



INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION AND MANAGEMENT

CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	ROBOT MANIPULATOR CONTROL USING INTELLIGENT CONTROL SCHEME <i>HIMANSHU CHAUDHARY, DR. RAJENDRA PRASAD & DR. N. SUKAVANUM</i>	1
2.	SECURITIZATION AS A FACTOR OF ECONOMIC INTEGRATION <i>DIVVIO GALLEGOS PANIAGUA & JOSE G. VARGAS-HERNANDEZ</i>	7
3.	E-GOVERNMENT - TRENDS AND CHALLENGES FROM THE PERSPECTIVE OF DEVELOPING NATIONS WITH FOCUS ON PAKISTAN <i>SHAKEEL IQBAL & DR. IJAZ A. QURESHI</i>	15
4.	INFLUENCE OF INTERNATIONAL LABOR MIGRATION AND REMITTANCES ON POVERTY REDUCTION IN BANGLADESH <i>MD. MORSHED HOSSAIN, MD. ZAHIR UDDIN ARIF & MD. NASIR UDDIN</i>	21
5.	APPLICATION OF SYSTEMATIC INNOVATION IN TECHNOLOGY DEVELOPMENT (RCA AND TOPSIS MODELS PRESENTATION TO DETERMINE PROBLEM SOLVING STRATEGIES) <i>DR. YOUNOS VAKIL ALROAIA, JAVAD SOFIYABADI & ELAHEH BAKHSHIZADEH</i>	27
6.	FINANCIAL FLEXIBILITY AND RISK MANAGEMENT <i>MOZAFFAR A CHOWDHURY</i>	35
7.	BOARD DEPENDENCE, INTERNAL AUDITORS AND EARNINGS MANAGEMENT: AN EMERICAL RESEARCH OF IRAN <i>MOHAMMADREZA ABDOLI, MARYAM SHAHRI & MOHSEN RAHMANI</i>	39
8.	CHILD LABOUR CONDITION IN RESTAURANT SECTOR OF BANGLADESH <i>JASMINE JAIM</i>	44
9.	FISCAL DEFICITS AND OUTPUT GROWTH IN NIGERIA <i>DR. FREDRICK ONYEBUCHI ASOGWA & MUSA SHERIFF URAMA</i>	47
10.	MEASURING THE QUALITY OF TEHRAN'S MUNICIPALITY SERVICES FROM THE VIEW POINT OF THE CLIENT <i>DR. AMIR HOSSEIN AMIRKHANI, SAYD MEHDI VEISEH, MARYAM GHASEMI & HAMIDEH SHEKARI</i>	52
11.	ATTITUDES OF INDIANS TOWARDS SERVICE QUALITY FOR LIFE INSURANCE IN INDIA <i>ANAND PRAKASH, SANJAY KUMAR JHA & S. P. KALLURKAR</i>	57
12.	PROFITABILITY PERFORMANCE: A CASE STUDY OF PANYAM CEMENTS AND MINERAL INDUSTRIES (AP), INDIA <i>N. VENKATA RAMANA, S. MD. AZASH & K. RAMA KRISHNAIAH</i>	64
13.	THE AUDIT EXPECTATION GAP: AN EMPIRICAL STUDY IN JORDAN <i>SULTAN HASSAN MOHAMMED AHMED & DR. D. RAGHUNATHA REDDY</i>	68
14.	DIFFUSION OF MOTOR VEHICLE SALES IN DELHI <i>DR. DEBABRATA DAS</i>	77
15.	AN EXPLORATORY INVESTIGATION ON EFFECTIVE RISK HANDLING ATTITUDES OF TOP BUSINESS LEADERS IN RELATION TO THEIR APPROACHES TOWARDS INNOVATION <i>DR. PUSHP LATA & ABHISHEK SYAL</i>	84
16.	AUTOMATIC INFORMATION COLLECTION & TEXT CLASSIFICATION FOR TELUGU CORPUS USING K-NN ALGORITHM <i>NADIMAPALLI V GANAPATHI RAJU, VIDYA RANI V, BHAVYA SUKAVASI & SAI RAMA KRISHNA CHAVA</i>	88
17.	RE-ATTEMPT CONNECTIVITY TO INTERNET ANALYSIS OF USER BY MARKOV CHAIN MODEL <i>DIWAKAR SHUKLA, KAPIL VERMA & SHARAD GANGELE</i>	94
18.	FACTORIAL STUDY OF STUDENTS ATTITUDE TOWARDS TECHNOLOGY ENABLED ACADEMIC LEARNING <i>SHARMILA.C & DR. R. RAJENDRAN</i>	100
19.	ATTITUDE AND PERCEIVED IMPORTANCE TOWARDS WORK-LIFE BALANCE POLICIES: A COMPARATIVE EMPLOYEE ANALYSIS OF PRIVATE AND PUBLIC SECTOR BANKS <i>S.M. SHARIQ ABBAS & VANDANA PREMI</i>	103
20.	AUDIENCE AWARENESS AND MULTICULTURAL COMMUNICATION <i>DR. DIVYA WALIA</i>	109
21.	FINANCIAL ANALYSIS OF INDIAN AUTOMOBILE INDUSTRY <i>DR. NISHI SHARMA</i>	112
22.	ANALYTICAL STUDY OF VARIOUS APPROACHES IN SERVICE QUALITY, DESIGN AND DEVELOPMENTS <i>DR. RAJESH N. PAHURKAR</i>	117
23.	WORK – FAMILY ROLE CONFLICT OF WOMEN TEACHERS IN ENGINEERING COLLEGES IN TIRUCHIRAPPALLI DISTRICT <i>DR. M. YASMIN & FAYAZ AHAMED .M.A.</i>	121
24.	INTERROGATION OF PACKAGING AND ADVERTISING <i>A.NITHYA</i>	125
25.	A COMPARATIVE STUDY OF THE DOT.COM CRISIS AND THE SUB-PRIME CRISIS <i>DR. T.GEETHA</i>	130
	REQUEST FOR FEEDBACK	136

