A COMPARATIVE STUDY OF INDIAN AND INTERNATIONAL COMMERCIAL VEHICLE BRANDS WITH REFERENCE TO RANE BRAKE LINING LTD.

SHARMILA B

412421631044

Of

SRI SAIRAM INSTITUTE OF TECHNOLOGY
AN AUTONOMOUS INSTITUTION
A PROJECT REPORT

Submitted to the

FACULTY OF MANAGEMENT SCIENCES

In partial fulfillment of the requirements
For the award of the degree

Of

MASTER OF BUSINESS ADMINISTRATION
ANNA UNIVERSITY

CHENNAI - 600025
JUNE 2023

BONAFIDE CERTIFICATE

This is to certify that this Report titled. **"A COMPARATIVE STUDY OF INDIAN AND INTERNATIONAL COMMERCIAL VEHICLE BRANDS WITH REFERENCE TO RANE BRAKE LINING LTD."** is the Bonafide work of **SHARMILA B, 4124216344** who, carried out the research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any otherproject report on dissertation on the basis of which a degree or award was conferred on an earlieroccasion on this or any other candidate.

DR.IMMACULATE.P.S   DR.SENTHILNATHAN.C.R

Signature of the Guide   **Signature of the HOD**

INTERNAL EXAMINER   **EXTERNAL EXAMINER**

DECLARATION

I, SHARMILA B, hereby declare that the Project report, entitled **"A COMPARATIVE ANALYSIS OF INDIAN AND INTERNATIONAL COMMERCIAL VEHICLE BRANDS WITH REFERENCE TO RANE BRAKE LINING LTD."** submitted to Anna university, Chennai in partial fulfillment of the requirement for the award of the degree of **MASTER OF BUSINESS ADMINISTRATION** is record of original and independent research work done by me during MONTH, YEAR under the supervision of DR.IMMACULATE.P.S **SriSairam Institute of Technology / Department of Management Studies**, and it has not formedthebasis for the degree or other similar title to any candidate of any university.

<div align="right">

SHARMILA B

</div>

ACKNOWLEDGEMENT

First of all I would like to praise the Almighty for the countless blessings that he showered upon me to complete this project work.

I am thankful to our Chief Executive Officer **Dr. SAI PRAKASH LEOMUTHU** for providing excellent environment and infrastructure at Sri Sairam Institute of Technology

I would like to express my sincere thanks to **DR K PALANIKUMAR** Principal of Sri Sairam Institute of Technology, Chennai for extending his moral support to complete the project work.

I extend my heartfelt thanks to **Dr. K.MARAN,** Director, Sri Sairam Institute of Management Studies, Chennai for his valuable ideas guidance and support for the successful completion of thisproject work.

I also thank **Dr C R Senthilnathan,** Head of the Department, who motivated to carryout and complete this project work.

I also thank faculty my guide *Dr. Immaculate P S,* who inspired me to undertake and complete this project work.

Finally I express my gratitude to all my faculty members, my parents all my friends and well- wishers for the successful completion of this project work.

SHARMILA B

ABSTRACT

The purpose of this research is to compare Indian and international commercial vehicle brands. The goal is to obtain insight into the similarities, distinctions, and competitive advantages of various commercial vehicle brands. The study emphasizes the need of understanding the dynamics between Indian and foreign brands in order to assist strategic decision-making and increase Indian commercial vehicle makers' competitiveness. The study employs a mixed-methods approach to data gathering and analysis, incorporating quantitative and qualitative data. Data is collected from a variety of sources, such as industry publications, corporate websites, consumer surveys, and expert interviews. Product quality, innovation, brand recognition, customer happiness, price, distribution networks, and after-sales support are among the important characteristics examined in the study.

The research study has implications for various stakeholders, including commercial vehicle manufacturers, policymakers, investors, and consumers. By examining the competitive landscape and understanding the factors that influence brand performance, this study contributes to the development of effective strategies for Indian commercial vehicle manufacturers to enhance their market position, expand their customer base, and foster innovation in the industry.

Keywords: Commercial vehicle, Brands, Innovation, Comparison, and industry.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER - I
INTRODUCTION

INTRODUCTION

CHAPTER- I

1.1 INDIAN AUTOMOTIVE INDUSTRY

Indian automotive industry is one of the high performing industries of Indian economy. This has significantly aided India's status as an ideal spot for many multinational corporations in the automobile sector looking to establish operations there. Multinational firms have been drawn to the Indian market by the country's expanding middle class and rising purchasing power, together with the country's economic progress during the previous ten years.

```
                    ┌─────────────────┐
                    │      Indian     │
                    │    Automotive   │
                    │     Industry    │
                    └─────────────────┘
        ┌──────────────┬──────┴──────┬──────────────┐
 ┌───────────┐ ┌───────────┐ ┌───────────┐ ┌───────────┐
 │   Two     │ │ Passenger │ │ Commercial│ │   Three   │
 │  Wheeler  │ │  Vehicle  │ │  Vehicle  │ │  Wheeler  │
 │           │ │   (PV)    │ │   (CV)    │ │           │
 └───────────┘ └───────────┘ └───────────┘ └───────────┘
```

Table -Segments of Indian automotive Industry.
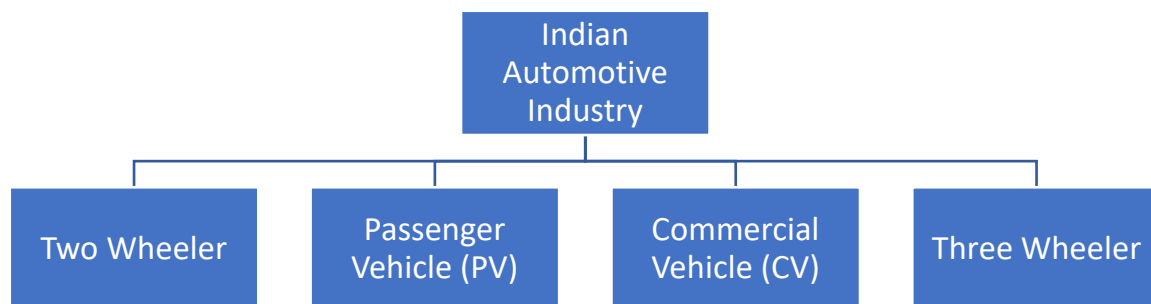
Indian automotive market compressed into four sectors.
- ➢ Two -wheelers which comprise of mopeds, scooters, motorcycles and electric two-wheeler.
- ➢ Passenger vehicle which includes passenger car, utility vehicle, and multi-purpose vehicles.
- ➢ Commercial vehicle that are light and medium -heavy vehicles.
- ➢ Three wheelers that are passenger carriers and good carriers.

1.2 INDIAN COMMERCIAL MARKET

Nation's growth and Indian automotive are dependent on each other. To stay competitive among other countries, well planned network and innovation system are required. Indian automotive industry had profitable segment for the nation. The below table shows that Indian automotive industry has increased 24% than previous year and also 4th position in global automotive market (according to international organization for motors vehicle manufactures). This indicated a good sign for Indian economy.

S.NO	COUNTRY	PV	CV	GROWTH
1	China	23836083	3184532	3%
2	United Kingdom	775014	101600	-6%
3	Japan	6566356	1269163	0%
4	India	4439039	1017818	24%

Table – Top 4 country's production details.

SOURCE: OICA

AUTOMOBILE PRODUCTION TRENDS						
CATEGORY	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
COMMERCIAL VEHICLE	810,253	895,448	1,112,405	756,725	624,939	805,527
AUTOMOBILE DOMESTIC SALE TRENDS						
CATEGORY	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
COMMERCIAL VEHICLE	714,082	856,916	10,07,311	717,593	568,559	716,566
AUTOMOBILE EXPORT TRENDS						
CATEGORY	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
COMMERCIAL VEHICLE	108,271	96,865	99,333	60,379	50,334	92,297

Table -production details for commercial vehicle

Source: SIAM

FACTORS AFFECTING COMMERCIAL VEHICLEM INDUSTRY:

Commercial vehicle in India has influence on various factor such as

- Improvement In Infrastructure
- Change in axle load
- policy changes
- Scrappage of old vehicle
- BS-VI Emission Norms by 2020
- Rise in the penetration of EVs

Improvement in Infrastructure:

The impact of infrastructure improvement on commercial vehicle may depend on various factors such as the type of infrastructure, the mode of transportation, the level of demand, and the policy measures. Commercial vehicle has huge impact in infrastructure development and construction field.

Opportunity in Infrastructure projects such as

- ➤ Aviation
- ➤ Bridge
- ➤ Power and energy
- ➤ Water
- ➤ Transportation
- ➤ Mining

Change in axle load:

| Create new opportunities for product upgrades and innovations | → | Suppliers may offer new concepts or better fuel efficiency | → | OEMs may introduce new models or variants |
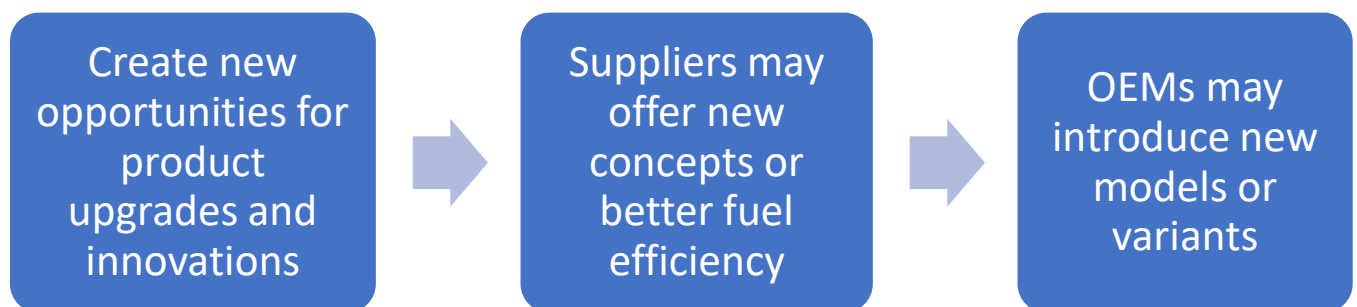
Axle load is the amount of weight that a single axle od a vehicle can carry. The government might increase the maximum allowable axle load and gross vehicle weight (GVW) of commercial vehicle. This could increase or reduce the demand of commercial vehicle. The change in axle load has negative impact on the environment, road safety and pavement

design. Higher axle load may increase vehicle mileage and traffic congestion, which may lead to higher fuel consumption and carbon emissions.

Policy changes:
  PROS
  - Increase the demand for green mobility solutions.
  - Create a conducive environment for domestic and foreign investment.
  CONS
  - Adopting new technologies
  - Change over time depending on the political and economic factors

Scrappage of old vehicle:

Some CV manufacturers, such as **Tata Motors and Ashok Leyland**, have pitched for an incentive-based scrappage policy that can offer financial benefits to the owners of old vehicles who opt for scrapping them and buying new ones. Reduce oil consumption, carbon emissions and road accidents caused by old vehicles.

BS-VI Emission Norms by 2020

The implementation of BS-VI emission norms from April 1, 2020 could create short-term headwinds for the commercial vehicle (CV) segment. In commercial vehicles, changes are expected in engine components and the exhaust management system, which have a low impact on auto-casting. Nevertheless, BS-VI norms will lead to addition of both non-cast components and more electricals / sensors and changes in electronic control unit (ECU), which will push up prices across vehicle segments. Therefore, advancement in sales, particularly in the commercial vehicle segment, is anticipated.

