CONSUMER BEHAVIOUR TOWARDS ELECTRIC VEHICLES IN INDIA

By-
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Course: MSc in International Business
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Submitted to the National College of Ireland, August 2024

Abstract

Purpose: The purpose of the study is to investigate the factors influencing consumer behaviour towards electric vehicles (EVs) in India aiming to enhance EV adoption in this market.

Methodology: The study has been done through involvement of primary quantitative data strategy in the form of surveys. 43 participants belong to the category of millennials and Generation Z within 22-35 years of age and have a good knowledge about the adoption of electric vehicles and its use in the Indian market have been chosen as samples. The study has further used SPSS software for analysing the gathered survey responses in an efficient way based on the study objectives.

Results & Findings: It has been found that the utilisation of EVs are influenced in the Indian market by multiple factors that include sustainability, government incentives, and low operating costs. It can be concluded that the prioritisation of EVs in India can strategically assist in enhancing sustainability and reducing climate change issues.

Limitations: Lack of focus towards other countries and vehicles, apart from India and EVs and the time constraints have been observed as the key limitations in the study.

Submission of Thesis and Dissertation

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Acknowledgement

I would like to express my deepest gratitude to those who have supported me throughout the journey of completing this dissertation.

Firstly, I would like to thank my supervisor, for their patience and the time they invested in providing feedback on my work. I am also grateful to all the lecturers at National College of Ireland who have guided me throughout the academic year. Your knowledge, dedication and willingness to assist have been integral to my learning experience, and for that, I am thankful. To my family, especially my parents, thank you for your unwavering support and encouragement. Finally, a heartfelt thanks to my friends for their companionship and motivation throughout this journey.

Signature: Ostler Dion Barreto

Date: 10th August 2024

National College of Ireland

Project Submission Sheet

Student Name:	Ostler Dion Barreto		
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Consumer Behaviour Towards Electric Vehicles in India

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Additional Evidence:

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Additional Evidence:

[Place evidence here]

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List of Abbreviations

Faster Adoption and Manufacturing of Hybrid and Electric Vehicles	FAME
Electrical Vehicle	EV
Production-Linked Incentive Scheme	PLI
Battery Electric Vehicles	BEV
Plug-in Hybrid Electric Vehicles	PHEV
Hybrid Electric Vehicles	HEV
Theory of Reasoned Action	TRA

Chapter 1: Abstract and Introduction

1.1 Abstract

India offers an exceptional yet challenging market for adoption of Electric Vehicles due to its fast-expanding economy and expanding population. Growing numbers of people are contemplating EVs as a practical substitute for conventional gasoline-powered cars, as awareness of climate change and need for sustainable behaviours increases. Between 2022 and 2023, the number of registered vehicles will increase by 6.3% from 2022 (IANS, 2023). Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) was introduced by the Indian government in 2015 to reduce the rate of pollution and increase adoption rate of EVs. Despite these policies and practises the adoption rate of the EV in the Indian market is low. The main reason for the reluctance of Indian buyers is the lack of a suitable charging infrastructure in their nation. The goal of this study is to analyse these complicated issues and offer useful information to interested parties so they may get over from present obstacles and promote the wider uptake of electric vehicles in India.

1.2 Background of the study

The needs and preferences of consumers towards Electrical Vehicle (EVs) has increased as a result of the worldwide trend towards the eco-friendly and sustainable transportation method. In this context, Sahoo *et al.* (2022), discussed that acceptability of consumers towards EVs varies due to some of the factors like governmental policy, savings, technological advancement and concerns on the environment. A report from IANS (2023), demonstrated that Indian Institute of Toxicology Research (IITR), informed car emission was one of the most prominent causes of air pollution in India. For instance, the statistics on the number of registered automobiles in Lucknow city shifted from approximately 26. 5 lakh vehicles in 2022 to above 28 lakh vehicles in 2023 (IANS, 2023). Supporting this IEA (2023), reported that in India urban air pollution is mostly caused by road transportation, which contributes 12% of energy-related CO2 emissions. Based on this issue and to lower air pollution rate the Indian Government launched ***Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME)*** in 2015 (PIB, 2023).

In the year 2019 FAME II was launched which offers incentives for electric and hybrid vehicles purchasing and aims in supporting 1 million two-wheelers, 500,000 three-wheelers, 55,000 four-wheelers, and 7,000 buses through subsidising (PIB, 2023). The Economic Times (2024), found out that the Indian Government directly subsidies and incentives up to INR 10000 for every two-

wheeler for roughly 3.33 lakh two-wheelers. It is INR 50,000 for a large three-wheeler up to INR 25,000 subsidy for a small three-wheeler and up to INR 50,000 in case of a large three-wheeler (The Economic Times, 2024). Due to this governmental awareness and benefits and in an effort to combat rising pollution levels of the nation, the Indian people are switching to EVs. Supporting this Sun (2023), reported that the electric car sales volume in India is predicted to surpass 9 million units by 2027 ***(Refer to Figure 1)***.

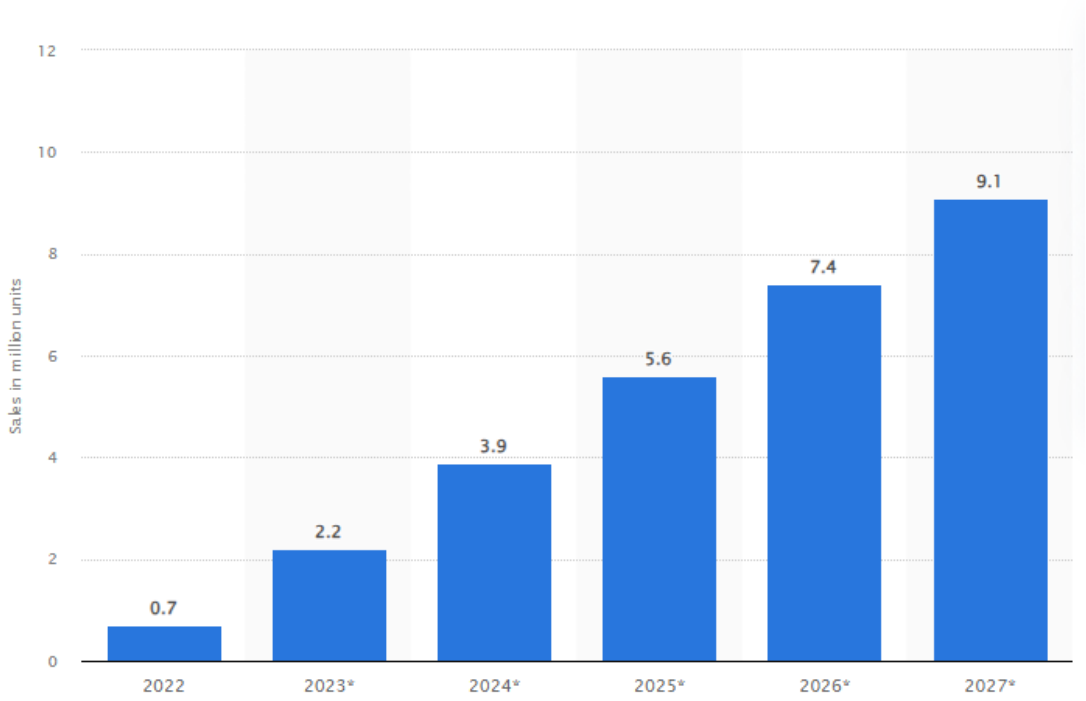

Figure 1: Sales volume of electric vehicles in India 2022-2027

(Source: Sun, 2023)

Automotive companies witnessed the growth of a latent need for subscription-based EV models to cater to the ever-evolving needs of millennials and Gen Zs with their flexible ownership ability (Chakravorty, 2022). Chakravorty (2022), also reported that there is a growing demand of millennials and Gen Zs to buy EVs and without actually purchasing a car, sometimes they prefer a choice of vehicles through the subscription services offered by different auto companies. Customers are increasingly searching for long-term, practical, and affordable solutions as they have grown accustomed to renting services (chauffeur and self-driven) (Chakravorty, 2022).

Based on this it can be interpreted that since the millennials and Gen Z generation are known for their environmental consciousness and tech-savviness, they have a significant influence on the

purchasing decisions of the EVs. Through conducting this research, the findings will help the manufacturers to tailor their strategies for meeting the consumer demands, enhance the appeal to Ev and ultimately contribute to a more sustainable future for the Indian transportation sector.