A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories

Indexed & Listed at: [Ulrich's Periodicals Directory](#) ©, ProQuest, U.S.A., [Index Copernicus Publishers Panel](#), Poland, [Open J-Gate](#), India

as well as in [Cabell's Directories of Publishing Opportunities](#), U.S.A

Circulated all over the world & Google has verified that scholars of more than Hundred & Fifteen countries/territories are visiting our journal on regular basis.

Ground Floor, Building No. 1041-C-1, Devi Bhawan Bazar, JAGADHRI – 135 003, Yamunanagar, Haryana, INDIA

www.ijrcm.org.in

CHIEF PATRON

PROF. K. K. AGGARWAL

Chancellor, Lingaya's University, Delhi
Founder Vice-Chancellor, Guru Gobind Singh Indraprastha University, Delhi
Ex. Pro Vice-Chancellor, Guru Jambheshwar University, Hisar

PATRON

SH. RAM BHAJAN AGGARWAL

Ex. State Minister for Home & Tourism, Government of Haryana
Vice-President, Dadri Education Society, Charkhi Dadri
President, Chinar Syntex Ltd. (Textile Mills), Bhiwani

CO-ORDINATOR

MOHITA

Faculty, Yamuna Institute of Engineering & Technology, Village Gadholi, P. O. Gadholi, Yamunanagar

ADVISORS

PROF. M. S. SENAM RAJU

Director A. C. D., School of Management Studies, I.G.N.O.U., New Delhi

PROF. S. L. MAHANDRU

Principal (Retd.), Maharaja Agrasen College, Jagadhri

EDITOR

PROF. R. K. SHARMA

Dean (Academics), Tecnia Institute of Advanced Studies, Delhi

CO-EDITOR

MOHITA

Faculty, Yamuna Institute of Engineering & Technology, Village Gadholi, P. O. Gadholi, Yamunanagar

EDITORIAL ADVISORY BOARD

DR. AMBIKA ZUTSHI

Faculty, School of Management & Marketing, Deakin University, Australia

DR. VIVEK NATRAJAN

Faculty, Lomar University, U.S.A.

DR. RAJESH MODI

Faculty, Yanbu Industrial College, Kingdom of Saudi Arabia

PROF. PARVEEN KUMAR

Director, M.C.A., Meerut Institute of Engineering & Technology, Meerut, U. P.

PROF. H. R. SHARMA

Director, Chhatarpati Shivaji Institute of Technology, Durg, C.G.

PROF. MANOHAR LAL

Director & Chairman, School of Information & Computer Sciences, I.G.N.O.U., New Delhi

PROF. ANIL K. SAINI

Chairperson (CRC), Guru Gobind Singh I. P. University, Delhi

PROF. R. K. CHOUDHARY

Director, Asia Pacific Institute of Information Technology, Panipat

DR. ASHWANI KUSH

Head, Computer Science, University College, Kurukshetra University, Kurukshetra

DR. BHARAT BHUSHAN

Head, Department of Computer Science & Applications, Guru Nanak Khalsa College, Yamunanagar

DR. VIJAYPAL SINGH DHAKA

Head, Department of Computer Applications, Institute of Management Studies, Noida, U.P.

DR. SAMBHAVNA

Faculty, I.I.T.M., Delhi

DR. MOHINDER CHAND

Associate Professor, Kurukshetra University, Kurukshetra

DR. MOHENDER KUMAR GUPTA

Associate Professor, P. J. L. N. Government College, Faridabad

DR. SAMBHAV GARG

Faculty, M. M. Institute of Management, Maharishi Markandeshwar University, Mullana

DR. SHIVAKUMAR DEENE

Asst. Professor, Government F. G. College Chitgappa, Bidar, Karnataka

DR. BHAVET

Faculty, M. M. Institute of Management, Maharishi Markandeshwar University, Mullana

ASSOCIATE EDITORS

PROF. ABHAY BANSAL

Head, Department of Information Technology, Amity School of Engineering & Technology, Amity University, Noida

PROF. NAWAB ALI KHAN

Department of Commerce, Aligarh Muslim University, Aligarh, U.P.

DR. ASHOK KUMAR

Head, Department of Electronics, D. A. V. College (Lahore), Ambala City

ASHISH CHOPRA

Sr. Lecturer, Doon Valley Institute of Engineering & Technology, Karnal

SAKET BHARDWAJ

Lecturer, Haryana Engineering College, Jagadhri

TECHNICAL ADVISORS

AMITA

Faculty, Government H. S., Mohali

MOHITA

Faculty, Yamuna Institute of Engineering & Technology, Village Gadholi, P. O. Gadholi, Yamunanagar

FINANCIAL ADVISORS

DICKIN GOYAL

Advocate & Tax Adviser, Panchkula

NEENA

Investment Consultant, Chambaghat, Solan, Himachal Pradesh

LEGAL ADVISORS

JITENDER S. CHAHAL

Advocate, Punjab & Haryana High Court, Chandigarh U.T.