Rise in the penetration of EVs:

The rise in the penetration of electric vehicles (EVs) is expected to have a significant impact on the commercial vehicle (CV) industry. According to a report by Columbia University's Centre on Global Energy Policy, light-duty commercial trucks have the highest forecasts for EV penetration of all truck classes, and they even outpace some projections for passenger vehicle EV penetration by 2030. In contrast, electrification of heavy-duty trucks is projected to remain challenged by the size and weight of the batteries required to move them over long distances.

1.2 INDUSTRY PROFILE:

RANE GROUP OF COMPANIES

The Rane group of companies was founded in the year 1926 and headquartered in Chennai, India. They started as a distributor of automobiles and spare parts. The Rane group of companies was the most preferred OE manufacturer and supplier for global auto majors. Manufactures steering and suspension systems, friction materials, valve train components, occupant safety systems, die-casting products and provide connected mobility solutions.

The Rane group companies are listed,

- Rane Engine Valve Limited

- Rane (madras) Limited

- Rane Brake Lining Limited

- Rane TRW Steering Systems Private Limited

- Rane NSK Steering Systems Private Limited

- Rane t4u Private Limited.

TECHNOLOGY:

Rane group partners with a wide spectrum of auto majors to provide concepts to product solutions. This is made possible by well-integrated design, manufacturing and testing facilities at each of the group companies. Being manufacturers of safety and critical components, technology development has been a focus area in all Rane group companies. Rigorous testing, continuous upgradation of in-house technology and support from strategic development partners has enabled Rane to enhance technical competencies at all levels. Technologies developed in recent past- hydrostatic steering unit, new generation pumps-drooping flow, seat belts-pre-tensioner and child restraint, tilt and telescopic column with integrated collapse, NVH reduction and lower telescopic load and electric power steering.

MODERN MANUFACTURING FACILITIES:

Rane group partners with a wide spectrum of auto majors to provide concept to products solutions. This is made possible by well-integrated design, manufacturing and testing facilities at each of the group companies. Facilities consistently upgraded to meet

technological advancements. Integrated production lines for all group companies on par with world standards.

GLOBAL LOCATIONS:
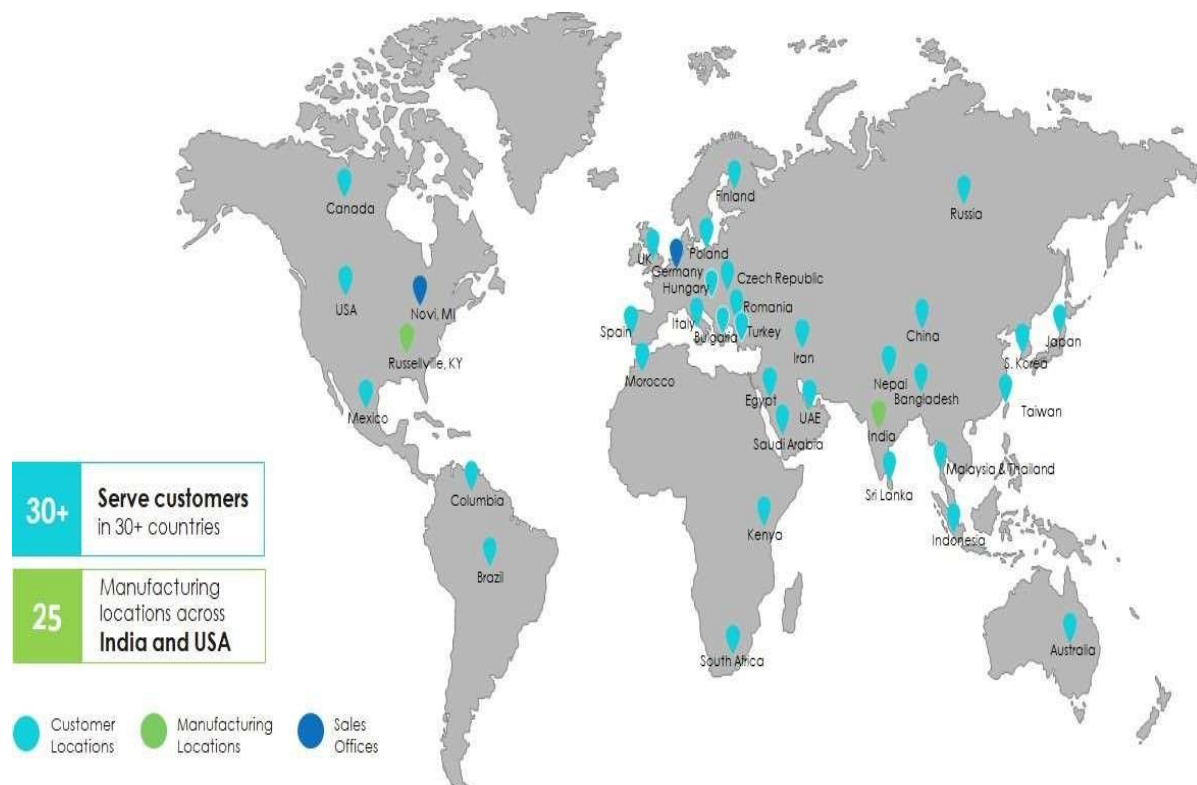
MAJOR INTERNATIONAL CUSTOMERS:

- AUDI
- BMW
- ELECTRO MOTIVE
- HYUNDAI
- JOHN DEERE
- LISTER PETTER
- POLARIS
- RENAULT
- SKODA
- YAMAHA

Rane group has totally 24 manufacturing locations and onehead office across India.

- Pune (head office)

- Rudrapur (3)

- Bawal (1)

- Gurugram (1)

- Sanand (1)

- Hyderabad (5)

- Bangalore (1)

- Mysore (1)

- Chennai (6)

- Pondicherry (2)

- Trichy (3)

MAJOR NATIONAL CUSTOMERS:

- ASHOK LEYLAND
- TATA
- FORCE
- FORD
- HERO HINDUSTAN MOTARS
- HONDA
- ISUZU
- MAHINDRA
- MARUTI
- SUZUKI
- NISSAN
- FIAT
- TOYOTA
- TVS

MILESTONES OF RANE GROUP

From a distributor of automobile and auto components to the winner of the most coveted quality awards for manufacturing, the journey has crossed many memorable milestones.

- **1929 to 1958 –** In 1929 founded as a distributor of automobiles and spare parts. In 1936Rane incorporated as a public limited company.
- **1959 to 1986 –** Started manufacturing IC engine valves, Tie rod ends, Friction materialproducts and Manual steering gears.
- **1987 to 2000 –** Established JV with TRW and NSK to offer power steering systems, occupant restraint systems and energy absorbing steering columns.
- **2001 to 2014 –** TQM journey with Deming grade prize for 3 companies and Deming prize for 5 companies. Started manufacturing high pressure aluminium die cast products, electric power steering and airbags.
- **2015 to present –** Establishing Rane auto parts and expanded footprints in USA with the acquisition of precision die casting Inc. Acquired Rane t4u private limited in Bangalore.

1.3 COMPANY PROFILE

PROFILE OF THE COMPANY:

Rane Brake Lining (RBL), a Rane Group Company, was established in 1964 in technical and financial collaboration with Nisshinbo Industries, Japan for manufacturing asbestos-free brake linings, disc pads and clutch facings that have application in every segment of the automobile industry. The company is a market leader in India, exporting to more than 15 countries. Research and Development are prime areas dedicated facility for new product development for critical applications including aerospace.

VISION OF RANE BRAKE LINING:

"To establish global presence and enhance domestic leadership by providing eco-friendly friction solutions."

"To stimulate and nurture the intrinsic desire in people to learn, grow and enhance performance to achieve business success and growth."

MISSION OF RANE BRAKE LINING:

- To enhance business in current served market and expand the presence in other geographical regions.
- To do strategic initiatives to enhance Aftermarket/Explore Export Businesses.
- To providing eco-friendly solutions to the markets.
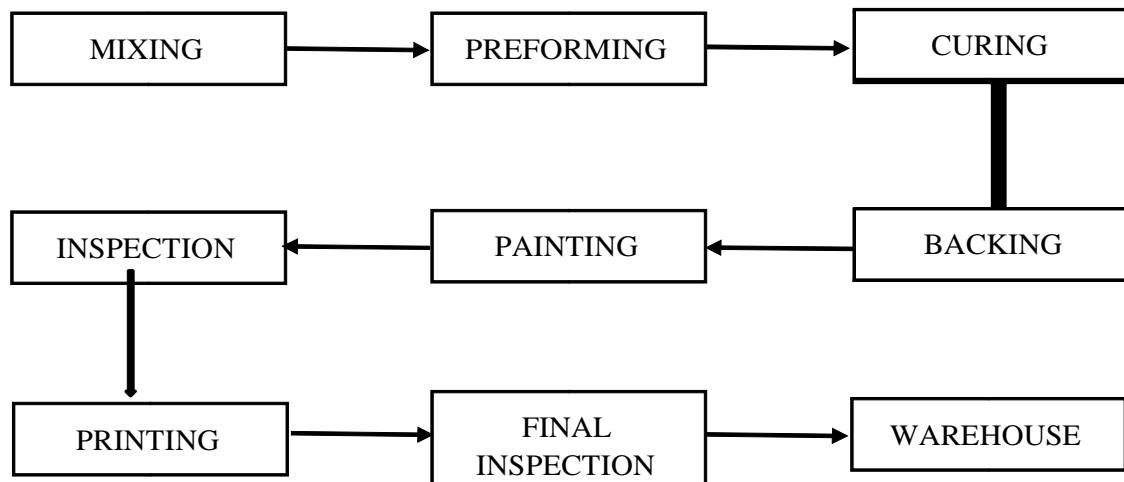
POLICIES OF RANE BRAKE LINING:

- Code of Conduct
- Whistle blower
- Corporate Social Responsibility Policy (CSR)

CUSTOMERS:

RBL supplies friction material to all leading OEMs in India through brake / clutch assembly manufacturers, aftermarket, export market for Heavy Commercial Vehicle (HCV), Light Commercial Vehicle (LCV), Utility Vehicle (UV), Passenger Car (PC), Two Wheelers (2W), Tractor segments and Indian Railways and the major customers of RBL are shown below.