1.3 Problem Statement

Although the Indian Government implemented several policies and strategies for promoting EVs as a sustainable transportation solution, yet the adoption rate remains relatively low. According to Singh (2024), despite the governmental initiatives the EV adoption rate in India is still very low, accounting for only approximately 1% of all automobile sales. Just a small percentage of Indian consumers have gone electric yet, meaning that the adoption of 4-wheeler EVs for private usage is still rather limited. Indians are not purchasing EVs due to a lack of infrastructure for charging them (Singh, 2024). A survey has been conducted among the Indian people regarding EV purchasing and 51.7% of the respondents said that better infrastructure for charging EVs was necessary for the government to speed up the adoption of EVs in India (Singh, 2024). One of the main reasons preventing EVs from being adopted quickly in India is a lack of infrastructure for charging them, which causes range anxiety (Singh, 2024).

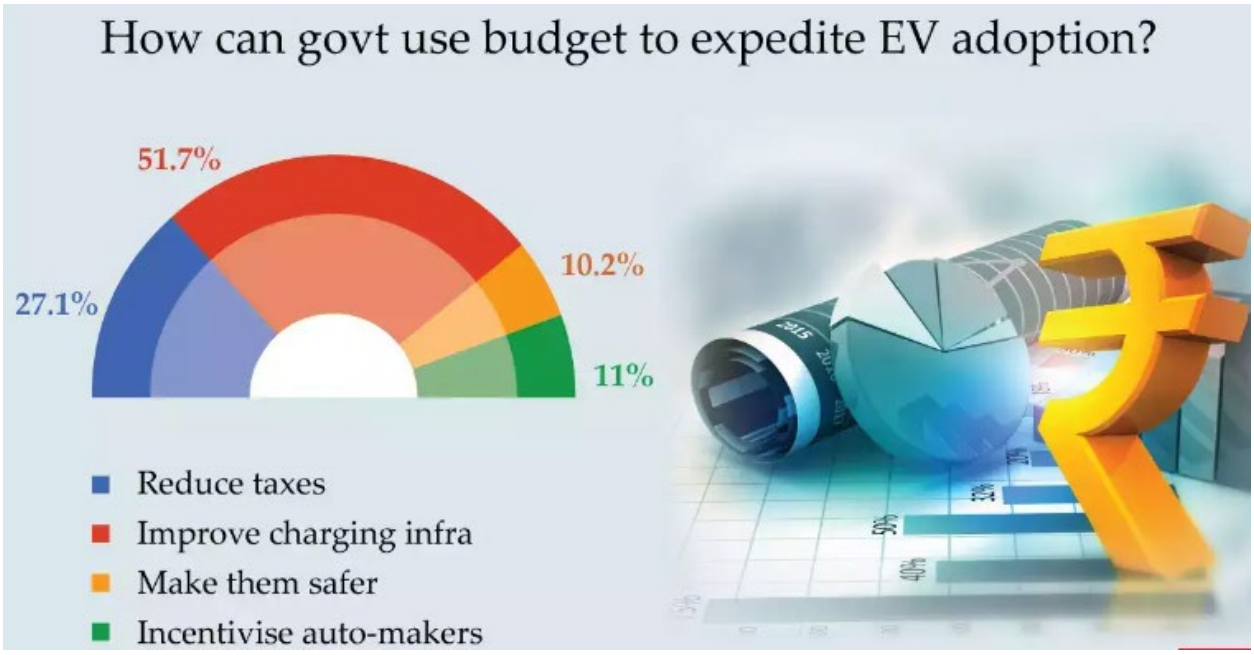

Figure 2: Things that stopped Indian people from buying EVs

(Source: Singh, 2024)

The issue also involves the necessity of customised marketing plans that will appeal to the general public and vehicle aficionados, especially those who have a dual interest in EV bikes and cars. In order to make EVs a practical and appealing alternative, manufacturers need to find out top priorities of these consumers in terms of features, cost, and performance.

1.4 Research aim

The aim of this research is to investigate the factors influencing consumer behaviour towards electric vehicles (EVs) in India aiming to enhance EV adoption in this market.

1.5 Research Rationale

EVs are powered by fuel and electricity which is environmentally friendly and economically sustainable. According to Sahoo *et al.* (2022), the EV ecosystem is well balanced between infrastructure, sustainable product design and government, which result in strategic alliances. In this context, the Indian government provides free toll passes for EV customers to increase the adoption rate of EV in the market. Furthermore, the Indian government has committed to incorporate an agenda as "only Electric vehicles on Road" by 2030 (Khurana, Kumar and Sidhpuria, 2019). This agenda can motivate the Indian consumers to adopt EVs for minimising harmful environmental impact below 7% in the automobile industry. However, the adoption rate of EV is still low in the Indian market due to its high capital costs and limited vehicle service centres (Goel, Sharma and Rathore, 2021). In addition, charging time of EVs is as high as 8 hours for 7Kw batteries in India, which is a threat for adoption of EVs in the long routes of driving such as 400 km or 500 km. Due to these concerns, only 0.5% of consumers have so far adopted EVs in the Indian market in comparison to fuel-based cars. In this regard, the motivation of concerned research is to examine both opportunities and barriers related to EVs in the Indian market and impacts of those on adoption perspectives of Indian consumers.

1.6 Contribution to the knowledge and research significance

The involvement of EVs in the automobile sector promotes sustainable practice as it does not produce greenhouse gas emissions and air pollution. As, EVs limit tailpipe emissions which offer environmental opportunities in comparison to fuel or gas-powered vehicles (Alanazi, 2023). However, high charging time and lack of servicing infrastructures restrict the Indian customers to adopt this vehicle. In this context, this research sheds light on the feasibility of EVs in the Indian market and assesses its factors which affect the Indian consumer attitude of buying EVs. This research mainly targets automobile retailers, manufacturers of EVs, Indian consumers and Indian

policymakers for understanding the opportunities and barriers of EVs in India while addressing the areas for development. In this context, this research has added value to the research on EVs while discussing Indian market and Indian consumer perceptions which extend knowledge.

The research is significant as it has a scope of further research based on the challenges of EVs and its improvements for increasing the acceptance among Indian customers. In addition, the previous researches have limited interpretation in relation to the Indian consumer behaviour towards EVs, which has been extended in further at this research. Based on this context, the concerned research is significant and relevant in the contemporary environment.

1.7 Potential methodological approach

The research has been undertaken with a primary quantitative method which has been collected through a survey method. The concerned research has adopted positivism research philosophy, descriptive research design and deductive research approach for incorporating in-depth and authentic data in relation to Indian consumer perception on EVs in the present environment. Before initiating the survey, a consent form has been provided to individual participants to take their opinions in relation to willingness to engage with the research. The collected information has been analysed through frequency and statistical analysis for gaining the findings of the research. The pilot study has been executed through recruiting 43 Indian Millennials and Gen Z customers with a target population of 55 for obtaining the quantitative insights through following the eligibility criteria. Moreover, the implementation and usage of SPSS software helped in increasing the accuracy of the results with identification of statistical significance and correlations among the variables.

1.8 Description of main results

The main results of the study indicate that the Indian consumers have a high level of engagement with electric vehicles that increases their familiarity with the adoption of electric vehicles. The results showed that the attitudes of consumers are somewhat likely to purchase electric vehicles in the next 5 years as they get the motivation to purchase due to lowered operating costs. The advanced features in the EVs including autonomous driving and connected car techniques are very essential to be implemented in EVs. In this regard, workplace charging facilities, public charging stations with government support for purchasing EVs through incentives has been effectively influencing consumer behaviour of India to adopt EVs. The technical features including instant

torque and acceleration, customization possibilities in cars and high performance and speed in motorcycles also leads them to purchase EVs and motorcycles.

1.9 Key literature indication and gap

Some key literatures have been identified in this section which has helped to structure the discussion at literature review. According to Sahoo *et al.* (2022), demand for EVs in the Indian market is increasing due to enhancing environmental consciousness. Additionally, the research of Buhmann and Criado (2023), depicted that technological attributes with extended battery and energy efficiency facilities of EVs influence purchase decisions of customers. However, Mulgund (2022) mentioned that lack of charging infrastructure and high investment are the pain points for Indian customers to adopt EVs. Besides, the identified gap is lack of discussion about Indian customer moral standards and perception towards EVs which have been fulfilled in this research.

1.10 Structure of the dissertation

Chapter 1: Abstract and Introduction

This chapter contains background of research topic and abstract of study with research rationale, significance and problem statement. It also includes methodological approach and structure of dissertation.

