274.048	293.147	312.247
Scooters India	155.528	159.043	162.558	166.072	169.587	156.126	159.115	162.104	165.094	168.083
Majestic Auto	100.008	92.817	85.626	78.435	71.245	108.219	101.168	94.117	87.066	80.015

	Table No. 1.4.3: TOTAL EXPENSES					Table No.1.4.4: RAW MATERIAL				
Year	2012-13	2013-14	2014-15	2016-17	2017-18	2012-13	2013-14	2014-15	2016-17	2017-18
Hero Motocorp	17869.8	19222.1	20574.4	21926.7	23279.0	15171.61	16325.39	17479.16	18632.94	19786.72
Bajaj Auto	13940.60	14912.90	15885.20	16857.40	17829.70	12061.63	12841.35	13621.07	14400.8	15180.52
TVS Motor	5984.66	6373.24	6761.82	7150.39	7538.97	4725.4	5036.47	5347.54	5658.61	5969.69
LML	108.62	64.97	21.32	-22.34	-65.99	140.088	99.138	58.188	17.238	-23.712
Atul Auto	214.29	231.48	248.66	265.85	283.04	185.952	200.999	216.046	231.093	246.141
Scooters India	174.552	180.00	185.44	190.89	196.34	120.73	125.16	129.59	134.02	138.45
Majestic Auto	88.6535	80.6088	72.564	64.5193	56.4746	62.5308	56.8006	51.0705	45.3403	39.6102

	Table No. 1.4.5 WORKING CAPITAL					Table No. 1.4.6 OPERATING PROFIT				
Year	2012-13	2013-14	2014-15	2016-17	2017-18	2012-13	2013-14	2014-15	2016-17	2017-18
Hero Motocorp	-2751.75	-2987.55	-3223.34	-3459.13	-3694.92	3099.31	3330.19	3561.07	3791.95	4022.83
Bajaj Auto	-1338.49	-1414.31	-1490.12	-1565.94	-1641.75	3118.188	3361.374	3604.56	3847.747	4090.933
TVS Motor	-352.38	-372.752	-393.123	-413.494	-433.866	290.70	303.440	316.18	328.91	341.65
LML	-157.422	-163.916	-170.409	-176.903	-183.397	-46.20	-48.760	-51.32	-53.88	-56.44
Atul Auto	10.1526	10.5793	11.0059	11.4326	11.8593	20.03	21.864	23.69	25.52	27.35
Scooters India	-5.1345	-7.9202	-10.7059	-13.4916	-16.2773	-19.87	-22.015	-24.16	-26.30	-28.44
Majestic Auto	1.17121	1.88691	2.60261	3.31831	4.03401	11.29	12.076	12.87	13.66	14.45

Table No. 1.4.7 Net Profit

Year	2012-13	2013-14	2014-15	2016-17	2017-18
Hero Motocorp	2866.43	3072.83	3279.23	3485.63	3692.03
Bajaj Auto	2581.682	2781.326	2980.969	3180.613	3380.257
TVS Motor	156.60	164.03	171.47	178.90	186.34
LML	-99.28	-102.82	-106.36	-109.90	-113.44
Atul Auto	9.56	10.44	11.32	12.19	13.07
Scooters India	-30.00	-33.41	-36.81	-40.21	-43.62
Majestic Auto	12.74	14.87	16.99	19.12	21.25

Note: The table Present the result of growth projection for the period from 2012-13 to 2017-18 by using the method of Linear Growth Model.
 Source: Computed

1.6.1 Net Sales

The Table no 1.3.1 describes the ANOVA for Net Sales of selected two and Three Wheeler Companies. It is clear from the table that the significant difference between actual and trend values in Hero Motocorp, Bajaj Auto, TVS Motors, LML and Atul Auto are at one per cent level of significance. Further the analysis reveals that Scooters India and Majestic Auto are having five percent level of significance. So it is concluded that the null hypothesis is rejected while the alternative hypothesis is accepted for Hero Motocorp, Bajaj Auto, TVS Motors, LML and Atul Auto.