Brake Assembly Manufacture	Vehicle OMEs	Railways
1. Amalgamations Repco Ltd 2. Automotive Axles Ltd 3. Brakes India Ltd 4. Brembo Brake India Private Ltd 5. Endurance Technologies Private Ltd 6. Exedy India Ltd 7. Foundation Brake Manufacturing Ltd 8. Luk India Private Ltd 9. Mando India Ltd	1. Asia Motor Works Ltd 2. Bajaj Auto Ltd 3. Caterpillar India Private Ltd 4. Force Motors Ltd 5. Ford India Ltd 6. General Motors 7. Honda Siel Cars India Ltd 8. Hyundai Motor India Ltd 9. Mahindra & Mahindra Ltd 10. Mahindra Navi Star Automobiles Ltd 11. Maruti Suzuki India Ltd 12. Nissan Motors India Private Ltd 13. Renault Nissan Automotive Private Ltd 14. Royal Enfield Motors Ltd 15. Tata Motors Ltd 16. Tractors and Farm Equipment Ltd 17. Toyota Kirloskar Motor Private Ltd 18. VE Commercial Vehicles Ltd 19. Volkswagen 20. Yamaha Motor Private Ltd	1. Indian Railways 2. Malaysian Railways 3. Sri Lankan Railways

PRODUCTION PROCESS:

```
┌──────────┐      ┌──────────────┐      ┌──────────┐
│  MIXING  │ ───► │  PREFORMING  │ ───► │  CURING  │
└──────────┘      └──────────────┘      └──────────┘
                                              │
┌──────────────┐   ┌──────────┐      ┌──────────┐
│  INSPECTION  │◄──│ PAINTING │◄─────│  BACKING │
└──────────────┘   └──────────┘      └──────────┘
      │
┌──────────┐      ┌──────────────┐      ┌──────────────┐
│ PRINTING │ ───► │    FINAL     │ ───► │  WAREHOUSE   │
└──────────┘      │  INSPECTION  │      └──────────────┘
                  └──────────────┘
```

STEP 1 MIXING:

It is the first step in production process, in this they have to mix the raw materials with correct quantity. They have to mix different types of liquids and solutions.

STEP 2 PREFORMING:

This is to get a shape of the product. The mixed elements are carried to the pressure plate, there the upper plate will press the materials with low temperature, this will be easy to eliminate the unwanted things before it gets harder. The plate will press for 10 to 15 times to make a shape.

STEP 3 CURING:

It will eliminate the air pressure in the materials, and also it eliminates the unwanted things.

STP 4 BACKING:

It is a high temperature moulding process; it will give final shape to the product will full hardness.

STEP 5 PAINTING:

After the manufacturing process the products will move on to coting area. The paint will be made on both sides; the next process is to rub the friction side.

STEP 6 INSPECTION:

The first Inspection will be made by the section head, if there is any mistake that should be send to reproduction.

STEP 7 PRINTING:

> After Inspection, the plant code will be printed on the products.

STEP 8 FINAL INSPECTION:

> The final Inspection has been made by the plant head.

STEP 9 WAREHOUSE:

> After all the process, the products will be packed and sent to the warehouse, from there it will be supplied to different depots.

RANE BRAKE LINING PRODUCTS

- Steering and Suspension Systems
- Valve Train Components
- Friction Material Products
- Occupant Safety Systems
- Light Metal Casting Products
- Aftermarket Products

INVESTORS OF RANE BRAKE LINING:

- Rane Holdings Limited
- Rane Engine Valve Limited
- Rane (Madras) Limited
- Rane Brake Lining Limited
- ZF Rane Automotive India Private Limited
- Rane NSK Steering Systems Private Limited

STRUCTURE OF THE ORGANISATION:

ORGANISATION STRUCTURE:

The organization structure of Rane Brake Lining (RBL) is each manufacturing companies should have President as their high level authority. Rane group has totally 6 Presidents for their 6 Manufacturing companies. President who comes directly under the MD of the Rane group. Companies and the department heads works under the guidelines of the President. They are the only authority for all the 4 plants which comes under Rane Brake Lining. The

department heads in the head office is responsible for all the plants. There are many sub divisions in the above mentioned departments.

DEPARTMENTS:

There are totally 11 departments in RBL which was divided into corporate and plant.

Corporate	**Plant**
• Corporate Finance	Plant Finance
• Corporate Human Resource	Quality Assurance
• Marketing	Production
• Material management	Research and Development
• Total Quality Management	
• Corporate manufacturing	

CORPORATE FINANCE

- Take care of the expenses made by the corporate office of all 4 plants.
- Maintaining all the license of the company.
- Conducting the annual budget meeting.

CORPORATE HUMAN RESOURCE

- Conducting the Rane Institute for Employee Development (RIED) training.
- Problem solving and improve in employee relationship.
- Employee's suggestions and welfare is taken into consideration.
- To make sure employees are motivated and encouraged to work.
- To create policies that welfare for the employees.

MARKETING

- It is divided into 3 Techno Marketing, Original Equipment Material, After Marketing.
- Annual meeting with customer companies to increase the sales.

MATERIAL MANAGEMENT

- Annual meeting with the raw materials suppliers.
- Bargaining and finalize the cost of raw materials for the Company.

TOTAL QUALITY MANAGEMENT

- Have the power to rise questions when there is any drawback in quality.
- Responsible for both Corporate and Plant.

CORPORATE MANUFACTURING

- Responsible for the New Product Development.
- Meeting with all department heads when a new product designed.
- Authority for the change of a products.

PLANT FINANCE

- Takes care of Expenses made by the Plants.
- Conducting annual meeting with Material Management department for purchasing of raw materials.

QUALITY ASSURANCE

- Testing the quality of raw materials.
- Inspection on finished goods.
- Checking all the qualities within the manufacturing plant.

PRODUCTION

- Passing the rules and regulations on production process.
- Responsible for raw material consumption.
- Fixing the amount of mixing ratio for each and every product.

RESEARCH AND DEVELOPMENT

- Praising the new ideas given by the employees.
- Improving safety precautions in working environment.

1.4 REVIEW OF LITERATURE:

Sharma Nishi (2011) examined the financial performance of the car industry's passenger and commercial vehicle segments in terms of four financial parameters: liquidity, profitability, leverage, and managerial efficiency study from 2001-02 to 2010-11. The analysis reveals that while Tata Motors and Mahindra & Mahindra Ltd's profitability and management efficiency are good, their liquidity condition is not. Commercial vehicles have a considerably stronger liquidity situation than passenger vehicles.

Shinde Govind P. & Dubey Manisha (2011) states that the study was conducted with key players' performance in segments such as passenger vehicle, commercial vehicle, utility vehicle, two and three wheeler vehicle, and SWOT analysis and key factors influencing the growth of the automobile industry in mind.

Singh Amarjit and Gupta Vinod (2012) investigated the car sector in general. The Indian car industry has established itself as a manufacturing powerhouse, and several joint ventures with international participation have been established in India. According to the SWOT analysis, there are some challenges that the automobile industry faces, as well as some innovative key features such as keyless entry, electrically controlled mechanisms, enhanced driving control, soft feel 7 interiors, and future focus areas such as fuel efficiency, emission reduction, safety, and durability.

Singh Amarjit and Gupta Vinod (2012) investigated the car sector in general. The Indian car industry has established itself as a manufacturing powerhouse, and several joint ventures with international participation have been established in India. According to the SWOT analysis, there are some challenges that the automobile industry faces, as well as some innovative key features such as keyless entry, electrically controlled mechanisms, enhanced driving control, soft feel 7 interiors, and future focus areas such as fuel efficiency, emission reduction, safety, and durability.

Hotwani Rakhi (2013) states that evaluation of company's profitability position and growth in light of Tata Motors' sales and profitability during the last 10 years. Ratios, standard deviations, and the coefficient of variance are used to analyse data. According to the study, there is no substantial association between firm sales and profitability.

Murlidhar, A. Lok Hande & Rana Vishal S. (2013) states that the author attempts to assess Hyundai Motors Company's performance in terms of export, domestic sales, production, and profit after tax. The pie chart and bar graph are used to demonstrate the performance of the firm through time.

Azhagaiah R. & Gounasegaran (2014) states that India's per capita real GDP growth has been identified as a crucial driver of growth for the country's car sector. The federal government would establish several task groups to address issues like as taxes, land acquisition, labour reform, and skill development for the car sector.

Surekha B. & Krishnalah K.Rama (2015) states that research illustrates the success of Tata Motors. It is possible to conclude that the company's core strength is extraordinary. The firm may boost its profitability even more by maximising capital gearing and reducing administrative and financial expenditures for future expansion.

Agarwal, Nidhi (2015) states that the research compares the financial performance of Maruti Suzuki with Tata Motors Ltd. The financial data and statistics needed for the study are derived from several company annual reports. Both businesses' liquidity and leverage have been assessed. Four ratios are used to assess the leverage position: capital gearing, debt-equity, total debt, and proprietary ratio. The findings indicate that Tata Motors Ltd. must enhance the proportion of its proprietor's money invested in the firm in order to strengthen its long-term solvency situation.

Jothi, K. & Geethalakshmi, A. (2016) states tha research attempts to assess the profitability and financial status of selected Indian vehicle businesses using statistical methods such as ratio analysis, mean, standard deviation, and correlation. The research demonstrates a favourable association between profitability, short-term and long-term capital.

Kaur Harpreet (2016) states that the quality and quantity performers of Maruti Suzuki Co. and how these have affected its market position in India. Secondary data for this study was gathered from yearly reports, journals, and vehicle report websites. According to the results, MSL has been effectively leading the vehicle business in India for the previous several years.

Karthik, R., & Kumar, A(2018) states that the Indian automotive industry is poised for continued growth, driven by factors such as rising middle-class population, urbanization, and technological advancements. The industry's future success will depend on the ability to address challenges, leverage opportunities, and adapt to changing market dynamics.

Pandey, A., & Joshi, V. (2018) states that manufacturing capabilities in the Indian automotive industry have improved significantly, focusing on cost-effectiveness, quality, and innovation. The industry has witnessed investments in advanced technologies and production processes.

Blamurugan,S (2019) states that Customer satisfaction is critical for corporate performance because it drives client loyalty and retention. If automakers want to keep their consumers for a long time, they must focus on the right marketing mix.

Jain, A., & Jha, S. K. (2020) states that the Indian automotive industry has experienced remarkable growth and emerged as a key player in the global automotive market. Factors such as increasing disposable incomes, changing consumer preferences, and government policies have contributed to its expansion.

Sinha preta (2020) states that ROA and EM have a significant impact on ROE, albeit the relative importance of the separate factors varies each firm. In the case of Mahindra & Mahindra, EM has the greatest impact on ROE, showing a strong reliance on debt and hence a high leverage.

Gupta, M., & Kumar, R. (2020) states that The Indian automotive industry faces challenges such as infrastructure limitations, regulatory complexities, and environmental concerns. These challenges require collaborative efforts from industry stakeholders, policymakers, and infrastructure developers to overcome them.

Kumar, S., & Tiwari, R. (2021) states that the Indian automotive industry is witnessing a shift towards sustainable mobility solutions, including electric vehicles, shared mobility, and smart transportation systems. These transformations are expected to shape the future of the industry, reducing carbon emissions and enhancing transportation efficiency.

Koushik, R (2023) states that When the financial positions of the two firms are compared, it is evident that M & M Ltd has more net sales than Tata Motors. It demonstrates that, although performing well in sales, Tata Motors must focus on reducing expenditures in order to enhance profits.

Adlin Jebakumari S. & A. Jayanthila Devi (2023) states that Tata Motors Limited, known for reliability and quality, is a strong firm that has been bolstered by its parent company, Tata Group, via many acquisitions and mergers. The significant amount of money spent by the corporation on research and development reflects the knowledge of its personnel.

.

1.5 NEED FOR THE STUDY:

- ➢ In-depth analysis of Indian and International commercial vehicle industry.
- ➢ Comparing Domestic and Global commercial vehicle brands.
- ➢ Understanding factors affecting commercial vehicle industry and key players in market, level of innovation and quality standard It highlights the rules and regulations that apply to the industry.
- ➢ Challenges with road infrastructure, safety measures and other issues in CV industry.
- ➢ Evaluating brand reputation of both Indian and International commercial vehicle industry.