Chapter 2: Literature Review

In this chapter, a critical analysis has been initiated through compare and contrast between viewpoints of different previous authors related to the research topic. In addition, theoretical underpinning and conceptual framework with literature gap have also been included in this chapter.

Chapter 3: Research Question

The research questions have been formulated in this chapter with main and sub questions based on the aim and objectives of the research.

Chapter 4: Research Methodology

This chapter has included important tools and methods which have been considered for collecting and analysing the primary quantitative data related to the research topic to find out solutions for the problem.

Chapter 5: Findings and Analysis

In this chapter, the findings of research have investigated the research problem in which the collected primary quantitative data have been analysed through frequency and statistical analysis.

Chapter 6: Discussion

The discussion chapter has discussed the collected findings of the research in relation to the information of previous literature review chapters to address whether or not the research objectives have met.

Chapter 7: Conclusions

The conclusion chapter has summarised the complete findings of the research. In addition, this chapter includes limitations of the study and appropriate recommendations have been made based on the research problems. At last, the scope of future research has also been included in this chapter.

Chapter 2: Literature Review

2.1 Chapter Introduction

The literature review chapter includes background of research topics through summarising the existing research information critically. In this regard, this chapter has reviewed the existing information related to consumer behaviour on EVs at Indian market critically. Furthermore, this chapter has included theoretical perspectives to outline the knowledge. At last, significant gaps of current literature have been investigated while identifying strengths and weaknesses of the research. The complete literature review has been conducted thematically to generate greater insights related to previous information relevant to the topic. At last, a conceptual framework has been included in this chapter to make a pictorial representation of key variables of this research.

2.2 Key themes to present areas of debates

2.2.1 Motive and attitude formation of consumers

The individual aspiration for pleasure and fulfilment of certain requirements is referred to personal motive or self-motivation. According to Sahoo *et al.* (2022), the understanding of personal motive is important to determine their willingness to commit in attaining desired goals. In this context, positive motive trends help to drive an individual to achieve and avail desired benefits. On the contrary, XIAO *et al.* (2022) reported that negative personal motives of consumers restrict them to attain benefits through creating inhibitions in their minds. For example, environmental benefits, economic incentives and effective performance are the positive personal motives for consumers to adopt EVs (Higueras-Castillo *et al.*, 2023). However, negative personal motives such as high initial cost and lack of reliability on new technology affect the positive attitude formation of consumers towards EVs (Anastasiadou and Gavanas, 2022). It signifies that the personal motives of Indian consumers affect the acceptance attitude towards EVs.

The Indian consumers have positive motives to adopt EVs related to sustainability focused characteristics and attitudes to do something for reducing CO_2 emissions in the social environment. However, Bansal *et al.* (2021), mentioned that the Indian consumers have diverted due to poor charging infrastructure, lower disposable income of consumers and limited driving range of EVs which negatively affect positive attitude formation of buying EVs. In this regard, the primary data of the concerned article provide a contradictory outcome about the personal motives of Indian customers and their attitudes towards EVs. As, customers want to accept EV for personally contributing to sustainability while poor infrastructure and lack of proper support affect their

attitude in India. However, Sahoo *et al.* (2022) argued that the concerns of financial gain, environment and contentment with government subsidies apply to make positive attitudes in adopting EVs. Typically, Indian consumers buy EVs in response to government offers rather than understanding its effectiveness towards the environment. Therefore, the facilities of EVs are responsible for changing the motive and attitude of consumers towards EVs.

2.2.2 Social Motive of Consumers

The adoption of EVs is significantly influenced by the societal motives of the customers. According to Sahoo *et al.* (2022), social motives impact people for taking action on values, beliefs, and the impact of society standards on maintaining environmental consciousness. In the EV adoption, one of the key social motives regarding EV adoption is the growing environmental consciousness of people. Supporting this Sahoo *et al.* (2022), informed that customers are becoming increasingly concerned about the ecological qualities of products and the negative impacts of their actions on the environment due to environmental degradation.

Manley, Seock and Shin (2023), discussed that Millennials and Generation Z have a sensitive feeling of responsibility for the environment since these people are ready to give much importance to sustainability in their daily lives. These customers are very much inclined to choose between EVs and the conventional internal combustion engine vehicles based on their preferred contribution to the reduction of the negative impact on the environment. Zimm (2021), demonstrated that EVs are an environmentally friendly technology that cuts down fuel consumption significantly and lowers the contribution of the transportation sector to the global warming issue. EV adoption is framed as a socially responsible choice by government laws and public campaigns which is further portrayed as another key social motive. Zhang, Bai and Shang (2018), stated that the awareness message regarding EV adoption is further reinforced by incentives, subsidies and awareness campaigns that display the environmental and social benefits of EVs. For example, ***Mahindra Electric*** is committed to advancing electric transportation in India as an Indian manufacturer and it regularly conducts awareness campaigns emphasising the financial and environmental advantages of EVs, with an emphasis on urban transportation solutions (Economic Times, 2023) ***(Refer to Figure 3)***. As a result of the benefits EV provides for the people and the environment, customers are more inclined to purchase them.

Figure 3: Promotional awareness of Mahindra Electric towards economic sustainability of EVs

(Source: Economic Times, 2023)

2.2.3 Factors influencing customer buying behaviour

Environmental benefits

EVs are eco-friendly as it emits low-carbon and does not emit green-house gas which strengthens its contribution towards sustainability. As stated by Tu and Yang (2019), energy-savings, low-carbon and intelligent electric vehicles reduce environmental impact which make positive behavioural intentions among consumers to purchase EV. The secondary data of this research has fulfilled the aim of research through understanding the effectiveness of EVs in managing environmental uncertainties and pollution. Similarly, Osman Gani *et al.* (2019), mentioned that environmental concerns of customers show their emotional responses to environmental issues which stimulate customer interests to EVs as it has sustainable benefits. In this context, the environmental concern influences consumer behaviour to purchase EVs as it has benefits such as low carbon emission and energy savings.

Technological advancement

The technological development and consumer adoption of EVs are related to managing energy efficiency and carbon intensity for future transportation. As stated by Forsythe *et al.* (2023), technological improvement at EV has enhanced consumer preferences for adopting this vehicle as it minimises fuel cost and complete operation run on electricity. In this context, customers are influenced by its energy-efficient technological benefits. Sun *et al.* (2019) also reported that new technology in batteries such as Nickel-Metal hydride and Lithium-ion enhances the energy capacity and charging potentials. The concerned advancements in present EVs influences customers to purchase EVs for minimising fuel expenditure and complications related to charging. For example, the emergence of lithium-ion batteries and solid-state batteries have driven Indian consumer acceptance towards EVs as it enhances safety, charging speed and efficiency (Pandey, 2024). Therefore, it can be stated that technological advancement of EVs drive consumer preferences to adopt EVs for gaining desired services and outcomes.

Economic incentives

The governments are quite focused on deploying EVs in their countries worldwide in relation to its environmental effectiveness. Due to this concern, different economic incentives or subsidies have been provided to EV customers for driving the sales of EVs. According to Potter and Favour (2024), purchase subsidies, tax incentives and infrastructure development influence customers towards EV adoption. In this context, policymakers continue to support EV adoption through long-term incentives for minimising dependency on fossil fuels. Gong, Ardeshiri and Rashidi (2020), reported that government incentives highly motivate the decision-making process of consumers to adopt EVs. As an example, India has projected 125% growth in the adoption of EVs due to different regulatory catalysts and government subsidies such as FAME (Faster Adoption and Manufacturing Electric vehicles) and PLI (Production-Linked Incentive Scheme) scheme (Times of India, 2024). In this respect, the FAME scheme provides incentives for purchasing EVs and charging infrastructure support to the customers while PLI scheme is effective for offering incentives to manufacture EVs in India (IEA, 2023). Hence, government support and economic incentives heavily influence customers to adopt EVs and improve their sales.

2.2.4 Types of electric vehicles and its market in India

The electric vehicle market in India is diverse, encompassing several types of vehicles designed for different consumer needs and preferences. Battery Electric Vehicles (BEVs), Plug-in Hybrid Electric Vehicles (PHEVs), Hybrid Electric Vehicles (HEVs), Electric Two-Wheelers and Electric

Three-Wheelers are some of the types of electric vehicles that are sold in India (Alanazi, 2023). Supporting this PIB (2023), reported that due to the FAME scheme of the Indian government that offers incentives and subsidies for EV buyers, the Indian EV market is witnessing substantial growth, with increasing annual sales. As reported by Zandt (2024), in 2023, the market share of electric cars was 6.3%, a significant rise from the little less than 1% pre-pandemic levels ***(Refer to Figure 4)***. It is unclear if the increase in 2023, which was supported by almost $600 million in government subsidies under the FAME-II program will continue into 2023. A 30% market share for electric vehicles by 2030 is the current government goal (Zandt, 2024).