CHANDER BHUSHAN SHARMA

Advocate & Consultant, District Courts, Yamunanagar at Jagadhri

SUPERINTENDENT

SURENDER KUMAR POONIA

CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to recent developments & practices in the area of Computer, Business, Finance, Marketing, Human Resource Management, General Management, Banking, Insurance, Corporate Governance and emerging paradigms in allied subjects like Accounting Education; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Monetary Policy; Portfolio & Security Analysis; Public Policy Economics; Real Estate; Regional Economics; Tax Accounting; Advertising & Promotion Management; Business Education; Business Information Systems (MIS); Business Law, Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labor Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; Public Administration; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism, Hospitality & Leisure; Transportation/Physical Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Digital Logic; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Multimedia; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic and Web Design. The above mentioned tracks are only indicative, and not exhaustive.

Anybody can submit the soft copy of his/her manuscript **anytime** in M.S. Word format after preparing the same as per our submission guidelines duly available on our website under the heading guidelines for submission, at the email addresses: **1** or info@ijrcm.org.in.

GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1. **COVERING LETTER FOR SUBMISSION:**

DATED: _____

THE EDITOR

IJRCM

Subject: SUBMISSION OF MANUSCRIPT IN THE AREA OF _____.

(e.g. Computer/IT/Finance/Marketing/HRM/General Management/other, please specify).

DEAR SIR/MADAM

Please find my submission of manuscript titled ' _____ ' for possible publication in your journal.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published elsewhere in any language fully or partly, nor is it under review for publication anywhere.

I affirm that all author (s) have seen and agreed to the submitted version of the manuscript and their inclusion of name (s) as co-author (s).

Also, if our/my manuscript is accepted, I/We agree to comply with the formalities as given on the website of journal & you are free to publish our contribution to any of your journals.

NAME OF CORRESPONDING AUTHOR:

Designation:

Affiliation with full address & Pin Code:

Residential address with Pin Code:

Mobile Number (s):

Landline Number (s):

E-mail Address:

Alternate E-mail Address:

2. **INTRODUCTION:** Manuscript must be in British English prepared on a standard A4 size paper setting. It must be prepared on a single space and single column with 1" margin set for top, bottom, left and right. It should be typed in 8 point Calibri Font with page numbers at the bottom and centre of the every page.
3. **MANUSCRIPT TITLE:** The title of the paper should be in a 12 point Calibri Font. It should be bold typed, centered and fully capitalised.
4. **AUTHOR NAME(S) & AFFILIATIONS:** The author (s) full name, designation, affiliation (s), address, mobile/landline numbers, and email/alternate email address should be in italic & 11-point Calibri Font. It must be centered underneath the title.
5. **ABSTRACT:** Abstract should be in fully italicized text, not exceeding 250 words. The abstract must be informative and explain the background, aims, methods, results & conclusion in a single para.
6. **KEYWORDS:** Abstract must be followed by list of keywords, subject to the maximum of five. These should be arranged in alphabetic order separated by commas and full stops at the end.
7. **HEADINGS:** All the headings should be in a 10 point Calibri Font. These must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.
8. **SUB-HEADINGS:** All the sub-headings should be in a 8 point Calibri Font. These must be bold-faced, aligned left and fully capitalised.
9. **MAIN TEXT:** The main text should be in a 8 point Calibri Font, single spaced and justified.
10. **FIGURES & TABLES:** These should be simple, centered, separately numbered & self explained, and titles must be above the tables/figures. Sources of data should be mentioned below the table/figure. It should be ensured that the tables/figures are referred to from the main text.
11. **EQUATIONS:** These should be consecutively numbered in parentheses, horizontally centered with equation number placed at the right.
12. **REFERENCES:** The list of all references should be alphabetically arranged. It must be single spaced, and at the end of the manuscript. The author (s) should mention only the actually utilised references in the preparation of manuscript and they are supposed to follow **Harvard Style of Referencing**. The author (s) are supposed to follow the references as per following:
 - All works cited in the text (including sources for tables and figures) should be listed alphabetically.
 - Use (ed.) for one editor, and (ed.s) for multiple editors.
 - When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc, in chronologically ascending order.
 - Indicate (opening and closing) page numbers for articles in journals and for chapters in books.
 - The title of books and journals should be in italics. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.
 - For titles in a language other than English, provide an English translation in parentheses.
 - The location of endnotes within the text should be indicated by superscript numbers.

PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:

BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio," Ohio State University.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITE

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Economic and Political Weekly, Viewed on July 05, 2011 <http://epw.in/user/viewabstract.jsp>

FINANCIAL ANALYSIS OF INDIAN AUTOMOBILE INDUSTRY

DR. NISHI SHARMA
ASST. PROFESSOR
UNIVERSITY INSTITUTE OF APPLIED MANAGEMENT SCIENCES
PANJAB UNIVERSITY
CHANDIGARH

ABSTRACT

Recent recession caused torrid impact on the financial performance of several industries worldwide. Most of them failed to confront with the market oscillations and produced crummy results. In the perfidious market conditions only that industry could remain resilient which is competent enough to make best possible use of assets and liabilities of organisation. In this context, Indian Automobile industry witnessed its worthiness to cope up the needs of precarious market. During last few decades it emerged out as one of the strong motors of Indian economy. However, in the recent year 2010-11 the sector faced some adverse changes in market which caused a significant downfall in the performance of many organisations. In this context, the present paper analyse the financial performance of seven monarchs companies of four-wheel segment (i.e., passenger car sector and commercial vehicle sector) of automobile industry for the period of 10 years from 2001-02 to 2010-11. It analyse the financial performance of selected units on the basis of 11 financial variables representing four different parameters viz., profitability, liquidity, managerial efficiency (activity) and leverage (long-term solvency) of the organisation. The paper also attempts to investigate whether the performance of different companies is similar to each other or is there any significant difference in that. It further assigns ranks to different companies on the basis of their performance and suggests some measures for the further improvement of the sector.