1.6 OBJECTIVES OF THE STUDY:

PRIMARY OBJECTIVE

➢ To compare Indian and International commercial vehicle brands.

SECONDARY OBJECTIVES

➢ To find out the key players in the market.

➢ To examine and compare customer satisfaction, brand reputation and technological advancement.

➢ To compare the strength and weakness of Indian and International commercial vehicle.

➢ To analysis of growth of commercial vehicle industry.

1.7 Scope of the study:

➢ This study focuses on commercial vehicles.

➢ The study focuses on Indian Automotive industry and compare Indian commercial vehicle industry with International commercial vehicle industry.

➢ The study focuses on LCV, MCV and HCV only.

➢ It will provide information related to the Indian trailer industry and its market leader and significant manufactures in this industry.

➢ This study also offers detailed information of recent trends and competitive scenario.

➢ It will help to understand the market size and performance of CV industry.

➢ The study focuses on current scenario of commercial vehicle industry.

1.8 RESEARCH METHODOLOGY:

Research refers to a systematic process undertaken on a specific problem to find answers and provide a solution to it.

RESEARCH DESIGN:

The research design refers to a detailed blueprint used to guide a research study. The research design used in this research paper is **"Descriptive research design".**

Descriptive research design is a type of research design that aims to obtain information to describe a population. It answers the question of what, where, when, and how rather than why questions.

METHODOLOGY USED:

Primary Data:

Primary data refers to the fresh data collected (i-e) the data collected for the first time is called primary data. In this research, the primary data is collected in the form of a **structured questionnaire**.

A **questionnaire** is a research instrument consisting of a series of questions to collect data from the respondents.

Secondary data:

Secondary data can be any previous study collected through websites, journals, books, Magazines, research papers, surveys etc. Secondary data refers to the information gathered to support the research.

Source of secondary data:

- ➢ Books
- ➢ Journal and magazines
- ➢ Official websites (SIAM)
- ➢ Newspaper
- ➢ Government records

SAMPLE:

Sample refers to a group of individuals that the researcher uses for collecting data.

SAMPLING TECHNIQUE:

Sampling refers to the process of withdrawing a part from the total or aggregate to draw influence from the total or aggregate.

Sampling techniques can be classified into probability sampling and non-probability sampling, the sampling technique used in this research paper is **"Purposive Sampling"**.

Purposive sampling:

Purposive sampling is a non-probability sampling technique in which a researcher chooses a sample that is most useful and relevant for research is called purposive sampling. In this research paper, the researcher has chosen individuals who are associated with the Commercial vehicle industry as a sample.

SAMPLE SIZE:

Sample size refers to the number of individuals the researcher is considering to collect data is called a sample size. The sample size for this research paper is **144**. The researcher has collected responses from **144 individuals who are associated with the Commercial vehicle industry.**

TOOLS USED FOR DATA ANALYSIS:

The tools used for analysis by the researcher are

- ➢ **Percentage Analysis:**

  Percentage analysis is one of the most preferred analysis techniques, it means to find the percentage of a sample from a population. It helps in narrowing down the data.

  The formula used for percentage analysis is:

  Number of respondents / Total number of respondents * 100

- ➢ **Statistical Analysis:**

  Statistical analysis refers to the various trends and tools applied to raw data that help in determining patterns, trends, and relationships between variables selected by the researcher. The various statistical tool used by the researcher is

  - a. **Chi Square**
  - b. **Correlation Analysis**
  - c. **Anova**

1.9 LIMITATIONS

➢ The sample size collected for the study is being limited to 144.

➢ The study will focus only on Indian automotive industry.

➢ It concentrates only on commercial vehicles.
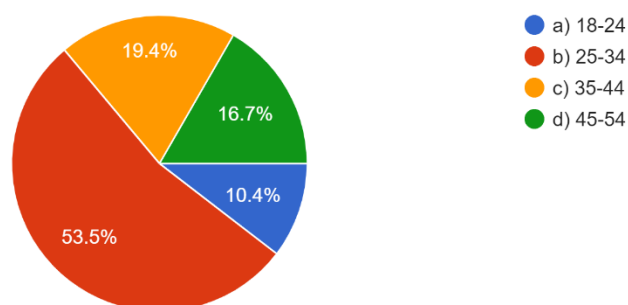
CHAPTER- II

DATA ANALYSIS AND INTERPRETATION

2.1 – PERCENTAGE ANALYSIS

TABLE 2.1.1 - AGE WISE CLASSIFICATION

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	18-24	15	10.4
2	25-35	77	53.5
3	35-44	28	19.4
4	45-55	24	16.7
TOTAL		**144**	**100**

FIGURE 2.1.1 - AGE WISE CLASSIFICATION

AGE
144 responses

- a) 18-24
- b) 25-34
- c) 35-44
- d) 45-54

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.1 depicts that 10.4% of respondent belong to18-24 the age group, 53.5% of respondent belong to the 25-34 age group, 19.4% of respondents belong to 35- 44 age group and 16.7 of respondents belong to the 44 – 54.

TABLE 2.1.2 - GENDER WISE CLASSIFICATION

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Male	130	90.3
2	Female	14	9.7
3	Other	0	0
TOTAL		**144**	**100**

FIGURE 2.1.2 - GENDER WISE CLASSIFICATION

GENDER

144 responses
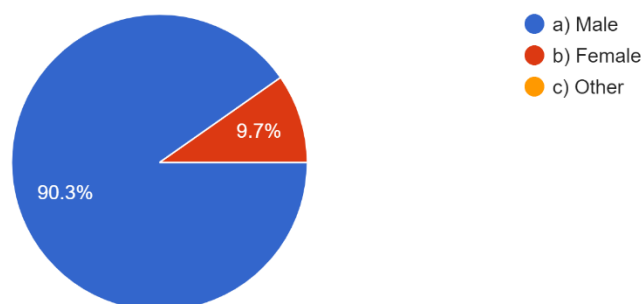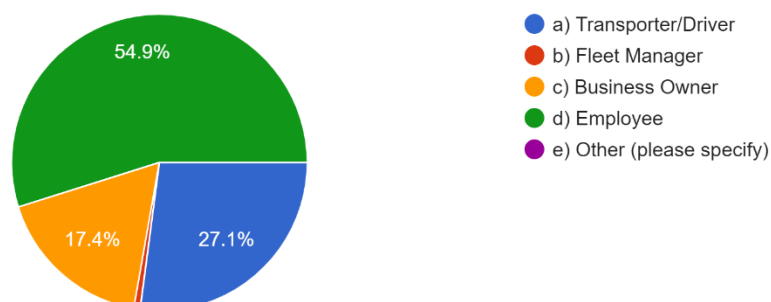

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.2 depicts gender-wise classification of respondent . 90.3% of respondent are male and 9.7% of respondent are female.

TABLE 2.1.3 - OCCUPATION OF THE RESPONDENT

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Transporter/Driver	23	27.1
2	Fleet Manager	1	0.7
3	Business owners	25	17.4
4	Employee	79	54.9
5	Others	0	0
TOTAL		**144**	**100**

FIGURE 2.1.3 - OCCUPATION OF THE RESPONDENT

Occupation
144 responses

- a) Transporter/Driver
- b) Fleet Manager
- c) Business Owner
- d) Employee
- e) Other (please specify)
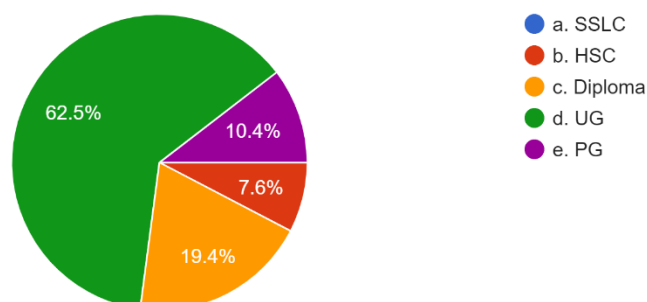
SOURCE: PRIMARY DATA

Interpretation:

Table and figure 2.1.3 depict that 27.1% of respondent identified themselves as transporter\driver,17.4% of respondent as business owner,54.9% as employee and 0.7% of respondent as fleet manager.

TABLE 2.1.4 – EDUCATION WISE CLASSIFICATION

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	SSLC	0	0
2	HSC	11	7.6
3	DIPLOMA	28	19.4
4	UG	90	62.5
5	PG	15	10.4
TOTAL		**144**	**100**

FIGURE 2.1.4 – EDUCATION WISE CLASSIFICATION

HIGHEST LEVEL OF OCCUPATION
144 responses

- a. SSLC
- b. HSC
- c. Diploma
- d. UG
- e. PG

62.5%
10.4%
7.6%
19.4%

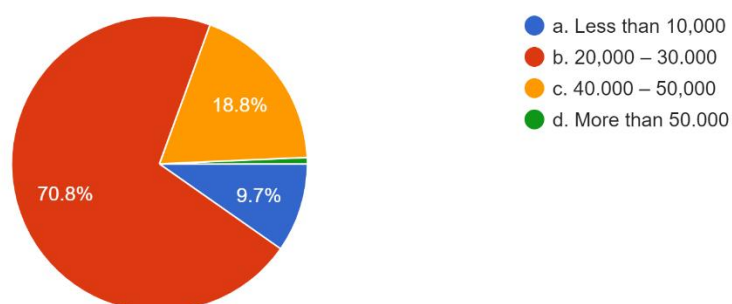**SOURCE: PRIMARY DATA**

Interpretation:

Table and Figure 2.1.4 depicts that 62.5% of respondent belong to under graduate , 10.4% of respondent belong to post graduate , 7.6% of respondent belong to HSC and 19.4% of respondent belong to diploma.

TABLE 2.1.5 – INCOME LEVEL OF THE RESPONDENT

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Less than 10,000	14	9.7
2	20,000- 30,000	102	70.8
3	40,000-50,000	27	18.8
4	More than 50,000	1	0.7
TOTAL		**144**	**100**

FIGURE 2.1.5 – INCOME LEVEL OF THE RESPONDENT

Monthly income
144 responses

- a. Less than 10,000
- b. 20,000 – 30.000
- c. 40.000 – 50,000
- d. More than 50.000
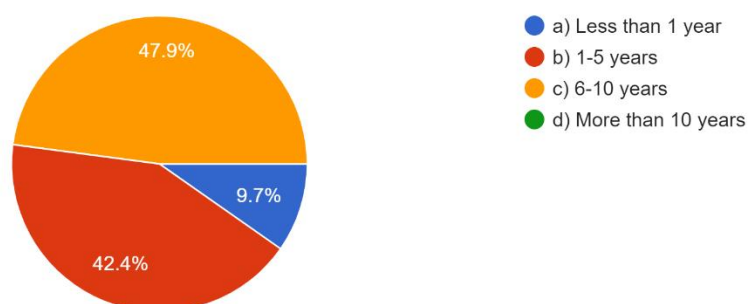
SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.5 depicts that 9.7% of respondent have an income level of less than 10,000, 70.8% of respondent have an income level of 20,000 – 30,000, 18.8% of respondent have an income level between 40,000 – 50,000, 0.7% of respondent have an income level of more than 50,000.