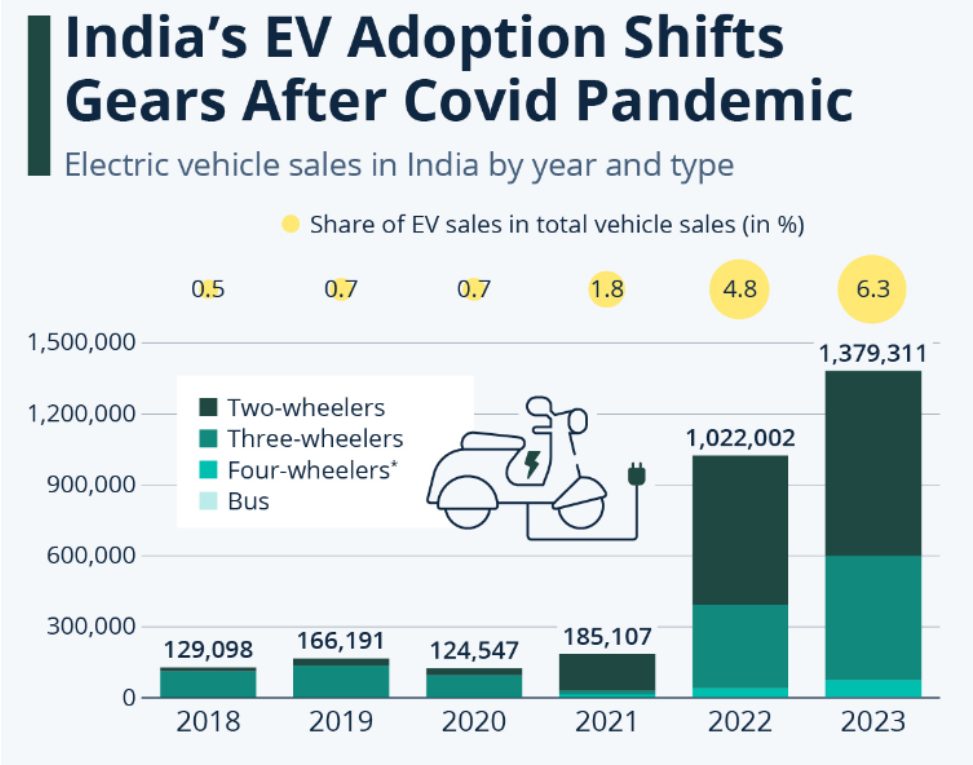

Figure 4: Electric vehicle sales in India after pandemic

(Source: Zandt, 2024)

The central government of India declared that by 2030, all new sales of ICE (petrol and diesel) cars will be replaced with plug-in EVs with an emphasis on lowering air pollution and reliance on fossil fuels (Pathak and Patel, 2021). EVs are starting to play a major role in the economic, energy, and environmental policies of India and the government wants to make India a centre for the production of electric cars worldwide. Pathak and Patel (2021), reported that in the FAME 1 programme, the government provided a total of INR 343 crore in incentives to encourage the

adoption of 2,78,000 EVs in various configurations, which has increased the demand of the EV in the Indian market. Supporting this Sun (2023), demonstrated that the Indian market share of the EV is rising up and a 40% market share for electric cars is predicted for the automobile market in 2030 which would nearly double in growth from 2022 ***(Refer to Appendix 1)***.

Based on these statistics, it is evident that the EV market is rising day by day in India in terms of technological advancements and it is widely accepted by consumers.

2.2.5 Consumer Preferences for Electric vehicles

In the context of consumer preferences towards the EV, several key factors are there that influence the choices and preferences of the customers.

Financial attribute

One of the primary considerations for the customers of EV adoption is the cost of the electrical vehicles. Although the initial cost of EVs is higher than the traditional ones, yet customers think about the long-term savings from lower fuel and maintenance costs. Liao, Molin and Wee (2017), discussed that customers are increasingly attracted to the operational cost of attributes approach which results in significant savings over time. The pricing of EVs is greatly impacted by governmental incentives, subsidies, and tax benefits. For example, the Indian Government declared that ***Under Section 80 EEB of the Income Tax Act***, people who use loans to buy electric vehicles (EVs) may deduct interest paid on the loans up to Rs. 1.5 lakh (as of July 2024) (Raote, 2024). All these initiatives taken by the Government make customers more appealing towards EVs

Technical attribute

Customers place a high value on the technical features like the battery life, range and overall performance. According to Buhmann and Criado (2023), consumers choose EVs with extended driving ranges and effective battery technology since range anxiety is still a major concern. Contrarily, Liao, Molin and Wee (2017), argued that EV uses slow charging that takes almost 6-8 hours for a full charge but fast chargers can fill the battery up by 80% within 15-30 minutes. The durability of the batteries and their ability to charge quickly also play a vital role as a technical attribute. Consumers are also seeking out cutting-edge technologies like smart car management systems, connection functions and regenerative brakes in the EV that enhance the customers' trust and adoption of electric vehicles.

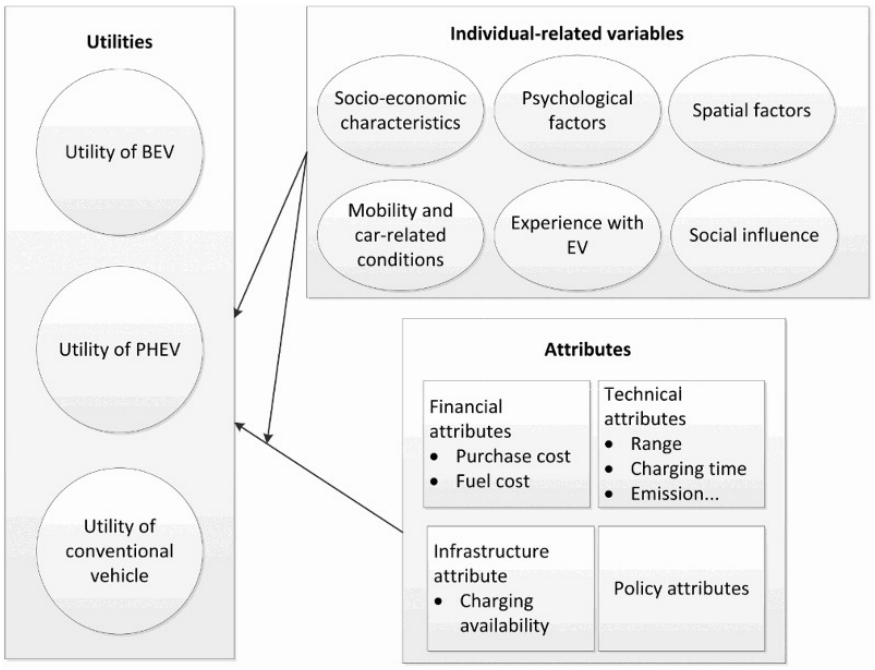

Figure 5: Consumer preferences for the Electrical vehicles

(Source: Liao, Molin and Wee, 2017)

Infrastructure attribute

For EV adoption, infrastructure for charging needs to be easily accessible and readily available. Mastoi *et al.* (2022), discussed that customers like a well-established, user-friendly network of charging stations that are readily accessible. The user experience is improved when charging stations are simple to identify and use through mobile applications or car systems as a result of infrastructure advancement.

Policy attribute

Customer choices are significantly influenced by government policies and incentives. Li and Wang (2023), stated that EVs become more appealing when purchase prices are subsidised, taxes are lowered and incentives are offered for installing home charging stations. For example, the Indian Government has lowered the GST rate on EVs from 12% to 5% which makes it more preferable for the customers (PIB, 2024). Also, in India the 18% GST formerly applied to electric car chargers and stations has been lowered to 5% GST (PIB, 2024). Consumer trust is increased by these laws and benefits that require EV-friendly urban design and encourage the construction of charging infrastructure.