KEYWORDS

Automobile Industry, Leverage, Liquidity, Managerial Efficiency and Profitability.

INTRODUCTION

Indian automobile industry can broadly be classified into three prominent segments viz., passenger vehicle segment, low/high commercial vehicle segment and two/three wheeler segment. According to OICA (2009) India's passenger car and commercial vehicle manufacturing industry is the seventh largest industry in the world with an annual production of more than 2.6 million units in 2009. Studies have found that in the forthcoming decades, there are very well prospective to Indian automobile sector in comparison to many other countries. IBEF (2010) also found that recent acquisition of Jaguar and Land Rover brands by Tata Motors and launch of world's cheapest car, 'Tata Nano' has taken the Indian automobile market on the global map. The increased availability of smaller and affordable cars is one of the strong reasons claiming expansion of the passenger vehicles market in India.

But rising interest rate, sharp increment in the price of petrol and high inflationary pressure on the cost of auto-components have bought serious downfall in the performance of many companies. In this context, the present paper analyse the financial performance of the passenger vehicle manufacturers and commercial vehicle manufacturers of the industry for a period of 10 years from 2001-02 to 2010-11. Though the players in this sector have risen from five to more than thirty five during last three decades (IBEF 2010), Indian four-wheel segment is still dominated by few business tycoons. The present paper studies the performance of seven leading Indian companies of the industry. The selection of the company is done on the basis of their market share. The companies selected from passenger vehicle segment, are Tata Motors Limited, Maruti Suzuki India Limited, Mahindra & Mahindra Limited and Hindustan Motors Limited. The companies studied from commercial vehicle segment are SML Isuzu, Ashok Leyland and VST Tillers. The paper attempts to investigate that whether the financial performance of selected companies is similar to each other or is there any significant difference in that. The paper also assigns ranks to different companies on the basis of their past performance and offers some suggestions for the further improvement of the industry.

REVIEW OF RELATED LITERATURE

The growth of Indian automobile sector is more witnessed after the liberalisation of economy. Since that period, an exponential growth has been observed in production, domestic sales, product designs, export etc. According to an estimate, the unprecedented growth and innovative practices of the industry assure that it will shortly achieve an annual growth rate perhaps more than double of China and the triad of North America, Europe and Japan. Due to the immense importance of the industry, its performance has always been a lucrative area for the researchers. During last decade many researchers have agreed upon the better prospective of the sector. According to the report of Automotive Component Manufacturers Association of India (2010), Indian automobile sector's export to Western Europe expected to rise by more than five times in the forthcoming decade and particularly for compact cars, India would become a global hub very shortly. McKinsey (2005) estimated that growth potential of India-based automotive component manufacturing will become around 500 per cent, from 2005 to 2015. Sagar and Chandra (2004) found that the substantial deepening of technological capabilities in the Indian automobile industry augurs well for the future. Ghosh et.al. (2011) recognised India's per capita real GDP growth as one of the key drivers of growth for the country's automobile industry. During last decade the performance of the industry was analysed on the basis of different variables. For instance, Tendulkar et al., (2006) finds that in a regulated regime, vertical integration plays a positive role. Piplai (2001) examines the effects of liberalisation on the Indian vehicle industry, in terms of production, marketing, export, technology tie-up, product up gradation and profitability.

NEED OF THE STUDY

As shown above most of the research has been undertaken to analyse the growth of Indian automobile sector, but still there is a dearth of comparative study to analyse the financial performance of individual company. In this context, the present paper attempts to analyse the financial performance of seven leading companies of passenger and commercial vehicle segment of Indian automobile industry. It analyse them on the basis of four financial parameters viz., profitability, liquidity, managerial efficiency and leverage condition for the period of 10 years from 2001-02 to 2010-11.

OBJECTIVES OF THE STUDY

The present paper aims at the following objectives:

- To analyse the financial performance of Indian automobile industry.
- To compare profitability of selected companies.
- To compare liquidity of selected automobile companies.
- To compare the efficiency of managers of selected units.
- To compare leverage position of selected automobile companies.
- To test the significance of difference (if any) in selected variables.
- To assign ranks to selected companies on the basis of their average financial performance during 2001-11.

RESEARCH METHODOLOGY

Indian automobile industry has two distinct set of players viz., automobile component manufacturers and the vehicle manufacturers, which are also referred as OEMs. From the view point of the segments, it may be broadly categorized into three segments viz., low/high commercial vehicle manufacturers, passenger vehicle manufacturers, two/three wheeler producers. The present paper studies the performance of commercial and passenger vehicle segment of the industry in terms of four different financial parameters.

SAMPLE

The paper studies the performance of seven automobile companies of this segment. The selection of the company is done on the basis of their market share. Companies selected from passenger vehicle segment are Tata Motors Limited, Maruti Suzuki India Limited, Mahindra and Mahindra Limited and Hindustan Motors Limited. Leading Indian companies selected from low/high commercial vehicle segment are SML Isuzu, Ashok Leyland and VST Tillers.