TABLE 2.1.6 – EXPERIENCES OF THE RESPONDENT

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Less than 1year	14	9.7
2	1-5 years	61	42.4
3	6- 10 years	69	47.9
4	More than 10 years	0	0
TOTAL		144	100

FIGURE 2.1.6 – EXPERIENCES OF THE RESPONDENT

Years of experience in the commercial vehicle industry:
144 responses

SOURCE: PRIMARY DATA

Interpretation:

Tabe and Figure 2.1.6 depicts that 9.7% of respondents have less than 1 year of experience, 42.4% of respondent have between 1- 5 year of experience and 47.9% of respondent have between 6-10 years of experiences.
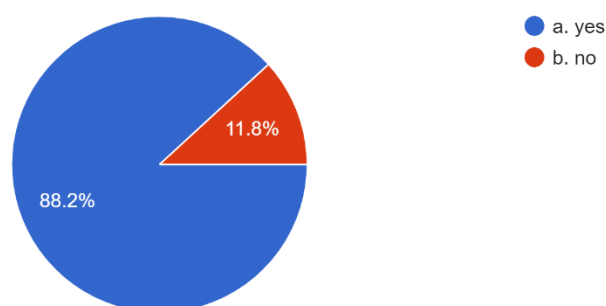
TABLE 2.1.7 – ASSOCIATION WITH COMMERCIAL VEHICLE

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	YES	127	88.2
2	NO	17	11.8
TOTAL		**144**	**100**

FIGURE 2.1.7 – ASSOCIATION WITH COMMERCIAL VEHICLE

Have you ever used or operated commercial industry before?
144 responses

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.7 depicts that 88.2% of respondent have used or operated commercial vehicle and 11.8% of respondent haven't used or operated commercial vehicle.
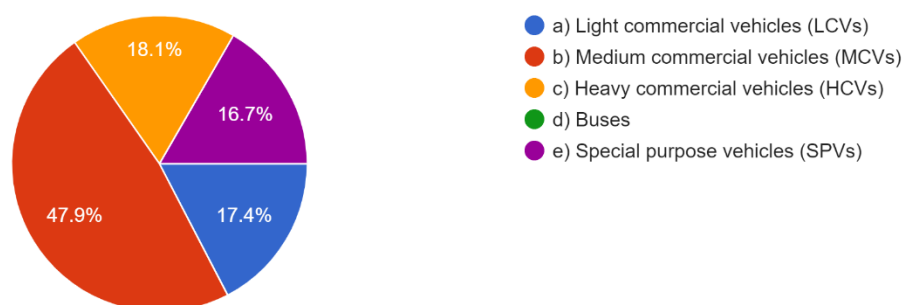
TABLE 2.1.8 – SEGMENT WISE CLASSIFICATION OF COMMERCIAL VEHICLE

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	LCV	25	17.4
2	MCV	69	47.9
3	HCV	26	18.1
4	BUSES	0	0
5	SPV	24	16.7
TOTAL		**144**	**1001**

FIGURE 2.1.8 – SEGMENT WISE CLASSIFICATION OF COMMERCIAL VEHICLE

Which segment(s) of the commercial vehicle market are you most interested in? (Select all that apply)
144 responses

- a) Light commercial vehicles (LCVs)
- b) Medium commercial vehicles (MCVs)
- c) Heavy commercial vehicles (HCVs)
- d) Buses
- e) Special purpose vehicles (SPVs)

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.8 depicts that 47.9% of respondent are interested in Medium Commercial Vehicles , 18.1% of respondent are interested in High Commercial Vehicles , 16.7% of respondent are interested in Special Purpose Vehicles , and 17.4% of respondent are interested in Light Commercial Vehicles.
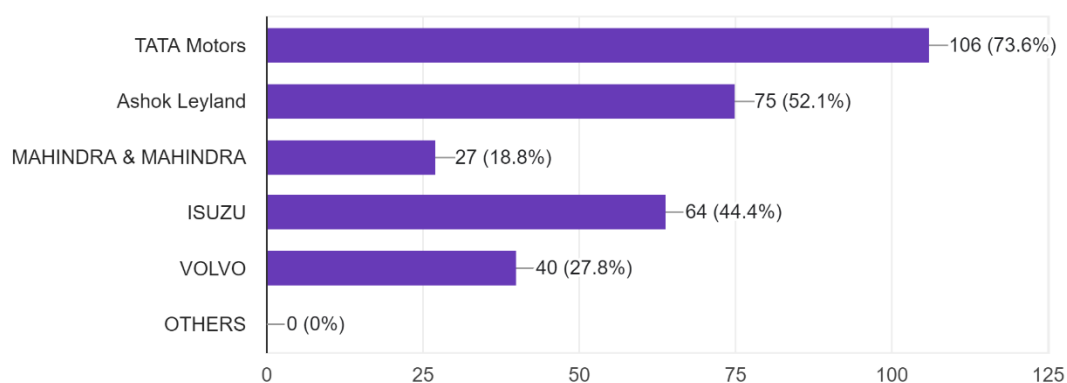
TABLE 2.1.9 – PREFERENCE OF CV BRANDS

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	TATA	106	73.6
2	Ashok Leyland	75	52.1
3	Mahindra & Mahindra	27	18.8
4	Isuzu	64	44.4
5	Volvo	40	27.8
6	Others	0	0
TOTAL		**144**	**100**

FIGURE 2.1.9 – PREFERENCE OF CV BRANDS

which brands you prefer?
144 responses

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.9 depicts that 73.6% of respondents prefer TATA Motors, 52.1% of respondents prefer Ashok Leyland, 44.4% of respondents prefer ISUZU , 27.8% of respondents prefer VOLVO , and 18.8% of respondents prefer Mahindra & Mahindra.

TABLE 2.1.10 – PREFERENCE FOR FUEL OPTION

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Diesel	94	65.3
2	Petrol	25	17.4
3	CNG	2	1.4
4	LPG	1	0.7
5	Electric	63	43.8
6	Hybrid	64	44.4
7	Hydrogen	0	0
8	Others	0	0
	TOTAL	**144**	**100**

FIGURE 2.1.10 – PREFERENCE FOR FUEL OPTION

Which fuel options do you currently use or consider for your commercial vehicles?
144 responses
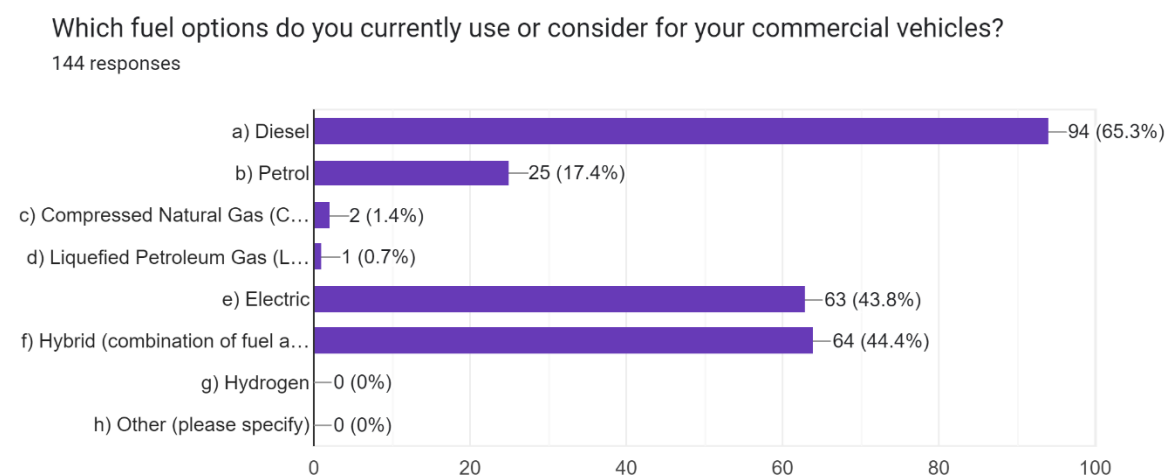
SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.10 depicts the preference for fuel option in market, 65.3% of respondent have chosen Diesel , 44.4% of respondent have chosen hybrid , 43.8% of respondent have chosen Electric , and 17.4% of respondent have chosen Petrol.
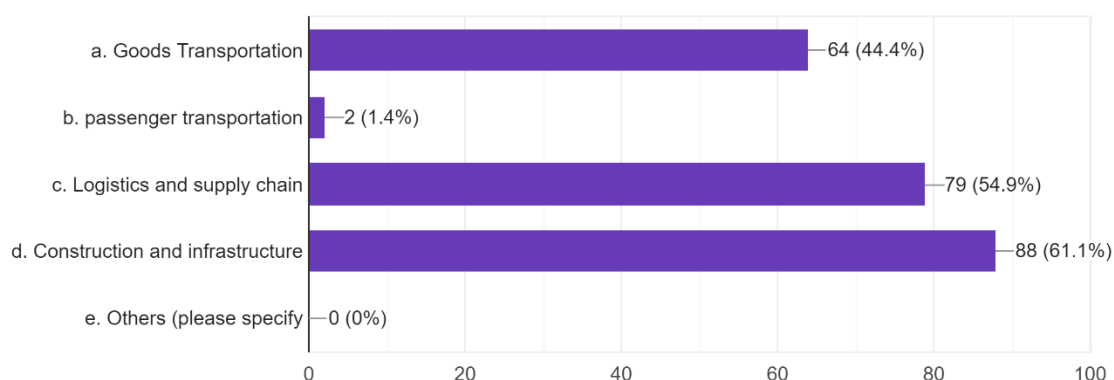
TABLE 2.1.11 – MAIN PURPOSE OF COMMERCIAL VEHICLE

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Good transportation	64	44.4
2	Passenger transportation	2	1.4
3	Logistics and supply chain	79	54.9
4	Construction and infrastructure	88	61.1
5	Others	0	0
	TOTAL	**144**	**1001**

FIGURE 2.1.11 – MAIN PURPOSE OF COMMERCIAL VEHICLE

What are the main purposes for using commercial vehicles in your industry?
144 responses

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.11 depicts the main purpose of commercial vehicle. 61.1% of respondents have chosen construction and infrastructure, 54.9% of respondents have chosen Logistics and supply chain, 44.4% of respondents have chosen goods transportation and 1.4% of respondents have chosen passenger transportation.