2.2.6 Governmental support and initiatives for electric vehicles in India

The positive ecological consequences of EVs in relation to low carbon footprints and limited use of non-renewable sources influences governments of different countries to use EVs in transportation. However, Caulfield *et al.* (2022) mentioned that economic and traditional barriers of EVs result in reliance or trust on the effectiveness of EVs in transportation. In this regard, different policies, subsidies and incentives have been provided from governments to influence the sales of EVs. As stated by Chawla *et al.* (2023), governmental support such as financial and non-financial incentives, regulatory measures, raising awareness and charging infrastructure development influences consumer purchasing decisions towards EVs. The primary data of concerned research has helped to understand that free-interest loans for new EV purchase and cheaper running costs of EVs with other governmental incentives drive the customer engagement. On the contrary, Goel and Sharma (2021) mentioned that government initiatives and support is unable to uplift the customer influence to EV as expected as buyers think that it is a luxurious and expensive vehicle which restricts them to engage with EV purchase decisions. In this context, despite all efforts of the government, the adoption of EVs remains an insurmountable problem in the automobile industry.

As an example, the Indian government has initiated "Total Cost of Ownership" (TCO) which would help to make the costs of EVs 70% cheaper in comparison to 2023 (IEA, 2023) ***(Refer to Appendix 2).*** The concerned initiative of the Indian government with FAME subsidies is favourable towards taxations for Indian customers while purchasing EVs.

Based on this context, it can be stated that government support influences customer purchase decisions for EVs as it mitigates their concerns regarding infrastructural problems and high capital costs. As stated by Zhang, Wang and Zhao (2020), different policies have also been generated for developing the adoption of green vehicles in the market such as tax preference, consumer subsidy and R&D subsidy while these initiatives focus on subsidising the customers who purchase EVs or green vehicles. The secondary qualitative data collection methodology of this research has clearly addressed the impact of consumer subsidy on purchase intentions of green vehicles. In this context, the government initiatives and support play important roles for enhancing customer intentions to EVs while making them more knowledgeable about its effectiveness. For example, FAME and PLI schemes are adopted faster by different states of India which will enhance 35% customer engagement and sales with EVs by 2030 and 50% market share by 2070 in India (IEA, 2023).

Therefore, government incentives and support are needed to make customers aware and engaged towards EVs while decreasing the harmful impact of fossil fuel accelerated vehicles.

2.2.7 Challenges and opportunities in the electric vehicle market in India

In the Indian market, the demand for EVs is rising slowly due to the government steps in reducing the reliance on fossil fuels and placing EVs as primary alternatives of Internal combustion engine (ICE) vehicles. However, EV accounted for only 1% of total vehicle sales in India at 2021 while it is expected to grow by 39% by 2030 (Mulgund, 2022). The primary challenge of the electric vehicle market of India is that investments are decreased eventually. Mulgund (2022) reported that PE/VC investment on EVs reached $1.7 billion in 2021 while it decreased to $666 million in 2022 ***(Refer to Appendix 3)***. It results in a lack of concern about climate and environmental sustainability in the Indian market which limits the infrastructural improvements of the EV market in India.

However, The Times of India (2021) mentioned that Indian government support with 25% of tax concession and zero registration fees with proper concern for infrastructural developments of EVs are the opportunities for EV market in India. In this context, positive government support and economic opportunities are able to drive the sales of EVs in the Indian market while enhancing its opportunities. Contrarily, Hemim (2024) discussed in its research that charging infrastructure in India is relatively limited and lack of standardised charging protocol create interoperability imitations. In this context, the lack of supporting infrastructure in India causes hindrance for development of the EV market. As an example, India has only 1742 charging stations which is relatively low and the biggest challenge for the EV sector in India (Mulgund, 2022). Furthermore, high operating costs, uncertainty in utilisation rates of charging stations and potential load on electricity discoms are also relative challenges to create an EV-friendly environment in India. On the other hand, Khan (2023), mentioned that the Indian government has allocated Rs 197000 crores for “National Green Hydrogen Mission”, which aims to improve charging infrastructure and invests in developing awareness about EVs. In this context, the reliable investments and government support towards green initiative can bring opportunities and drive the sales of EVs in India. Therefore, the EV market of India has various hindrances related to charging infrastructure, awareness and limited investment but the government support, initiatives towards infrastructure development and its concern are the opportunities for driving the sales of EV in the Indian market.

2.2.8 Drawbacks of Using Electric Vehicles

Certain disadvantages like cost-related challenges, infrastructure, working range, and technology challenges might influence the adoption of Electric vehicles despite having numerous advantages. According to Alanazi (2023), electrical cars cost more than traditional IC engine vehicles at the point of purchase due to accommodating battery technology. On the contrary, Varga, Sagoian and Mariasiu (2019), argued that the range for each electric vehicle is considerably low compared to conventional cars. Although the advancements are being made yet range anxiety remains a significant concern. Another major concern is battery life and this becomes a concern when people are going outside and there is a limited charging infrastructure (Liao, Molin and Wee, 2017). Charging station availability and its accessibility is one of the key issues for the EV market.

In rural areas, where there are not enough charging slots is considered as a disadvantage for EV owners. The longer charging time of the EVs is a significant barrier that prevents people from switching on the electrical vehicles from the conventional one. Moreover, Liao, Molin and Wee (2017), reported that batteries in the EV decrease their capacity which means they degrade and the performance of the vehicles is reduced. One very disadvantageous characteristic of an electric car is the high initial cost of replacement of the battery which is a long run owing expense (Kumar *et al.*, 2023). Also, the environmental impacts that come with the disposal and recycling of batteries form another challenge. Moreover, Liao, Molin and Wee (2017), discussed that EV takes much more time in the charging which in comparison to traditional vehicles is a significant disadvantage. The fast chargers can charge an EV battery to about 80% in half an hour although normal chargers take several hours to charge the battery. This is disadvantageous to the customers, particularly for the busy ones who have to travel for a long time. Based on these it can be interpreted that although EVs provide a new insight into sustainable transportation, yet the disadvantages of the EVs need to be addressed properly for making it more demanding and attractive to the customers.

2.3 Theoretical underpinning

2.3.1 Theory of Planned Behaviour

The theory of planned behaviour differentiates three types of beliefs that impact the intention of individuals for performing specific behaviours (Etheridge, Sinyard and Brindle, 2023; Sahoo *et al.*, 2022).

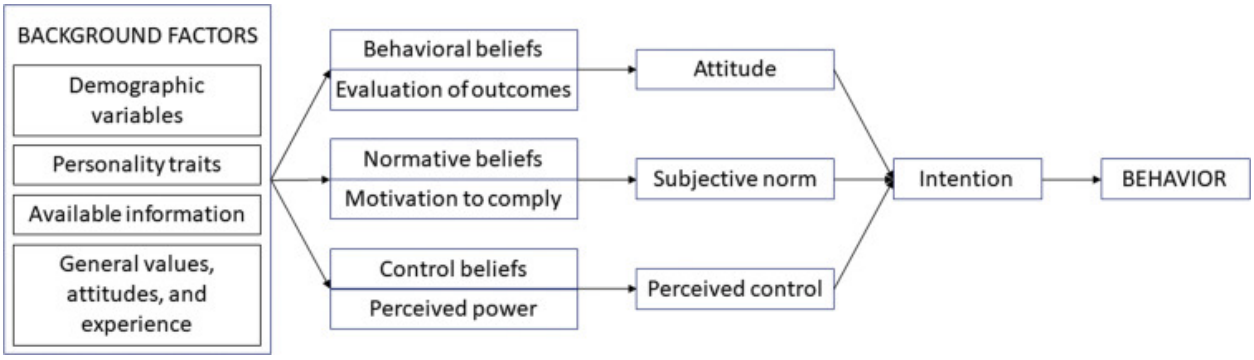

Figure 6: Beliefs in theory of planned behaviour

(Source: Etheridge, Sinyard and Brindle, 2023)

The three behaviours are behavioural beliefs that transform into attitudes towards behaviour, normative beliefs that relate to perceived attitude of figures towards behaviour and control belief that shows the ability to perform the behaviour. In this regard, it has been found in the study that around 59% of Indian consumers are concerned about climate changes, pollution levels and fuel vehicle emissions that indicates their interest in EVs (Deloitte, 2022). Moreover, the EV sales have increased to 782.39k units in India in 2023 that has been consistently increasing annually (Sun, 2024). It can be interpreted that Gen Z might be focused on motivation to comply through encouraged by increased environmental concerts for adopting EVs and their general values and experience of increased population level and climate changes might help them to adopt EV technology. Therefore, Gen Z might include motivation to comply and control beliefs aspects of the theory for shifting from traditional fuelled vehicles to EV technology.

2.3.2 Theory of Reasoned Action

The Theory of Reasoned Action (TRA) shows that intention is the primary predictor of behaviour and this theory is used to analyse a wide range of behaviours and human activity (Sahoo *et al.*, 2022).