NULL HYPOTHESES

The study proposes to test the following null hypotheses:

H01: There is no significant difference in profitability of selected units.

H02: There is no significant difference in liquidity of selected units.

H03: There is no significant difference in managerial efficiency of selected units.

H04: There is no significant difference in leverage of selected units.

DATA

The present study is largely analytical in nature and focuses on financial analysis of automobile industry in India. It analyse the performance of seven leading companies of four-wheel segment of Indian automobile industry. There are different tools to investigate the efficiency level, but the ratio analysis has been found most suitable and has been applied in the paper for analysis. The study attempts to investigate significant difference (if any) in the financial performance of the selected units on the basis of four parameters viz., profitability, liquidity, managerial efficiency and leverage. Profitability of companies has been analysed on the basis of five variables viz., Operating Margin (%), Net Profit Margin (%), Adjusted Earnings per Share (EPS), Adjusted Return on Net Worth (%) and Dividend per Share. The analysis of liquidity position has been done on the basis of current ratio and quick ratio. As managerial efficiency of a company lies with effective use of the assets therefore, managerial efficiency has been tested on the basis of inventory turnover ratio and fixed asset turnover ratio. The leverage (long term solvency) of selected companies has been analysed through the ratio of long-term debt to equity and proprietary ratio i.e., the proportion of owner's fund to total resources. The data used for analysis is a secondary data (taken from way2wealth.com). The data has been collected for a period of 10 years from 2001-02 to 2010-11.

ANALYSIS OF DATA

The financial performance of selected companies have been analysed through financial ratios. Simple statistical techniques: averages, standard deviation, minimum and maximum value have been used to interpret the data. As the study also attempts to investigate whether the financial performance in terms of ratios are similar or is there any significance difference in that. To test the difference in the performance of companies one way ANOVA test has been applied. The statistical results have been tested at 95% confidence level (5% level of significance) as well as at 99% confidence level (1% level of significance). If the computed value of F ratio is found more than the critical value at the respective level of significance the null hypothesis will be rejected and if the same is lesser than the critical value of F-test the corresponding hypothesis will be accepted. Further ranks will also be assigned to different companies on the basis of their financial performance.

LIMITATIONS

The study is based on the secondary data and is subject to the authenticity of the available data. Further, the percentage of different models produced by the company could not be taken into account due to non-availability of sales composition. The study also suffers from the limitation of sample size and period of study.

FINDINGS

COMPARISON OF SELECTED COMPANIES

PROFITABILITY ANALYSIS

Profitability indicates company's efficiency to manage the resources and generate profit for its stakeholders. It could be analysed through various ratios. The present paper studies five profitability ratios viz., operating margin, net margin, return on net worth, earning per share and dividend per share. Return on net worth and earnings per share have been taken after adjustment. The results of ratio analysis of profitability are shown in table 1:

TABLE 1: ANALYSIS OF PROFITABILITY RATIO OF SELECTED COMPANIES (APRIL 2001 TO MARCH 2011)

Profitability Ratio	Tata Motors	Maruti Suzuki	Mahindra & Mahindra	Hindustan Motors	SML Isuzu	Ashok Leyland	VST Tillers
Operating Margin (%)							
Mean	10.329	11.465	11.107	-2.6090	6.6770	10.387	12.991
Standard Deviation	1.93	3.54	2.57	5.78	1.07	1.39	3.50
High	13.25	15.29	16.29	6.170	7.810	12.65	18.90
Low	6.710	6.220	8.210	-9.530	4.960	7.660	6.450
Net Profit Margin (%)							
Mean	5.0600	6.5850	8.0330	-2.9580	3.1800	5.1950	7.4050
Standard Deviation	2.58	3.06	2.86	5.79	1.09	1.09	2.92
High	7.350	10.29	11.12	5.320	4.390	6.290	12.19
Low	-0.8400	1.420	3.580	-10.98	0.8700	3.040	2.720
Adjusted Return On Net Worth (%)							
Mean	15.882	15.993	19.408	-92.147	28.084	17.609	19.462
Standard Deviation	10.5	6.79	7.40	99.7	16.1	5.38	10.1
High	30.12	23.24	27.28	4.310	51.69	23.72	34.46
Low	-4.060	3.930	5.820	-348.1	4.650	8.650	0.4500
Adjusted EPS							
Mean	25.980	50.644	30.613	-3.9130	15.989	5.4940	23.764
Standard Deviation	14.8	28.6	13.0	2.13	7.14	4.89	20.0
High	43.76	93.66	43.83	0.1000	25.71	16.65	53.46
Low	-3.130	4.100	7.610	-6.990	4.280	1.370	0.2300
Dividend Per Share							
Mean	10.850	6.5000	9.6500	0.00	5.1500	2.6700	4.4000
Standard Deviation	6.14	8.49	2.60	0.00	2.10	2.22	2.74
High	20.00	30.00	13.00	0.00	8.000	7.500	9.000
Low	0.000	1.500	5.000	0.00	1.500	1.000	1.000

The analysis of operating and net margin reveals that commercial vehicle manufacturer VST Tillers is leading and is followed by Maruti Suzuki and Mahindra and Mahindra. The performance of SML Isuzu remained lesser volatile during the study period however margin secured by it is not very satisfactory. The competitive performance of Mahindra and Mahindra shows its strength to maintain its resilience. Its worst performance on this parameter, during the study period, is better than that of its peer group. The average adjusted EPS of Maruti Suzuki is far ahead from other enterprises. However, average dividend payout ratio of the company is not so liberal. Dividend declared by Tata Motors is comparatively more than the other companies of the group but undoubtedly, it is highly volatile. The average profitability of Hindustan Motors is not so sound throughout the study period and that resulted into non-declaration of dividend. The study further found that the operating and net margins of automobile industry in India are not so volatile as compared to return on net worth and earnings per share.