TABLE 2.1.12 – LEVEL OF INVOCATION IN CV

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Very dissatisfied	0	0
2	Dissatisfied	0	0
3	Neutral	41	28.5
4	Satisfied	75	52.1
5	Very satisfied	28	19.4
TOTAL		**144**	**100**

FIGURE 2.1.11 – LEVEL OF INVOCATION IN CV

How satisfied are you with the level of innovation currently offered in commercial vehicles?
144 responses

- a) Very dissatisfied
- b) Dissatisfied
- c) Neutral
- d) Satisfied
- e) Very satisfied
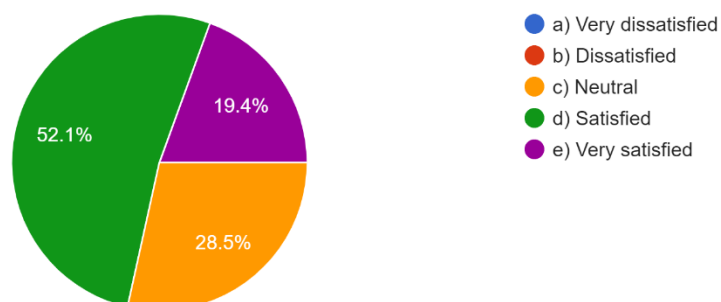
SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.11 depicts that 52.1% of respondent are satisfied with the level of innovation in the commercial vehicle, 19.4% of respondent are very satisfied with the level of innovation in commercial vehicle and 28.5% of respondent have chosen neutral.
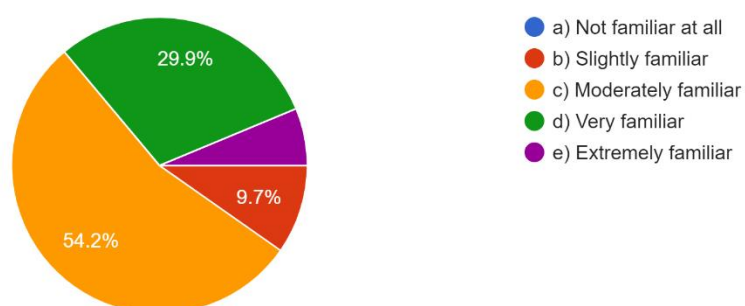
TABLE 2.1.13 – FAMILIARITY WITH INDIAN COMMERCIAL VEHICLE BRANDS

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Not familiar at all	0	0
2	Slightly familiar	14	9.7
3	Moderately familiar	78	54.2
4	Very familiar	43	20.9
5	Extremely familiar	9	6.3
TOTAL		**144**	**1001**

FIGURE 2.1.13 – FAMILIARITY WITH INDIAN COMMERCIAL VEHICLE BRANDS

How familiar are you with Indian commercial vehicle brands?
144 responses

- a) Not familiar at all
- b) Slightly familiar
- c) Moderately familiar
- d) Very familiar
- e) Extremely familiar

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.14 depicts familiarity with an Indian commercial vehicle brand. 9.7% of respondents have chosen slightly familiar, 54.2% of the respondent have chosen moderately familiar, 2.4% of respondents have chosen extremely familiar ,and 29 .9% of the respondent have chosen very familiar.
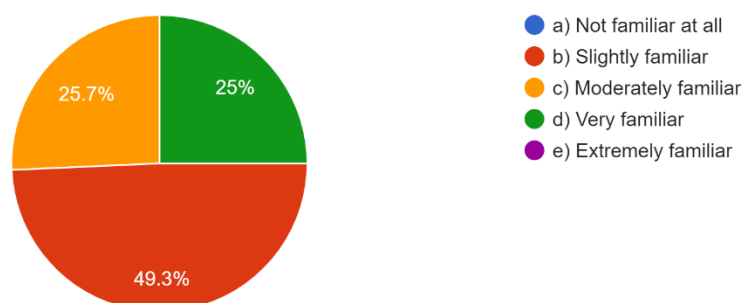
TABLE 2.1.14 – FAMILIARITY WITH INTERNATIONAL COMMERCIAL VEHICLE BRANDS

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Not familiar at all	0	0
2	Slightly familiar	71	49.3
3	Moderately familiar	37	25.7
4	Very familiar	36	25
5	Extremely familiar	0	0
	TOTAL	**144**	**100**

FIGURE 2.1.14 – FAMILIARITY WITH INTERNATIONAL COMMERCIAL VEHICLE BRANDS

How familiar are you with International commercial vehicle brands?
144 responses

- a) Not familiar at all
- b) Slightly familiar
- c) Moderately familiar
- d) Very familiar
- e) Extremely familiar

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.14 depicts familiarity with an international, commercial vehicle brand. 49.3% of respondents have chosen slightly familiar, 25.7% of the respondent have chosen moderately familiar, and 25% of the respondent have chosen very familiar.

TABLE 2.1.15 -KEY FACTORS AFFECTING THE DECISION TO PURCHASE A CV

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Price \affordability	55	38.2
2	Performance and reliability	28	19.4
3	Fuel efficiency	1	0.7
4	Safely features	45	33.3
5	Brand reputation	15	10.4
	TOTAL	**144**	**100**

FIGURE2.1.15-KEY FACTORS AFFECTING THE DECISION TO PURCHASE A CV

What are the key factors that influence your decision to purchase a commercial vehicle?
144 responses

- a) Price/affordability
- b) Performance and reliability
- c) Fuel efficiency
- d) Safety features
- e) Brand reputation
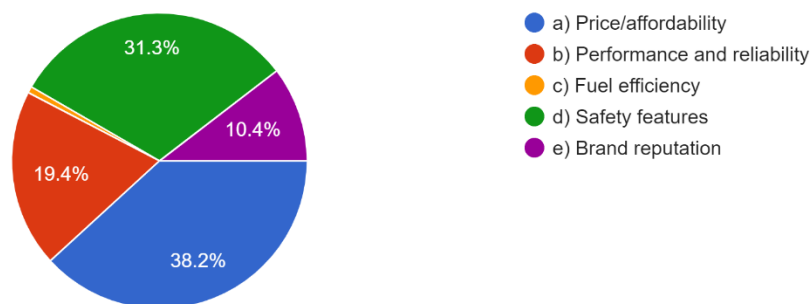
SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.15 depict that 38.2% of respondents have chosen , 19.4% of respondents have chosen performance and reliability, 0.7% of respondents have chosen fuel efficiency, 31.3% of respondents have chosen safety features and 10.4% of respondents have chosen brand reputation.

TABLE 2.1.16 – CHALLENGES FOR PURCHASING OR OWNING CV IN INDIA

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	High initial cost	25	17.4
2	Maintenance and repair cost	14	9.7
3	Limited access to financing options	9	6.3
4	Availability of spare parts	81	56.3
5	Lack of reliable after-sales service	15	10.4
TOTAL		**144**	**100**

FIGURE 2.1.16 – CHALLENGES FOR PURCHASING OR OWNING A CV IN INDIA

What are the key challenges you face when purchasing or owning commercial vehicles?
144 responses

- a) High initial cost
- b) Maintenance and repair costs
- c) Limited access to financing options
- d) Availability of spare parts
- e) Lack of reliable after-sales service
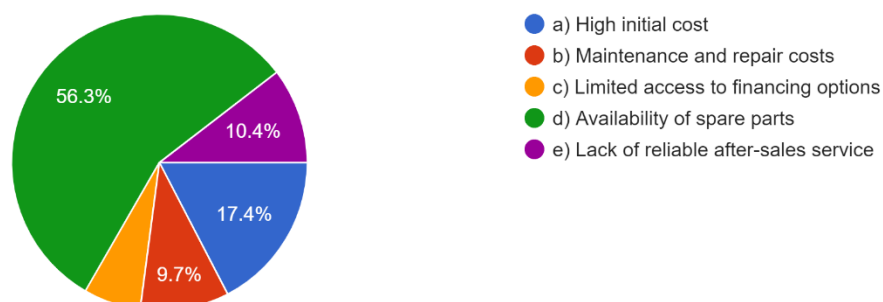
SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.16 depicts 56.3% of respondents have chosen the availability of spare parts, 10.4% of respondents have chosen lack of reliable after-sales service, 17.4% of respondents have chosen high initial cost , 9.7% of respondents have chosen maintenance and repair cost and 10.4% of respondents have chosen limited access to financing options.

TABLE 2.1.17 – FACTORS AFFECTING THE GROWTH OF THE CV MARKET IN THE FUTURE

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Government policies and regulations	0	0
2	Technologies development	28	19.4
3	Infrastructure development	26	18.1
4	Environmental concerns and emission norms	75	52.1
5	Economic growth and business expansion	15	10.4
TOTAL		144	1001

FIGURE 2.1.17 – FACTORS AFFECTING THE GROWTH OF THE CV MARKET IN THE FUTURE

Which factors do you think will have the most impact on the growth of commercial vehicle market in the future?

144 responses

- a) Government policies and regulations
- b) Technological advancements
- c) Infrastructure development
- d) Environmental concerns and emission norms
- e) Economic growth and business expansion
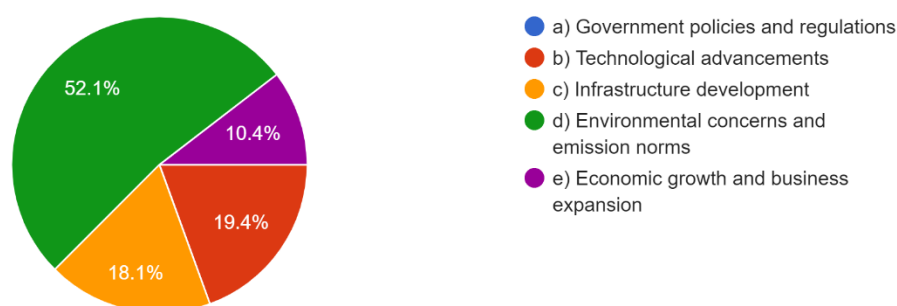
SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.17 depicts that 52.1% of respondents have chosen environmental concern and emission norms, 19.4% of respondents have chosen technological advancements, 18.1% of respondents have chosen infrastructure development, and 10.4% of respondents have chosen economic growth and business expansion.
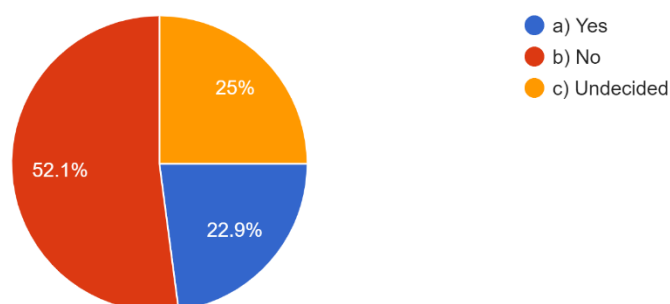
TABLE 2.1.18 - POSSIBILITIES OF SHIFTING FROM AN INDIAN BRAND TO AN INTERNATIONAL BRAND

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Yes	33	22.9
2	No	75	52.1
3	Undecided	36	25
	TOTAL	**144**	**100**

FIGURE 2.1.18 - POSSIBILITIES OF SHIFTING FROM AN INDIAN BRAND TO AN INTERNATIONAL BRAND

Would you consider switching to an Indian commercial vehicle brand if it offered comparable quality and features to international brands at a more competitive price?
144 responses

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.18 depict the possibilities of shifting from an Indian brand to an international brand. 52.1% of respondents have chosen No, 22.9% of respondents have chosen Yes and 25% of respondents have chosen Undecided.
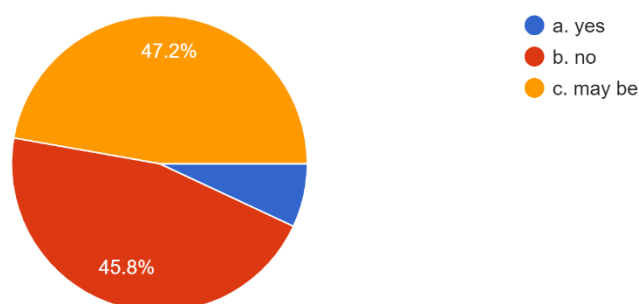
TABLE 2.1.19 – WILLINGNESS TO PAY A PREMIUM FOR INTERNATIONAL COMMERCIAL VEHICLE

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Yes	10	6.9
2	No	66	45.8
3	Maybe	68	47.2
	TOTAL	**144**	**100**

FIGURE 2.1.19 – WILLINGNESS TO PAY A PREMIUM FOR INTERNATIONAL COMMERCIAL VEHICLE

Are you willing to pay a premium for environmentally friendly features in International commercial vehicles?