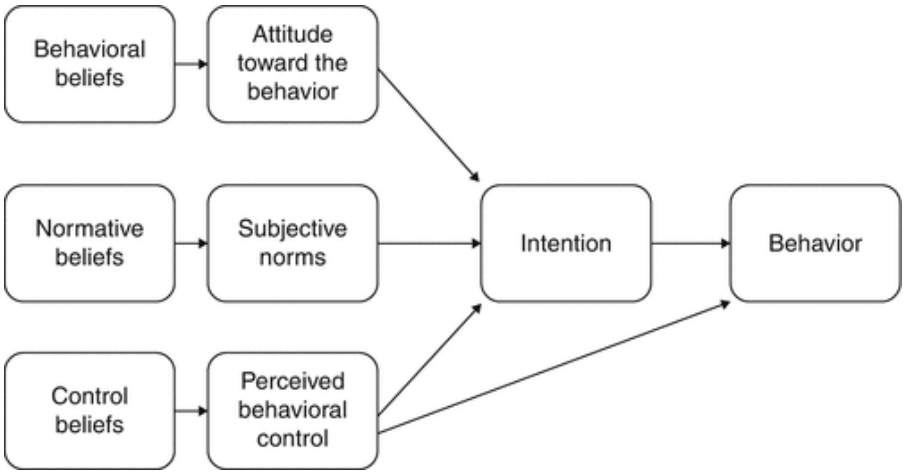

Figure 7: Aspects of Theory of Reasoned Action

(Source: LaCaille, 2013)

The behavioural, normative and control beliefs lead to attitude toward the behaviour, subjective norms and perceived behavioural control respectively that leads to intention and behaviour (LaCaille, 2013). An increased environmental concern of Gen Z has been the motivation behind the adoption of electric vehicle technology for enhancing environmental sustainability (Gupta and Sharma, 2023). This generation has a strong belief that increasing adoption of EV technology enhances environmental beliefs. Moreover, growing up in the era of advanced technology, Gen Z are open to rapid changes in technology (Gupta and Sharma, 2023). From this, it can be analysed that there is a normative belief among the generation Z that adopting and consuming sustainable technologies can decrease environmental hazards and enhance sustainability. There has been increased purchasing intention of EVs among Gen Z because of their positive attitude towards environmental sustainability (Wulandari, 2023). Therefore, it has been observed that the Gen Z might be emphasised on behavioural and normative beliefs that leads to their intention to adopt EV technology.

2.4 Conceptual framework

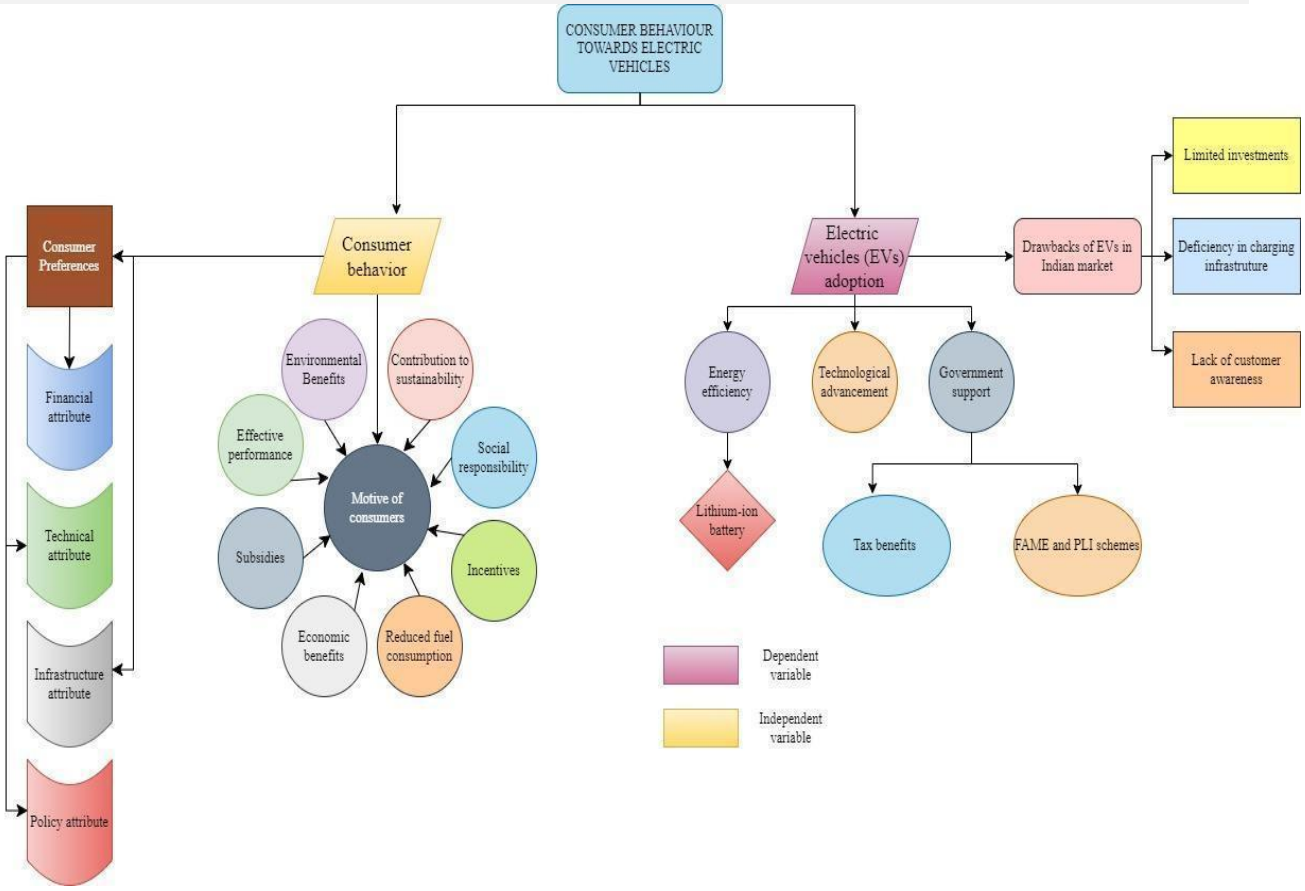

Figure 8: Conceptual framework

The conceptual framework is a system which guides the research through a pictorial presentation of key variables of the study. Based on the above framework, two key variables such as consumer behaviour and EVs adoption have been identified and it also includes important factors related to these variables. In this research, the dependent variable is Electric Vehicles (EVs) adoption and the independent variable is consumer behaviour that shows through the chance and influence in consumer behaviour the adoption of EVs increases. The sub variables are independent such as environmental benefits, contribution to sustainability, social responsibility, effective performance, decreased fuel consumption and others leads to adopting EVs that are energy efficient, technologically advanced and provide government support. This framework helps to understand different attributes of consumer behaviours and its impact on motives of them. In addition, the factors of EVs such as energy efficiency, technological advancement and government support have

included which influence EVs adoption. The drawbacks of EVs in the Indian market have also been showcased in this conceptual framework.

2.5 Literature gap

The above discussion has assessed the existing knowledge and previous literature regarding the factors, challenges and opportunities of EVs which drive consumer influences towards its adoption in the Indian market. According to Sahoo *et al.* (2022), environmental concerns influence Indian customers to buy EVs while the limited number of charging stations is considered a challenge but the Indian government is quite concerned about improving EV market sales. However, a gap has been identified regarding moral standards, knowledge and self-efficacy of Indian consumers towards accepting EVs as it has not been addressed in previous studies. Additionally, Zhang, Bai and Shang (2018), stated that the consumers are starting to engage with EVs due its energy efficient characteristics and economic incentives. Goel and Sharma (2021), provided the effect of government support is not beneficial for influencing consumer behaviour for adopting EV and lacked to figure out the effective techniques to convince consumers to purchase EVs in India. Mulgund (2022), revealed the total vehicle sales share of EVs is very less in India and mentioned that it can be increased by 2030 yet lacked in analysing the ways the share of sales can increase in India. In this regard, the previous studies also have provided limited discussion related to change of Indian customer motivation over time and have not compared their impacts on behavioural intentions of adopting EVs. Therefore, the concerned gaps have been addressed and fulfilled in this research.

2.6 Chapter summary

The complete chapter can be summarised through understanding the previous studies and knowledge related to EVs and its factors which influences customer preferences. This chapter has also helped to identify different views of previous authors in relation to EVs with both positive and negative perspectives. Hence, this knowledge has helped to make further research and fulfil the literature gap with additional values about Indian customer perspectives to EVs in the Indian market.