The projection obtained for net sales of selected two and Three Wheeler Companies by linear growth model during the year 2012-2013 to 2017-2018 shown in Table no.1.4.1 shows that Hero Motocorp (27256.7), Bajaj Auto (21907.1), TVS Motors (7839.56) and Atul Auto (309.443) have more net sales. It is also observed that the Scooters India (169.587) and Majestic Auto (71.245) are having net sales, which is steadily increasing trend while LML has marginally decreasing net sales during 2017-18, which is -497.811.

1.6.2 Total Income

The Table no 1.3.2 describes the ANOVA for total income of selected two and three wheeler Companies. It is clear from the table that the significant difference between actual and trend values in Hero Motocorp, Bajaj Auto, TVS Motors and Atul Autos are at one per cent level of significance. There is no significant difference in case of LML at five per cent of level of significance. There is no significant difference in case of Scooters India and Majestic auto in both one per cent and five per cent of level of significance, finally it is concluded that there is a significant relationship between actual and trend values for all the companies excluding Scooters India and Majestic auto.

The projection obtained for total income of selected two and three wheeler Companies by linear growth models during the year 2012-2013 to 2017-2018 shown in Table no.1.4.2 revealed that Hero Motocorp, Bajaj Auto, TVS motors, Atul Auto and Scooters India have more total income. It also indicates that the LML and Majestic auto are having less total income. It also reveals that by the year 2016-2017 All the companies will have increase in Total Income when compared with the year 2012-13.

1.6.3 Total Expenses

The table no 1.3.3 reveals that the ANOVA for Total Expenses of selected two and three wheeler companies. It is clear from the table that the significant difference between actual and trend values in Hero Motocorp, Bajaj Auto, TVS Motors, Atul Autos and Scooters India are at one per cent level of significance and LML and Majestic Auto shows the five percent level of significance. Finally it is concluded that the null hypothesis is rejected and the alternative hypothesis is accepted for all the companies.

The projection obtained for total expenses of selected two and three wheeler companies by linear growth models during the year 2012-2013 to 2017-2018 presented in Table no.1.10.3 shows that Hero Motocorp (23279), Bajaj Auto (17829.70) and TVS Motors (7538.97) will have more total expenses. It is also clear that Atul Auto, Scooters India, Majestic Auto and LML are also having increasing trend throughout the study period.

1.6.4 Raw Material Consumption

The Table no 1.3.4 shows the ANOVA for raw materials of selected Two and Three wheeler companies. It is found that the significant difference between actual and trend values in Hero Motocorp, Bajaj Auto, TVS Motors, Atul Autos and Scooters India are at one per cent level of significance and Whereas Majestic Auto and LML shows the five percent level of significance. It is concluded that the null hypothesis is rejected and alternative hypothesis is accepted for all the companies.

The projection obtained for Raw Materials of selected two and Three wheeler companies by linear growth models during the year 2012-2013 to 2017-2018 presented in Table no.1.4.4 shows that the Hero

Motocorp marked the first position of the growth by the way of utilizing the more number of raw materials than other companies with Rs.19786.72 crore. The Bajaj Auto with Rs. 15180.52 crore and TVS Motors with Rs. 5969.69 crore come next to the Hero Motocorp in the consumption of raw material. The Atul Auto, Scooters India, and Majestic Auto registered the positive trend in the consumption of raw material even they holds the last three positions respectively. On the same time LML with Rs. -23.712 crore alone shown the negative trend in the consumption is unlikely.

1.6.5 Working Capital

The Table no 1.3.5 shows the ANOVA for Working Capital of selected Two and Three wheeler companies. It is found that the significant difference between actual and trend values in Scooters India alone at one per cent level of significance. The Hero Motocorp, Bajaj Auto and TVS Motors show the five percent level of significance. But in the case of LML, Majestic auto and Atul Auto represented that there is no significant between actual value and trend value in terms of Working Capital usage. It is concluded that the null hypothesis is rejected and alternative hypothesis is accepted for all the companies except LML, Majestic auto and Atul Auto.

The projection obtained for Working Capital of selected two and three wheeler companies by linear growth models during the year 2012-2013 to 2017-2018 presented in Table no.1.4.5 shows that the Hero Motocorp, Bajaj Auto, TVS Motors, LML and Scooters India represented the negative trend. The Atul Auto and Majestic Auto registered the positive trend in the consumption of raw material even they holds the last two positions respectively.