144 responses

- a. yes
- b. no
- c. may be

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.19 depicts that willingness to pay a premium for international commercial vehicle. 47.2% of respondents have chosen may be, 15.8% of respondents have chosen No and 6.9% of respondents have chosen Yes.
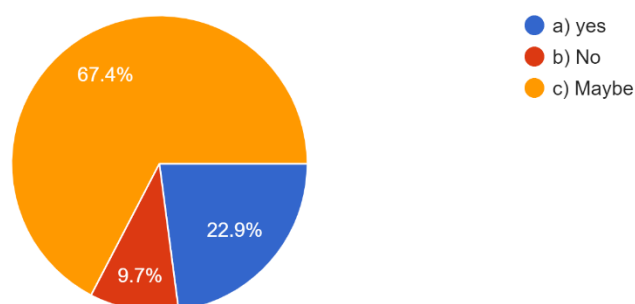
TABLE 2.1.20 – WILLINGNESS TO PAY A PREMIUM FOR INDIAN COMMERCIAL VEHICLE

S.NO	PARTICULARS	NO OF RESPONDENTS	PERCENTAGE
1	Yes	33	22.9
2	No	14	9.7
3	May be	67	67.4
TOTAL		**144**	**100**

FIGURE 2.1.20 – WILLINGNESS TO PAY A PREMIUM FOR INDIAN COMMERCIAL VEHICLE

Are you willing to pay a premium for environmentally friendly features in Indian commercial vehicles?
144 responses

SOURCE: PRIMARY DATA

Interpretation:

Table and Figure 2.1.19 depicts that willingness to pay a premium for Indian commercial vehicle. 67.4% of respondents have chosen may be, 9.7% of respondents have chosen No and 22.9% of respondents have chosen Yes.

2.2 STATISTICAL ANALYSIS

CHI-SQUARE TEST

To identify the relationship between two variables

- ✓ Question 9- Which segment(s) of the commercial vehicle market are you most interested
- ✓ Question 11- Which fuel options do you currently use or consider for your commercial vehicles

HYPOTHESIS

H0: There is no positive relationship between these 2 variables

H1: There is a positive relationship between these 2 variables

TABLE NO 2.2.1 CHI-SQUARE TEST

Fuel used in your commercial vehicles

	Observed N	Expected N	Residual
1	53	77.8	-24.8
2	50	77.8	-27.8
3	6	77.8	-71.8
4	4	77.8	-73.8
5	120	77.8	42.2
6	234	77.8	156.2
Total	467		

TABLE NO 2.2.2 Fuel used in your commercia vehicles

Test Statistics

	Fuel used in your commercial vehicale
Chi-Square	490.392[a]
df	5
Asymp. Sig.	.000

INTERPRETATION

Chi-square=490.392 for 5 degrees of freedom. The p-value is .000 is lesser than the level of significance (0.05). Therefore, Null hypothesis is rejected and there is no association between commercial vehicles market and fuel used in commercial vehicles.

CORRELATION ANALYSIS

To identify relationship between two variables

- ✓ Question 18- Which factors do you think will have the most impact on the growth of commercial vehicle market in the future.

- ✓ Question 13- How satisfied are you with the level of innovation currently offered in commercial vehicles.

HYPOTHESIS

H0: There is no positive relationship between there 2 variables

H1: There is a positive relationship between there 2 variables

TABLE NO 2.2.3 CORRELATION ANALYSIS

Correlations

		Satisfied level of innovation	Commercial vehicles market in future
Satisfied level of innovation	Pearson Correlation	1	-.562**
	Sig. (2-tailed)		.000
	N	144	144
Commercial vehicles market in future	Pearson Correlation	-.562**	1
	Sig. (2-tailed)	.000	
	N	144	144

INTERPRETATION

- ➤ The correlation relationship between two variables such as factors that impact the growth of the commercial vehicle market in the future and customer satisfaction to the level of innovation in cv is -0.562. This negative co-relation indicates weak relationship between these 2 variables.

- ➤ Since the p valve is 0.5, null hypothesis accepted.

ONEWAY ANOVA ANALYSIS

To identify relationship between two variables

- ✓ Question 7- Years of experience in the commercial vehicle industry
- ✓ Question 17- What are the key challenges you face when purchasing or owning commercial vehicles in India

HYPOTHESIS

H0: There is no positive relationship between these 2 variables

H1: There is a positive relationship between these 2 variables

TABLE NO 2.2.4 ONEWAY ANOVA ANALYSIS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	51.771	4	12.943	175.993	.000
Within Groups	10.222	139	.074		
Total	61.993	143			

INTERPRETATION

F-value is not statistically significant at the chosen significance level (p > 0.05) since the corresponding p-value (Sig.) is 0.00, which is below the commonly used threshold of .05. therefore, we reject the null hypothesis and conclude that there is a significant difference between the experience in the commercial vehicle industry.

CHAPTER- III

FINDINGS, SUGGESTIONS AND CONCLUSION

3.1 FINDING

➢ It is found that 53.5% of the respondents belong to the age group 18-21 in the age of the respondent.

➢ It is found that 90.3% of the respondents are male in the gender of the respondents.

➢ It is found that 54.9% of the respondents are employees in the occupation of the respondents.

➢ It is found that 62.5% of the respondents have the highest level of education as an undergraduate.

➢ It is found that 70.8% of the respondents have income levels between 20,000- 30,000.

➢ It is found that 47.9% of the respondents have 6-10 years of experience.

➢ It is found that 88.2% of the respondents have used or operated commercial vehicles.

➢ It is found that 47.9% of the respondents are most interested in a medium commercial vehicle.

➢ It is found that 73.6% of the respondent's preference for commercial vehicle brand is TATA Motors (Indian Brand).

➢ It is found that 65.3% of the respondent's preference for fuel option is diesel.

➢ It is found that 61.1% of the respondents used commercial vehicle for construction and infrastructure as main purpose.

➢ It is found that 52.1% of the respondents were satisfied with level of innovation in commercial vehicle industry.

➢ It is found that 54.2% of the respondents are moderately familiar with Indian commercial vehicle brands.

➢ It is found that 49.3% of the respondents are slightly familiar with International commercial vehicle brands.

- It is found that 38.2% of the respondents have chosen price/affordability as key factor affecting the decision to purchase a commercial vehicle .

- It is found that 56.3% of the respondents have chosen availability of spare parts as key challenge for purchasing or owning a commercial vehicle in india .

- It is found that52.1% of the respondents have chosen environmental concern and emission norms as the factor that impacts the growth of the commercial vehicle market in the future.

- It is found that 52.1% of the respondents have chosen no for shifting to an Indian commercial vehicle from international brands at a more competitive price.

- It is found that 47.2% of the respondents have chosen may be for shifting to an international vehicle brand from Indian brands at a more competitive price.

- It is found that 67.4% of the respondents have chosen may be for wiliness to pay a premium for Indian commercial vehicle .

3.2 SUGGESTIONS

➢ Both domestic and international brands should invest in R&D to improve the technological capabilities of their commercial vehicles. To remain competitive in an evolving market, features like as fuel efficiency, safety systems, telematics, connection, and electric or hybrid choices must be included.

➢ Indian brands can concentrate on customising commercial vehicles to meet the special needs of Indian customers. Understanding the various needs of various sectors and locations in India can lead to the development of specialised vehicles that meet specific difficulties and provide greater value for money. International brands can also experiment with localization methods by working with local partners or production facilities to adapt their products to the Indian market.

➢ Implementing strict quality control methods throughout the manufacturing process will aid in the delivery of reliable and durable automobiles, increasing customer satisfaction and lowering maintenance costs.

➢ Consistent product quality is critical for both Indian and multinational brands. Implementing strong quality control procedures throughout the manufacturing process will aid in the delivery of reliable and durable automobiles, enhancing customer satisfaction and lowering maintenance costs.

➢ Regular market research and customer feedback are crucial for understanding evolving customer needs, market trends, and competitive landscapes. Indian and international brands should invest in ongoing market research to identify opportunities for product improvement, innovation, and market expansion.

➢ Ensuring consistent product quality is crucial for both Indian and international brands. Implementing stringent quality control measures throughout the manufacturing process will help in delivering reliable and durable vehicles, thereby improving customer satisfaction and reducing maintenance costs.

3.3 CONCLUSION

The research study included a thorough comparison of Indian and international commercial vehicle models. The research sought to assess a variety of characteristics, including brand reputation, product quality, technical improvements, customer satisfaction, and market share. Customer satisfaction has emerged as an important aspect of the success of both Indian and multinational brands. Indian brands were found to succeed in after-sales service and maintenance assistance, which contributed significantly to customer loyalty. International brands, on the other hand, used their extensive dealer networks and global supply chains to ensure timely service and spare parts availability.

The study focuses on the competitive landscape of the Indian and international commercial vehicle markets. It emphasizes the importance of Indian firms focusing on technical breakthroughs and brand creation, while multinational brands should continue to understand and adapt to the Indian market's distinct needs. The study provides significant insights for commercial vehicle sector stakeholders to make informed decisions about brand positioning, product development, and consumer interaction tactics.

The findings of the study indicate that Indian commercial vehicle brands have made significant strides in recent years, demonstrating enhanced product quality, innovation, and customer-centric strategies. However, international brands continue to hold a competitive edge in areas such as advanced technology, global reach, and established brand reputation. Additionally, the research study has identified several opportunities for Indian commercial vehicle brands to improve their market position. These include investing in research and development, fostering innovation, enhancing product differentiation, strengthening after-sales service networks, and adopting sustainable and eco-friendly practices. Moreover, collaboration and partnerships with international brands can facilitate knowledge transfer, technological advancements, and access to global markets.

Overall, this comparative study has contributed to the understanding of Indian and international commercial vehicle brands, their competitive landscape, and the strategies necessary for Indian brands to enhance their market position. By recognizing the strengths and weaknesses of both Indian and international players, industry stakeholders can develop strategies that foster growth, drive innovation, and ensure a sustainable and competitive commercial vehicle industry in India.

REFERENCES

- Shinde, Govind P. and Dubey Manisha (2011), "Automobile Industry and Performance of Key Players," Asian Journal of Technology & Management Research, 1(2), pp. 11-28.

- Sharma, Nishi, (2011), "Financial analysis of Indian Automobile Industry," International Journal of research in Computer application & Management, 1(9), pp.-112-116

- Singh, Amarjeet and Gupta Vinod (2012), "Indian Automobile Industry: A review," International Journal of Research in Mechanical Engineering and Technology, 2(2), pp. 22-24

- Zafar Taria S.M. & Khalid S.M. (2012), "A comparative evaluation of financial performance and market value of Maruti and Tata Company," Bookman international journal of accounts, economics and business management, 1(1), pp.-7-16

- Murlidhar, A. Lokhande and Rana Vishal S. (2013), "Performance Evaluation of Hyundai Motor India Limited: An overview," International Journal of Marketing, Financial Services & Management Research, 2(3), pp-114-120

- Hotwani, Rakhi (2013), "Profitability Analysis of tata motors," Abhinav national monthly referred journal & research in commerce & management, 2(12), pp-1-8.