Chapter 3: Research Questions

3.1 Research question

Main question:

How does energy efficiency, technological advancement, environmental sustainability and government support influence the behaviour of consumers towards electric vehicles (EVs) in India aiming to enhance EV adoption in this market?

Sub questions

1. What are the aspects that make possible or obstruct the acceptance of electric vehicles in various segments of vehicles in the market of India within millennials and Generation Z?
2. What are the ways by which Indian manufacturers make EVs more appealing to the mainstream consumers, motorcycle enthusiasts and cars?
3. What are the key choices of mainstream consumers in terms of pricing, features, and performance of EVs?

3.2 Research Objectives

1. To examine the aspects that either make possible or hinder the adoption of EVs in the various vehicle segments in the market of India, particularly focusing on the attitudes and preferences of millennials and Generation Z.
2. To investigate strategic ways that automakers can utilise to improve the adoption of EVs within both mainstream consumers and automotive enthusiasts, that involve both car and motorcycle enthusiasts.
3. To explore the primary choices of mainstream consumers in relation to pricing, features, and performance aspects.

3.3 Hypothesis

H0: There is no significant influence of consumer behaviour towards the adoption of electric vehicles in India.

H1: There is a significant influence of consumer behaviour towards the adoption of electric vehicles in India.

Dependent variable	Independent variable
Influence of Consumer behaviour can increase	Adoption of Electric Vehicles depends on the

adoption of EV	increased consumer purchasing behaviour
Sub variables	**Sub variables**
Consumer preferences Purchase intention Satisfaction level Loyalty Financial incentives by Government Technical advancement including customisation, acceleration and high performance infrastructure, policy attribute	Energy efficiency including less fuel consumption Technological advancement such as autonomous driving and connected car technique Government support such as R&D subsidy and incentives Tax benefits Environmental benefits

Table 1: Identification of dependent and independent variables

Chapter 4: Methodology

4.1 Introduction

The chapter emphasises stating and identifying the research methods utilised in the study. The research methods have been assessed for effectively examining the gathered data to develop a detailed understanding of the research topic. In this regard, Saunders' research onion has been followed in the concerned research for choosing the methodological options properly to perform the research smoothly.

4.2 Philosophical assumption

Philosophy

An effective philosophy that helps in determining the quantitative foundation of a study is ***positivism research philosophy along with ontological assumptions***. In this regard, Saunders, Lewis and Thornhill (2019), mentioned that ontology is considered to be the assumptions regarding the nature of reality. Ontology helps a study determine the ways of aspects that can be focused on meeting the research questions for a research project. In this regard, the research has adopted ontological assumptions as it has assisted the study in defining the nature of reality related to the consumer behaviour for electric vehicles.

For adopting ontological assumptions in the concerned research, the study has followed positivism philosophy. Positivism research philosophy generally emphasises identifying the causal relationships or explanatory associations with the help of quantitative approaches in which the empirically based findings are gathered from large sample sizes (Park, Konge and Artino, 2020). In a study by Blackwell (2018), it has been observed that positivism focuses on phenomenalism, is resulted from foundationalism, and values objectivity to prove or disprove hypotheses. The research has adopted positivism research philosophy as positivism has guided the study in examining the factors to foster or impede adoption of electric vehicles in diverse vehicle segments in India. However, positivism philosophy cannot be utilised in subjective based research (Blackwell, 2018). Despite having a limitation, positivism has been effective in the research as explanatory connections related to the attitudes and preferences of consumers towards the adoption of electric vehicles have been understood appropriately.

Approach

The ***deductive research approach*** has been suitable for the concerned researcher to get a detailed understanding of the research topic by going from general to specific. In this context, Saunders,

Lewis and Thornhill (2019), figured out that deductive research approach occurs when conclusion is obtained logically from a set of the theory derived premises, however the conclusion is true if all the premises are true. The deductive research approach has been utilised in the study because it tended to move from general to specific. The deductive approach has assisted the research in clearly obtaining conclusions by starting from the attitudes and motives of consumers towards focusing on the preferences of consumers that are Generation Z and millennials for adopting electric vehicles in India. Additionally, in a study by Barroga *et al.* (2023), deductive approach has helped in making observations regarding a new or unclear phenomenon, investigating the present theory for the phenomenon, hypothesising explanations for observations. This process in turn has helped in analysing the outcomes and verifying the results to present conclusions and findings. In this regard, due to the feasibility of deductive research approach and its capability to meet the research objectives, the study has adopted deductive approach to obtain valuable conclusions regarding the consumer behaviour towards adopting electric vehicles.

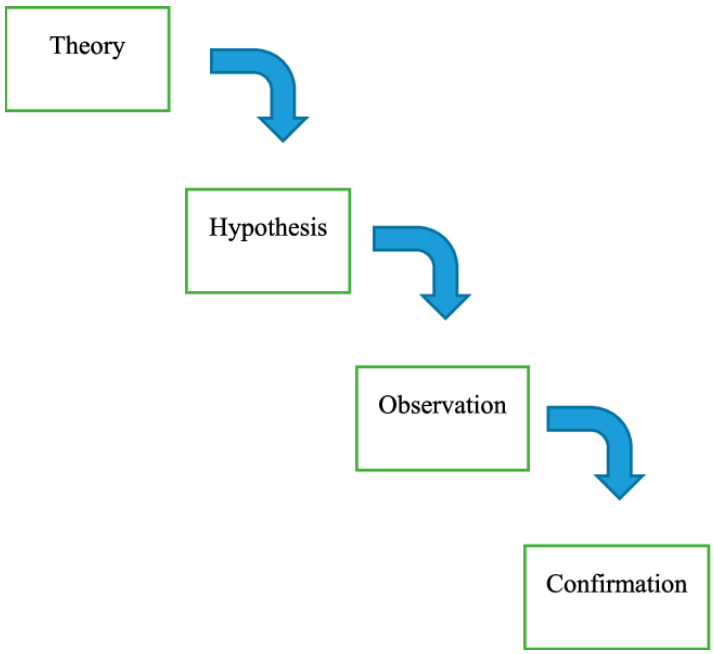

Figure 9: Deductive research approach

(Source: Turnbull, Chugh and Luck, 2020)

However, deductive research approaches sometimes face issues in selecting meaningful dependent and independent variables (Barroga *et al.*, 2023). Despite having a drawback, the deductive approach has been suitable for the study as it assisted in making observations and investigating the

ways by which manufacturers in India make electric vehicles more appealing to mainstream consumers, cars and motorcycle enthusiasts. Therefore, it can be stated that positivism research philosophy with ontological assumptions, and deductive research approach has guided the study to depict the trends of consumer behaviour towards electric vehicles in India and know their preferences effectively.

4.3 Research design

Descriptive research design has been applicable to the study to know the detailed information and describe the phenomenon related to the study topic. In this context, Aggarwal and Ranganathan (2019), evaluated that descriptive research design allows research in studying and describing the distribution of one or more than one variable, without regard to any causal or other hypotheses. The descriptive research design has guided the study to study the variables that are linked with the primary perceptions of mainstream consumers and understanding the description of their attitudes towards features, performance aspects and pricing.