1.6.6 Operating Profit

The table no 1.3.6 describes the ANOVA for Operating Profit of selected two and three wheeler companies. It is clear from the table that the significant difference between actual and trend values in Hero Motocorp, Bajaj Auto, Atul Autos and Scooters India are at one per cent level of significance. But in the case of TVS Motors, LML and Majestic auto represented that there is no significant between actual value and trend value in terms of Operating Profit. Finally it is concluded that the null hypothesis is rejected and the alternative hypothesis is accepted for all the companies except TVS Motors, LML and Majestic auto.

The projection obtained for Operating Profit of selected two and Three wheeler companies by linear growth models during the year 2012-2013 to 2017-2018 presented in Table no.1.4.6 shows that Bajaj Auto stand top among others with an operating profit of Rs. 4090.933 crore and Hero Motocorp hold the second position with an operating profit of Rs.4022.83 crore. The TVS Motors hold only the third position in respect of Operating profit with Rs.341.65 crore and Atul Auto comes next to TVS Motors with Rs.27.35 crore. The Majestic Auto comes next to the Atul Auto. On the other hand LML and Scooters India shown the negative trend with an operating loss of Rs.56.44 crore and Rs.28.44 crore respectively.

1.6.7 Net Profit

The table no 1.3.7 describes the ANOVA for Net Profit of selected two and three wheeler companies. It is clear from the table that the significant difference between actual and trend values in Hero Motocorp, Bajaj Auto, Atul Autos and Scooters India are at one per cent level of significance. Whereas Majestic auto alone represented the relationship with five percent level of significance. TVS Motors and LML represented that there is no significant between actual value and trend value in terms of Operating Profit. Finally it is concluded that the null hypothesis is rejected and the alternative hypothesis is accepted for all the companies except TVS Motors and LML.

The projection obtained for Operating Profit of selected two and three wheeler companies by linear growth models during the year 2012-2013 to 2017-2018 presented in Table no.1.4.7 that the Hero Motocorp stand first among others with a net profit of Rs.3692.03 crore and Bajaj Auto hold the second position with a net profit of Rs.3380.257 crore. The TVS Motors a massive producer of Two Wheelers hold only the third position in respect of net profit with Rs.186.34 crore and Majestic Auto comes next to TVS Motors with Rs.21.25 crore. The Atul Auto comes next to the Majestic Auto. On the other hand LML and Scooters India have shown the negative trend with a net loss of Rs.113.44 crore and Rs.43.62 Crore respectively. While analyzing the trend of the net profit earning the Hero Motocorp well advanced than others.

1.8 Findings

Based on the above observations, the study came out with the possible findings. The findings have been derived from the Analysis of Variances are shown in the Table No. 1.5.
The others findings are shown below:
- The null hypothesis is disproved and the alternative hypothesis is accepted for all the companies for the variable Net Sales, Total Expenses and Raw Material Consumption.
- The null hypothesis is rejected and the alternative hypothesis is accepted for all the

companies for the Total Income except Scooters India and Majestic Auto.
- The null hypothesis is disproved and the alternative hypothesis is accepted for all the companies for the Working Capital except LML, Atul Auto and Majestic Auto.
- The null hypothesis is rejected and the alternative hypothesis is accepted for all the

companies for the Operating Profit except TVS Motors, LML and Majestic Auto.
- The null hypothesis is disproved and the alternative hypothesis is accepted for all the companies for the Net Profit except TVS Motors and LML.

TABLE No. 1.5 - ANALYSIS OF VARIANCE (ANOVA)

Variables	Level of Significance		No Significance
	One per cent Level	Five per cent Level	
Net Sales	Hero Motocorp, Bajaj Auto, TVS Motors, LML, Atul Auto	Scooters India Majestic Auto	----
Total Income	Hero Motocorp, Bajaj Auto, TVS Motors, Atul Autos	LML	Scooters India, Majestic Auto
Total Expenses	Hero Motocorp, Bajaj Auto, TVS Motors, Atul Autos, Scooters India	LML, Majestic Auto	----
Raw Materials	Hero Motocorp, Bajaj Auto, TVS Motors, Atul Autos, Scooters India	Majestic Auto, LML	----
Working Capital	Scooters India	Hero Motocorp, Bajaj Auto, TVS Motors	LML, Atul Auto, Majestic auto
Operating Profit	Hero Motocorp, Bajaj Auto, Atul Autos, Scooters India	----	TVS Motors, LML, Majestic auto
Net Profit	Hero Motocorp, Bajaj Auto, Atul Autos, Scooters India	Majestic auto	TVS Motors, LML

Note: The table No. 1.5 presents the findings of study for the ANOVA for the study period. It is represented by taking variables as base and the results are shown based on the level of significance.