LIQUIDITY ANALYSIS

Liquidity analysis attempts to analyse the firm's ability to meet its immediate maturing short-term obligations. It is usually done through the calculation of current ratio and quick (liquid) ratio. A company must attempt to maintain optimum (ideal) ratio which undoubting depends upon the type of manufacturing industry. If liquidity ratios of a company are higher than the ideal ratios, the company is said to be having idle investment. Likewise, if ratio is lesser to required one, the deficit will represent possible difficulties in the payment of current liabilities of firm and it is surely not a healthy sign for the company. The results of liquidity analysis have been shown in table 2.

TABLE 2: ANALYSIS OF LIQUIDITY RATIO OF SELECTED COMPANIES (APRIL 2001 TO MARCH 2011)

Liquidity Ratio	Tata Motors	Maruti Suzuki	Mahindra & Mahindra	Hindustan Motors	SML Isuzu	Ashok Leyland	VST Tillers
Current Ratio							
Mean	0.91900	1.4130	1.1610	1.0750	1.5030	1.4200	1.8150
Standard Deviation	0.208	0.259	0.173	0.276	0.310	0.304	0.188
High	1.240	1.770	1.430	1.480	2.180	2.040	2.110
Low	0.6200	1.020	0.8600	0.7000	1.100	1.090	1.540
Quick Ratio							
Mean	0.64800	1.0460	0.81700	0.53600	0.95800	0.86900	1.0470
Standard Deviation	0.179	0.244	0.127	0.124	0.194	0.268	0.208
High	0.9600	1.310	1.010	0.7200	1.230	1.260	1.420
Low	0.4300	0.6600	0.6200	0.3700	0.6400	0.5300	0.7600

Liquidity ratios of selected companies reveal that liquidity position of commercial vehicle segment is better than that of passenger car manufacturers. VST Tillers' proportion of current as well as liquid assets is sufficient enough to meet its current liabilities. However, liquidity positions of Tata Motors and Hindustan Motors are not so healthy in comparison to other units.

MANAGERIAL EFFICIENCY ANALYSIS

Managerial efficiency of a company lies in making optimum utilisation of the assets of the companies. In this context, the paper studies inventory turnover ratio and fixed assets ratio of selected companies. Inventory is the most crucial asset for a manufacturing organisation. Particularly with reference to inventory turnover ratio, the cost of materials in Indian auto industry is the major component in production cost and its share is increasing (Narayanan and Vashishth 2008). The managerial efficiency to keep an optimum level of asset lies in maintaining an adequate ratio of assets to turnover. For instance inventory turnover ratio depicts how long a company takes on an average to sale its stock and replaces its inventory. Higher inventory turnover is considered to be desirable as it usually implies strong sales. On the contrary, lower turnover ratio reflects the poor volume of sales and excess inventory which ultimately accounts for an investment with a zero rate of return. Likewise, Higher fixed asset ratio implies that company has invested lesser amount in fixed assets to generate sales revenue hence it depicts better ability of company to utilise the fixed assets. On the contrary, lower ratio expresses the company's efficiency to use its fixed assets in an optimum manner. The results of ratio analysis are shown in table 3.

TABLE 3: ANALYSIS OF MANAGERIAL EFFICIENCY RATIO OF SELECTED COMPANIES (APRIL 2001 TO MARCH 2011)

Efficiency Ratio	Tata Motors	Maruti Suzuki	Mahindra & Mahindra	Hindustan Motors	SML Isuzu	Ashok Leyland	VST Tillers
Inventory Turnover Ratio							
Mean	12.977	25.077	12.989	9.2350	6.7220	7.0400	6.7200
Standard Deviation	1.67	5.49	2.39	3.66	1.65	1.62	1.72
High	14.91	30.47	17.91	17.94	9.110	9.240	10.07
Low	9.900	15.00	10.04	5.250	4.080	4.800	4.070
Fixed Asset Turnover Ratio							
Mean	2.1940	2.3190	2.7210	1.3720	10.109	1.9410	3.1290
Standard Deviation	0.557	0.458	0.830	0.393	4.26	0.617	1.06
High	3.080	3.090	3.850	2.370	14.73	2.860	5.070
Low	1.270	1.640	1.520	0.9500	4.040	1.250	1.710

The analysis of inventory turnover ratio shows that the performance of passenger vehicle manufacturers (Maruti Suzuki followed by Mahindra and Tata group) could be called satisfactory. However the study of fixed asset turnover ratio indicates the efficiency of SML Isuzu of commercial vehicle segment to generate revenue from its fixed assets.