- IdhayaJothi et al (2014), "A study on financial performance of Ashok Leyland limited at Chennai," IOSR journal of Business and Management, 16(6), pp. - 83-89

- Surekha, B. and K. Rama Krishnalah (2015), "A study of financial analysis of Tata motors" International journal of commerce, Business and Management, 4(4), pp.-1224-1228

- Aggarwal, Nidhi (2015), "Comparative Financial performance of Maruti Suzuki India Ltd. and Tata Motors ltd.," International Journal in management and Social Science, 3(7), pp.-68-74

- Jothi, k. and P. Kalaivani (2015), "A study on financial performance of Honda and Toyota Automobile company a comparative analysis," Journal of progressive research in social sciences, 2(1), pp.-33-35

- Kaur, Harpreet (2016), "MSIL" A leader in Indian Automobile Sector," International Journals of multi disciplinary and current research, 4, pp.-63-66

- Jain, A., & Jha, S. K. (2020). Indian Automotive Industry: A Review of Growth and Transformation. International Journal of Commerce and Management Research, 6(2), 19-28.

- Pandey, A., & Joshi, V. (2018). Manufacturing Capabilities in the Indian Automotive Industry: A Review. International Journal of Operations and Logistics Management, 7(2), 14-26.

- Verma, R., & Gupta, S. (2017). Technological Advancements in the Indian Automotive Industry: A Review. Journal of Automobile Engineering Research, 4(1), 10-20.

- Sharma, S., & Sharma, P. (2019). Government Initiatives and Policies in the Indian Automotive Industry: A Review. International Journal of Automotive Business Management, 6(3), 159-172.

- Gupta, M., & Kumar, R. (2020). Challenges and Prospects of the Indian Automotive Industry: A Critical Review. Journal of Contemporary Issues in Business and Government, 26(1), 1610-1625.

- Karthik, R., & Kumar, A. (2021). Indian Automotive Industry: Challenges and Opportunities. International Journal of Engineering Research and Advanced Technology, 7(4), 37-42.

- Kumar, S., & Tiwari, R(2021) Future Prospects of the Indian Automotive Industry: A Strategic Outlook. International Journal of Automotive Technology and Management, 21(1), 20-33.

WEBLIOGRAPHY:

- https://www.siam.in/
- https://www.autopunditz.com/
- https://www.siam.org/journals
- https://www.4me.com/siam/
- https://www.autopunditz.com/copy-of-tractor-sales
- https://www.autopunditz.com/post/commercial-vehicle-analysis-q1-fy-2021-2022-tata-mahindra-ashok-leyland-maruti-suzuki-others
- https://auto.economictimes.indiatimes.com/news/commercial-vehicle
- https://www.thehindubusinessline.com/topic/heavy-and-commercial-vehicles/
- https://auto.economictimes.indiatimes.com/tag/tata+motors+commercial+vehicles
- https://www.tatamotors.com/media/press-releases/
- https://economictimes.indiatimes.com/industry/auto/lcv-hcv/auto-expo-2023-commercial-vehicle-makers-hedge-fuel-technology-bets/articleshow/96920585.cms

APPENDIX

1. **Name**

2. **Age**

 a) 18-24

   b) 25-34

   c) 35-44

   d) 45-54

   e) 55 or above

3. **Gender**

   a) Male

   b) Female

   c) Other

4. **Occupation**

   a) Transporter/Driver

   b) Fleet Manager

   c) Business Owner

   d) Other (please specify)

5. **Highest level of education**

   a) SSLC

   b) HSC

   c) Diploma

   d) Undergraduate

6. **Monthly income**

   a) Less than 10,000

   b) 20,000 – 30.000

   c) 40.000 – 50,000

   d) More than 50.000

7. **Years of experience in the commercial vehicle industry**

   a) Less than 1 year

   b) 1-5 years

   c) 6-10 years

   d) More than 10 years

8. **Have you ever used or operated a commercial vehicle before?**

   a) Yes

   b) No

9. **Which segment(s) of the commercial vehicle market are you most interested in?**

    a) Light commercial vehicles (LCVs)

    b) Medium commercial vehicles (MCVs)

    c) Heavy commercial vehicles (HCVs)

    d) Buses

    e) Special purpose vehicles (SPVs)

10. which brand do you prefer?

a) TATA Motors

b) Ashok Leyland

c) Mahindra & Mahindra

d) Isuzu

e) Volvo

f) others

11. Which fuel options do you currently use or consider for your commercial vehicles?

a) Diesel

b) Petrol

c) Compressed Natural Gas (CNG)

d) Liquefied Petroleum Gas (LPG)

e) Electric

f) Hybrid (combination of fuel and electric)

g) Hydrogen

h) Other (please specify)

12. What are the main purposes for using commercial vehicles in your industry? (Select all that apply)

a. Goods Transportation

b. passenger transportation

c. Logistics and supply chain

d. Construction and infrastructure

e. Others (please specify):

13. How satisfied are you with the level of innovation currently offered in commercial vehicles?

a) Very dissatisfied

b) Dissatisfied

c) Neutral

d) Satisfied

e) Very satisfied

14. How familiar are you with Indian commercial vehicle brands?

a) Not familiar at all

b) Slightly familiar

c) Moderately familiar

d) Very familiar

e) Extremely familiar

15. How familiar are you with International commercial vehicle brands?

a) Not familiar at all

b) Slightly familiar

c) Moderately familiar

d) Very familiar

e) Extremely familiar

16. What key factors influence your decision to purchase an Indian commercial vehicle?

    a) Price/affordability

    b) Performance and reliability

    c) Fuel efficiency

    d) Safety features

    e) Brand Reputation

17. What are your key challenges when purchasing or owning commercial vehicles in India?

a) High initial cost

b) Maintenance and repair costs

c) Limited access to financing options

d) Availability of spare parts

e) Lack of reliable after-sales service

18. Which factors do you think will most impact the growth of the commercial vehicle market in the future?

a) Government policies and regulations

b) Technological advancements

c) Infrastructure development

d) Environmental concerns and emission norms

e) Economic growth and business expansion

19. Would you consider switching to an Indian commercial vehicle brand if it offered comparable quality and features to international brands at a more competitive price?

a) yes

b) no

c) undecided

20. Are you willing to pay a premium for environmentally friendly features in International commercial vehicles?

a) yes

b) no

c) undecided

21 Are you willing to pay a premium for environmentally friendly features in Indian commercial vehicles?

a) yes

b) no

c) undecided

22. Are you willing to pay a premium for environmentally friendly features in Indian commercial vehicles?

a) yes

b) no

c) may be

23. Is there anything else you would like to share about commercial vehicles or any other aspect related to this study?

Comparative study of Indian and International Commercial Vehicle Brand

29%	21%	2%	20%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	**Submitted to Sri Sairam Engineering College** Student Paper	7%
2	shodhgangotri.inflibnet.ac.in Internet Source	2%
3	ranegroup.com Internet Source	2%
4	Submitted to Manipal University Student Paper	2%
5	www.juse.or.jp Internet Source	2%
6	bsmedia.business-standard.com Internet Source	1%
7	docshare.tips Internet Source	1%
8	Submitted to B.S.Abdur Rahman Crescent Institute of Science & Technology Student Paper	1%

www.motorindiaonline.in

9	Internet Source	1%
10	www.energypolicy.columbia.edu Internet Source	1%
11	Submitted to London School of Economics and Political Science Student Paper	1%
12	Submitted to Dr. V.N. Bedekar Institute of Management Studies Student Paper	<1%
13	www.coursehero.com Internet Source	<1%
14	www.scribd.com Internet Source	<1%
15	www.voxco.com Internet Source	<1%
16	Submitted to University of Greenwich Student Paper	<1%
17	Submitted to Westcliff University Student Paper	<1%
18	www.studymode.com Internet Source	<1%
19	www.sweetstudy.com Internet Source	<1%

| 20 | www.researchgate.net
Internet Source | <1 % |

| 21 | Roger Fouquet. "The United Kingdom demand for renewable electricity in a liberalised market", Energy Policy, 1998
Publication | <1 % |

| 22 | Submitted to Philippine Science High School
Student Paper | <1 % |

| 23 | fdocuments.us
Internet Source | <1 % |

| 24 | www.businessinsider.in
Internet Source | <1 % |

| 25 | globalcsrc.org
Internet Source | <1 % |

| 26 | K. Ravi, P. Naveenchanran. "Study on practical model for Indian 2W automobile manufacturing", Materials Today: Proceedings, 2023
Publication | <1 % |

| 27 | hdl.handle.net
Internet Source | <1 % |

| 28 | Submitted to Symbiosis International University
Student Paper | <1 % |

| 29 | core.ac.uk
Internet Source | |

<1 %

| 30 | phdessay.com
Internet Source | <1 % |

| 31 | www.plastindia.org
Internet Source | <1 % |

| 32 | houstonthermalinspections.com
Internet Source | <1 % |

| 33 | images.moneycontrol.com
Internet Source | <1 % |

| 34 | scholar.mzumbe.ac.tz
Internet Source | <1 % |

| 35 | www.ijstm.com
Internet Source | <1 % |

| 36 | Submitted to Roger Williams University
Student Paper | <1 % |

| 37 | coek.info
Internet Source | <1 % |

| 38 | epe.lac-bac.gc.ca
Internet Source | <1 % |

| 39 | Submitted to IMS Unison University
Student Paper | <1 % |

| 40 | Ranawat, Mahipat and Tiwari, Rajnish. "Influence of Government Policies on Industry | <1 % |

Development: The Case of India's Automotive Industry", Technische Universität Harburg, 2009.
Publication

41	Submitted to University of Wales Institute, Cardiff Student Paper	<1 %
42	www.financialexpress.com Internet Source	<1 %
43	www.thinkindiaquarterly.org Internet Source	<1 %
44	de.slideshare.net Internet Source	<1 %
45	Submitted to ABES Engineering College Student Paper	<1 %
46	dspace.christcollegeijk.edu.in:8080 Internet Source	<1 %
47	id.scribd.com Internet Source	<1 %
48	media.proquest.com Internet Source	<1 %
49	www.eiu.com Internet Source	<1 %
50	www.uniport.edu.ng Internet Source	<1 %

Internet Source   <1 %

Exclude quotes   On   Exclude matches   Off
Exclude bibliography   On

Comparative study of Indian and International Commercial Vehicle Brand

FINAL GRADE

/0

GENERAL COMMENTS

Instructor

PAGE 20

PAGE 21

PAGE 22

PAGE 23

PAGE 24

PAGE 25

PAGE 26

PAGE 27

PAGE 28

PAGE 29

PAGE 30

PAGE 31

PAGE 32

PAGE 33

PAGE 34

PAGE 35

PAGE 36

PAGE 37

PAGE 38

PAGE 39

PAGE 40

PAGE 41

PAGE 42

PAGE 43

PAGE 44

PAGE 45

PAGE 46

PAGE 47

PAGE 48

PAGE 49

PAGE 50

PAGE 51

PAGE 52

PAGE 53

PAGE 54

PAGE 55

PAGE 56

PAGE 57

PAGE 58

PAGE 59

PAGE 60