1.8.2 Projection by linear growth models
- The Hero Motocorp stand first with Rs.27256.7 crore and LML has marginally decreasing net sales during 2017-18 which is Rs.-497.811 crore of Net Sales.
- The Hero Motocorp having higher and Majestic auto are having less total income.
- The Hero Motocorp leads in the spending of Rs.23279 crore and LML holding the last position.
- The Hero Motocorp marked the first position of the growth by the way of utilizing the more number of raw materials than other companies with Rs.19786.72 crore, on the other hand LML with Rs. -23.712 crore alone shown the negative trend in the consumption is unlikely.
- The Atul Auto and Majestic Auto registered the positive trend in the consumption of raw material and the other hand the Hero Motocorp, Bajaj Auto, TVS Motors, LML and Scooters India represented the negative trend.
- The Bajaj Auto stand top among others with an operating profit of Rs. 4090.933 crore and LML and Scooters India shown the negative trend with an operating loss of Rs.56.44 crore and Rs.28.44 crore respectively.

- The Hero Motocorp stands first among others with a net profit of Rs.3692.03 crore. But LML and Scooters India have shown the negative trend with a net loss of Rs.113.44 crore and Rs.43.62 Crore respectively.

1.9 Suggestions
Keeping in view of the above observations relating to the study, the following measures are suggested which, would go a long way to improve the performance of Indian automobile industry.
- The LML is suggested to concentrate on their promotional activities and market share to survive in a long run because the study revealed that the Net sales, Raw Material Consumption, Operating and Net profit are in negative trend.
- The Hero Motocorp, Bajaj Auto, TVS Motors, LML and Scooters India represented the negative trend in terms of Working Capital need to be concentrated even the nature of the industry are Capital Intensive.
- The Scooters India shown the negative trend with an operating and net loss need to be concentrated by improving their Sales and Product innovation.
- It is suggested that still there is a need for Indian automobile industry to adopt producing and selling wide range of products, to adopt better market strategy, by reducing

cost and revising prices to enhance the value of turnover so as to go ahead in the era of competitions.

- It is suggested that all the selected industries should undertake cost control measures further so that increased profit margin.
- The government should grant certain funds to leading Indian automobiles companies for research and development so that Indian vehicles can really become world class in five years time.

1.10 Conclusion

Profitability is the pre-requisite for the survival of every company or firm. The percentage change in production is showing a fluctuating trend throughout the years but, the production is showing an increasing trend. Similarly the sale of vehicles is also showing an upward trend. This study has shown that Indian automobile industry has been able to achieve high scores on the various components and this has positive impact on its profitability. Automobiles led to strong demand due to signs of revival in economy and increasing trend in hiring especially Organizations decisions will describe how the companies are placed within the industry and how they track new opportunities and innovations; ups and downs in growing markets, universal economic trends, and varying customer demand will confront companies to react in novel ways. Regardless, many of the companies will face major turning points in their corporate existence over the next five years; the near future will almost surely be a defining period for the automotive industry. Therefore, we can conclude that the automobile sector has revolutionized the life of common people. The vehicles are now the part and parcel of our lives without which it's nearly impossible to survive. This sector has contributed to the national exchequer as well as increased the economic activities as well in the form of providing jobs to the people as we have discussed earlier and also gave rise to other allied industries.

Corresponding Author:
Gopalakrishnan.C
Research Scholar (PhD in Management),
Anna University Chennai, Tamil Nadu, India,
Email id : ems167@gmail.com

References

1. Bain,J . (1951). "Relation of Profit Rate to Industry Concentration: American Manufacturing, 1936-1940", *Quarterly Journal of Economic*, Vol.65. Pp.293- 324.

2. Barney, J. (1991). "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, Vol.17, pp.99-120.

3. Capon, N., Farley J.V. and Hoenig, S. (1990). "Determinants of financial performance: A meta-analysis", *Management Science*, Vol.36, pp.1143-1159.