LEVERAGE (LONG-TERM SOLVENCY) ANALYSIS

Leverage ratios are designed to depict the future prospects of company to get finance. These ratios also give an idea about the degree of risk caused as a result of debt financing. The present study analyse the leverage of the selected companies though the study of two ratios viz., debt-equity ratio and proprietary ratio. Here, it is important to mention that only long term debts have been considered for the calculation of the ratio. Usually, lower the debt-equity ratio, higher is the degree of protection enjoyed by the creditors. This is so because company has to pay fixed obligation in the form of interest irrespective of the volume of the profit. On the contrary as proprietary ratio represents the owner's fund to assets. Higher ratio generally indicates secured position to creditors and a lower ratio indicates greater risk to creditors. The solvency ratios may be studied through table 4.

TABLE 4: ANALYSIS OF LEVERAGE RATIO OF SELECTED COMPANIES (APRIL 2001 TO MARCH 2011)

Leverage Ratio	Tata Motors	Maruti Suzuki	Mahindra & Mahindra	Hindustan Motors	SML Isuzu	Ashok Leyland	VST Tillers
Long Term Debt / Equity							
Mean	0.5500	0.0690	0.5900	1.8750	0.1020	0.6290	0.0650
Standard Deviation	0.1860	0.0489	0.2130	0.9930	0.2190	0.3070	0.0943
High	0.7900	0.1600	0.9100	3.7700	0.6200	1.0000	0.2400
Low	0.3100	0.0100	0.2300	0.8700	0.0000	0.2400	0.0000
Proprietary Ratio							
Mean	58.6840	91.8040	66.3860	32.4130	56.4530	59.7560	91.7540
Standard Deviation	8.4800	5.1900	9.3500	9.6500	22.5000	9.1200	7.7600
High	74.0200	98.7000	81.0300	49.2300	88.0500	74.5000	99.3800
Low	47.0500	80.4900	51.9300	16.5600	30.4600	49.9800	77.1100

Leverage analysis of selected companies reveals that the long-term solvency position of VST Tillers and Maruti Suzuki is very satisfactory to their creditors. These companies enjoy least average long-term equity ratio and higher average proprietary ratio in comparison to their peer group. Further the leverage position of these companies is relatively lesser volatile. The study also shows that the leverage position of Hindustan Motors is not very pleasant for its creditors.

TEST OF HYPOTHESES

TEST OF SIGNIFICANCE OF DIFFERENCE

To test the null hypotheses, financial ratios have further been analysed through ANOVA test. The results of ANOVA are tested at 5% level of significance (95% confidence level) as well as at 1% level of significance (99% confidence level). The null hypothesis is acceptable if the calculated value of F ratio is less than the critical value of F ratio. On the contrary, if calculated value is more than the critical value, the respective null hypothesis will be rejected. The results of ANOVA test for all 11 variables are presented in table 5.

TABLE 5: RESULTS OF ANOVA TEST

Analysis	F-ratio (for degree of freedoms 6 and 63)
Profitability	
Operating Margin (%)	27.61
Net Profit Margin (%)	14.15
Adjusted Return On Net Worth (%)	11.91
Adjusted EPS	13.07
Dividend Per Share	7.561
Liquidity	
Current Ratio	14.38
Quick Ratio	9.704
Managerial Efficiency (Activity)	
Inventory Turnover Ratio	50.17
Fixed Assets Turnover Ratio	30.23
Leverage (Long term Solvency)	
Long Term Debt / Equity	23.23
Proprietary (Owners fund as % of total Source)	33.20

The critical value of F-ratio at 95% level of significance is 2.25 and at 99% level of significance is 3.10. As the calculated values of F ratio, for all selected variables, are greater than the critical value at both of the level of significance therefore all null hypotheses have been rejected and we may conclude that there is a significant difference in the financial performance of selected units in terms of selected variables. As the management practice of selected companies significantly differs with each other, the following section provides ranks to these companies on the basis of their average performance during 2001-11.

RANKING OF THE COMPANIES

This section assigns ranks to different companies for selected variables on the basis of their average performance. A company showing best average performance for a particular variable has been assigned 1st rank for that variable and likewise company securing least ratio has been assigned 7th rank for that variable. However, for long-term debt to equity ratio the methodology has been reversed as lower ratio is preferable by creditors. After the assignment of ranks to all the variables, the composite score for each parameter has been computed and again ranks are been assigned for each parameter. The parameter having least value of composite score has been assigned first rank and parameter having highest score has been assigned last rank. The assignment of ranks could be understood through table 6:

TABLE 6: ASSIGNMENT OF RANKS TO SELECTED COMPANIES ON THE BASIS OF THEIR AVERAGE PERFORMANCE (2001-11)

Particulars	Tata Motors	Maruti Suzuki	Mahindra & Mahindra	Hindustan Motors	SML Isuzu	Ashok Leyland	VST Tillers
Profitability							
Operating Margin (%)	5	2	3	7	6	4	1
Net Profit Margin (%)	5	3	1	7	6	4	2
Adjusted Return On Net Worth (%)	6	5	3	7	1	4	2
Adjusted EPS	3	1	2	7	5	6	4
Dividend Per Share	1	3	2	7	4	6	5
Composite Score	20	14	11	35	22	24	14
Rank on the basis of Profitability	III	II	I	VI	IV	V	II
Liquidity							
Current Ratio	7	4	5	6	2	3	1
Quick Ratio	6	2	5	7	3	4	1
Composite Score	13	6	10	13	5	7	2
Rank on the basis of Liquidity	VI	III	V	VI	II	IV	I
Managerial Efficiency (Activity)							
Inventory Turnover Ratio	3	1	2	4	6	5	7
Fixed Assets Turnover Ratio	5	4	3	7	1	6	2
Composite Score	8	5	5	11	7	11	9
Rank on the basis of Efficiency	III	I	I	V	II	V	IV
Leverage (Long term Solvency)							
Long Term Debt / Equity	4	2	5	7	3	6	1
Proprietary (Owners fund as % of total Source)	5	1	3	7	6	4	2
Composite Ratio	9	3	8	14	9	10	3
Rank on the basis of Leverage	III	I	II	V	III	IV	I