4. Chandrasekaran, N. (1993). "Determinants of Profitability in cement industry", *Decision*, Vol. 20. No. 4: pp. 235-244.

5. Conyon, N. and Machin, S (1991). "The determinants of profit margins in UK manufacturing", *The Journal of Economics*, 34(4), pp. 369-382.

6. Dr. A. Vijayakumar (2011a), *"Cash Conversion Cycle and Corporate Profitability – An Empirical Enquiry in Indian Automobile Firms"*, *International journal of research in commerce, IT & management*, volume No: 1 (2011), Issue No. 2 (June) ISSN 2231-5756.

7. Dr. A. Vijayakumar(2011b)*, the determinants of profitability: an empirical investigation using Indian automobile Industry, *International journal of research in commerce & management*, volume no. 2 (2011), issue no. 9 (September) *Issn 0976-2183*.

8. Grinyer, Peter H., and Peter Mckiernan, (1991). "The determinants of corporate profitability in the U.K. Electrical Engineering industry", *British Journal of Management*, Vol 2, pp. 17-32.

9. ICRA (2004), "The Thailand & ASEAN India Free Trade Agreement: Implications for the Indian Auto Industry", Automotive Component Manufacturers Association of India and Investment Information and Credit Rating Agency of India.

10. Kakani, Ram Kumar, Biswatosh saha and V.N. Reddy (2001). "Determinants of Financial Performance of Indian corporate sector in the Post – Liberalization Era: An exploratory study", NSE Research Institute, Paper, No. 5, Mumbai: National Stock Exchange of India Limited.

11. Kean, Fred R., and Hans Baumann, (2000). "Firm size, Employees and Profitability is U.S manufacturing Industries". http://ssrn.com/sol./paper.c? Abstract id=899615. Accessed on 10 July, 2006.

12. Kuldip Kaur (1997). "Size, Growth and Profitability of firms in India. An Empirical investigation", *Finance India*, Vol. XII, No. 2. pp. 455-457.

13. McKinsey(2005), "Vision 2015 for the Indian Automotive Components Industry", Automotive Component Manufacturers Association of India and McKinsey and Company.

14. Nagarajan, M., and R.R. Barthwal (1990). "Profitability and structure: A Firm-level study of Indian pharmaceutical industry", *The Indian Economic Journal*, 38(2): pp. 70-84.

15. Nataraj.S (2012) "Customer satisfaction in automobile industry – an Indian online buyers' perspective of car manufacturers' websites", University of Mysore, Karnataka, India.

16. Orsato, R.J., Wells (2007), P. U-turn: the rise and demise of the automobile industry, *Journal of Cleaner Production,* 2007, 15(11-12), pp 994-1006

17. Peteraf,M. (1993). "The Cornerstones of competitive advantage: A resource-based view", *Strategic Management Journal*, Vol.14, pp.179-191.'

18. Porter, M. (1981). "The Contributions of Industrial organization to strategic management", *Academy of Management Review*, Vol.6, pp.609-620.

19. Sachin Maheshwari (2012), "Study of HR Department Structure in Auto Component Companies in Haryana", International Business Academic, Haryana.

20. Scherer,F.(1980). "Industrial market structure and economic performance (2nd ed)". Chicago: Rand-McNally.

21. Sharma, S (2006), "A Study on Productivity Performance of Indian Automobile Industry: Growth Accounting Analysis", 2006.

22. Sidhu H.S. and Gurpreet Bhatia, (1998). "Factors affecting in Indian Textile Industry", *The Indian Economics Journal*, pp. 137-143.

23. Simon Fenny (2000). "Determinants of profitability: An empirical investigation using Australian tax entities", Melbourne Institute of Applied Economic and Social Research, The University of Merbourne, Working Paper.

24. Thirumavalavan, P. (2006). "Determinants of Earning Before Interest and Taxation (EBIT) of Aluminium companies", *PSG Journal of Management Research*, Vol. 1, No. 2, : pp. 33-37.

25. Vijayakumar, A. (1998). "Determinants of corporate size, growth and profitability, *Management Accountant*, Vol. X. No.4: pp. 925-932.

26. Vijayakumar, A. (2002). "Determinants of profitability-A firm Level study of the sugar industry of Tamil Nadu", *The Management Accountant*, pp. 458-465.

1/15/2013