Source: Author's Calculation

As shown from table 6, Mahindra & Mahindra Limited found best in terms of profitability among all the peer companies of the industry. It is followed by Maruti Suzuki, VST Tillers and Tata Motors. In terms of liquidity, commercial vehicle manufacturers are more efficient. However, passenger vehicle manufacturer Maruti Suzuki also demonstrates sound liquidity position. The managerial efficiency of Maruti is also very satisfactory in the industry. The leverage positions of Maruti

Suzuki and VST Tillers are very satisfactory. However the same for Hindustan Motors is not very rosy. Further, here it is important to note that the pre-indicated ranks are not the sole indicator of business efficiency. As a matter of fact the interpretation of ratio depends upon number of factors. In the present paper a general criteria for assessment of ratio has been used. According to which the firm with higher profitability, higher liquidity ratios (not more than ideal ratio), lower debt-equity ratio (not less than ideal ratio), higher proprietary ratio (not more than ideal ratio) and higher turnover ratio is assumed to be more efficient.

CONCLUSION

The analysis reveals that the management of asset is a matter of great concern for every segment of automobile sector (as decision regarding investment in any asset or reallocating the fund makes a substantial difference to company's profitability). The study of selected pioneer companies for the period from 2001-02 to 2010-11 demonstrates the difference in the financial management of the companies. The financial performance of Mahindra & Mahindra Limited as well as Tata Motors is very satisfactory in terms of profitability as well as managerial efficiency to generate sales from the use of assets. But their liquidity positions are not so sound. The liquidity position of commercial vehicle manufacture is better than passenger vehicle manufacturers. Further, the financial performance of Ashok Leyland is comparatively poor to its competitors SML Isuzu and VST Tillers. Leverage analysis found that there is better long term solvency scenario for passenger vehicle industry Maruti Suzuki and commercial vehicle industry VST Tillers. The performance of Hindustan Motors, from the passenger vehicle segment, is not very satisfactory and requires better strategies to meet the challenges of tycoons. The trend of profitability of selected units particularly that of passenger vehicle manufacturers, shows a downward slope which is a consequent of rapid rise in the price of petrol (causing reduction in potential of volume purchased by customers), increment in the price of components used for production and growing incidence of interest rate. Thus in order to mitigate the involved risk and volatility of performance, government should initiate immediate steps to control the price of petrol, components and interest rates. Further there is a good scope to produce compact products to meet the current requirements.

REFERENCES

- Automotive Component Manufacturers Association of India (2010), "Indian Auto Component Industry: An Overview", retrieved from http://acmainfo.com/docmgr/Status_of_Auto_Industry/Status_Indian_Auto_Industry.pdf, accessed on May 2011
- Ghosh, A., Ray, S. And Makkar, J. (2011) "Two-Wheeler Industry: Growth Drivers Intact", Report of Investment Information and Credit Rating Agency of India. Retrieved from <http://www.icra.in/Files/ticker/Two-Wheeler%20Industry%20Note,%20June%202011.pdf> accessed on September 2011
- IBEF (2010), "India Brand Equity Foundation report on Automotives", April 2010, retrieved from http://www.ibef.org/download/Automotives_060710.pdf, accessed on March 2011.
- McKinsey (2005), "Vision 2015 for the Indian Automotive Components Industry", Automotive Component Manufacturers Association of India and McKinsey and Company. Retrieved from http://www.mckinsey.com/locations/india/mckinseyonindia/pdf/New_Global_Order_Automotive_Suppliers.pdf, accessed on April 2011.
- Narayanan, G., and Vashishth, P. (2008), "Determinants of Competitiveness of the Indian Auto Industry", Working Paper No.201, Indian Council for Research on International Economic Relations. Retrieved from http://www.icrier.org/pdf/Working%20Paper%20201_final.pdf accessed on January 2011
- Organisation Internationale des Constructeurs d'Automobiles (2009), "OICA Production Statistics" retrieved from <http://oica.net/category/production-statistics>, accessed on April 2011.
- Piplai, T. (2001), "Automobile Industry: Shifting Strategic Focus", Economic and Political Weekly, 36(30), pp. 2892-2897.
- Sagar, A. D. and Chandra, P. (2004), "Technological Change in the Indian Passenger Car Industry" BCSIA Discussion Paper 2004-05, Energy Technology Innovation Project, Kennedy School of Government, Harvard University, 2004. Retrieved from http://belfercenter.ksg.harvard.edu/files/2004_Sagar_Chandra.pdf, accessed on May 2011
- Tendulkar, S. D., Mitra, A., Narayanan, K. and Das, D.K. (2006), "India: Industrialisation in a Reforming Economy", Academic Foundation, New Delhi, pp. 439-470.

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Computer Application and Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you to supply your critical comments and suggestions about the material published in this issue as well as on the journal as a whole, on our E-mails i.e. **infoijrcm@gmail.com** or **info@ijrcm.org.in** for further improvements in the interest of research.

If you have any queries please feel free to contact us on our E-mail **infoijrcm@gmail.com**.

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-

Co-ordinator