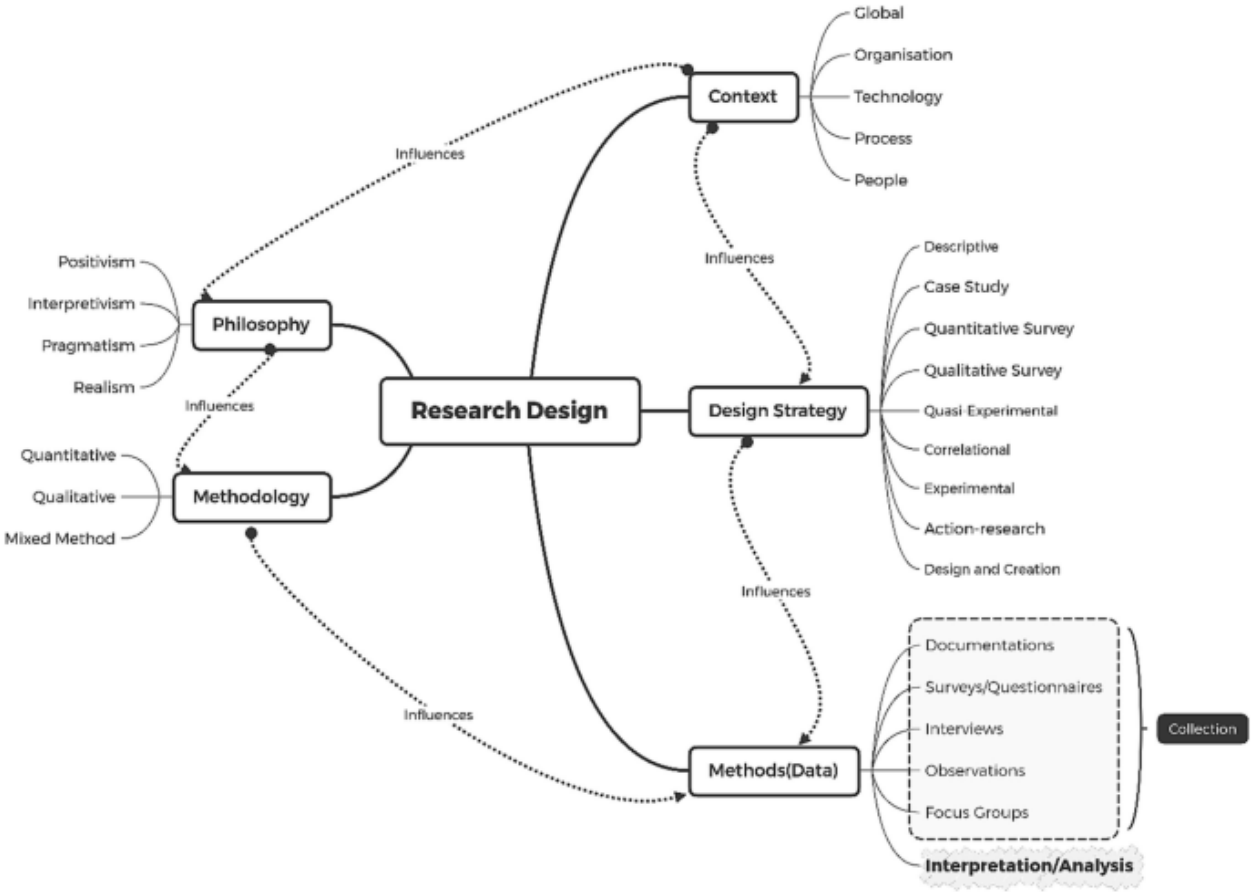

Figure 10: Research design

(Source: Mbanaso et al., 2023)

Based on an empirical study by Buhmann and Criado (2023), the descriptive research design has assisted in distributing the variables and has described the variables. This has been performed in terms of age, having children, male population, living in the urban areas and education and previous experience influence the adoption of electric vehicles positively. In this regard, the feasibility of descriptive design in previous study has ensured its adoption in the concerned research. On the contrary, Aggarwal and Ranganathan (2019), argued that descriptive design sometimes provides invalid and unreliable conclusions. Despite having limitations, descriptive research design has been suitable for the research as it assisted in describing the patterns and trends of mainstream consumers to know the environmental benefits of adopting electric vehicles. Hence, the descriptive research design has been appropriate for the study due to its focus on understanding the beliefs and attitudes of consumers towards adopting electric vehicles in India.

4.4 Instrument

4.4.1 Strategy

Primary quantitative research strategy has been adopted in the study to examine the attitudes of consumers towards electric vehicle adoption in the Indian market. Quantitative research engages in collecting numerical data and analysing it with mathematical techniques (Apuke, 2017). The primary quantitative strategy has been performed in the research with survey methods to understand the preferences of consumers towards the adoption of electric vehicles and its importance in India. The primary quantitative strategy that is survey method has assisted the study in analysing the viewpoints of consumers regarding the adoption and use of electric vehicles and their beliefs in the Indian market. However, quantitative research sometimes presents critical objectivity and is based on a single reality (Apuke, 2017). Despite having a drawback, the primary quantitative research strategy has been chosen as it helped in examining the factors influencing consumer behaviour for adoption of electric vehicles in the Indian market.

4.4.2 Instrument for the research

For conducting the survey, a questionnaire tool has been used in the research for gathering the opinions and viewpoints of Indian consumers regarding the adoption of electric vehicles. The questionnaire has been divided into 25 questions that includes demographic questions and the rest questions have a relation to the research topic and research questions. The questions in the

questionnaire have been asked in an easy format to help participants answer properly. Some Likert scale questions have been given to know the actual opinion of the consumers towards the electric vehicles in India.

4.5 Sample

Purposive sampling has been chosen as appropriate for the study to conduct the sampling for the research in accordance with the research topic. Campbell *et al.* (2020), analysed that purposive sampling method is a better match that helps research in meeting the aims and objectives effectively. This process in turn helps in enhancing the rigour of the study and the trustworthiness of data and results. The purposive sampling technique has been selected in the research as this sampling technique has guided the study to deliberately select participants within the age group of 22 to 35 years. However, the purposive sampling has a limitation that is the more purposive a sample is, the more limited is the external validity (Andrade, 2021). Despite a limitation, purposive sampling has been chosen as it has helped the research in choosing a target population that is 55, and out of which 43 participants have been chosen to respond to the survey questions for the research and this is the sample population. The 43 participants have been chosen after following the inclusion and exclusion criteria. The participants who had not responded to the survey questions had somewhat failed to meet the inclusion criteria and had less knowledge regarding the adoption of electric vehicles in India. The sample population has been accessible for the research as they all have agreed and approved the consent to participate in the survey questionnaire and have responded to the questions within the time frame. The inclusion criteria for the research have included the Indian consumers who belong to the category of millennials and Generation Z within 22-35 years of age and have a good knowledge about the adoption of electric vehicles and its use in the Indian market. However, the exclusion criteria include those consumers living in other countries who do not fall within the age group of 22-35 years and have less knowledge regarding the research topic.

4.6 Pilot study

A small sample size has been considered for the research that is 43 Indian millennials and Generation Z consumers from a target population that is 55, to gather the primary quantitative data after following inclusion and exclusion criteria. Initially, the research topic along with the aim has been posted in social media platforms such as Facebook and Instagram, along with a consent form. Those individuals after getting the posts, on social media platforms who have agreed to take part

in the survey after their consent approval have participated to answer the 25 questions in the google form.

4.7 Procedure for data collection

Primary quantitative data collection method has been executed in the research for gathering quantitative responses about the adoption of electric vehicles in India. Quantitative data collection methods help research in providing valuable insights for ordering reality and reduce personal bias (Savela, 2017). The primary quantitative data collection method that is the survey method has guided the study to evaluate and analyse the responses of participants and get their varied perspectives and opinions about the adoption of electric vehicles in India. From an empirical study by Chawla *et al.* (2023), the survey method has assisted in analysing public perceptions regarding autonomous driving along with automotive tracking systems and also helped in understanding the reason behind adopting new technologies by individuals. Based on this information, the feasibility of the survey method has been understood to signify its adoption in the concerned research to meet the research objectives. However, quantitative data collection sometimes fails to provide a detailed understanding of analysed items because of the inherently reductive nature of classification (Savela, 2017). Despite having a drawback, the primary quantitative data collection has assisted the study in developing a detailed knowledge regarding the factors that influence the behaviour of consumers towards the adoption of electric vehicles in India. The survey questions have been asked to the participants as their different responses help in knowing their attitudes and beliefs about electric vehicles and their knowledge about the importance of technology usage in the Indian market. The involvement of EVs in the automobile sector promotes sustainable practices that in turn help in protecting the environment. The collection of data from the Indian millennials and Generation Z consumers has helped in addressing and meeting the research questions being initially focused. The information from the consumers has been gathered after posting the research topic and its aim in social media platforms such as Facebook and Instagram, along with a consent form. After getting the posts, on social media platforms the participants agreed to take part in the survey after their consent approval and after seeing the inclusion criteria. A google form has been sent to the participants who have opted to take part in the survey and then they have been able to respond to the questions and in this way, information from participants have been gathered for the research.

4.8 Data analysis

The primary quantitative data has been analysed with the help of ***statistical analysis through SPSS software*** for evaluating and analysing the attitudes of consumers towards electric vehicles in India. The statistical analysis helps to condense the test results and present accordingly so that individuals might quickly spot and comprehend the patterns of data; however sometimes the precision of results reduces through their flaws (Nawrocka *et al.*, 2015). Despite having limitations, the statistical analysis has been utilised for evaluating the primary quantitative data as it has helped in generating the statistical interpretation by following descriptive statistics, correlation and regression methods. The statistical analysis has been performed in the research to show the relationship between dependent and independent variables and test the hypothesis.

4.9 Limitations

The study has effectively analysed the consumer behaviour towards electric vehicles in India yet faced some limitations in the research procedure. The inclusion of only the primary quantitative data collection method has decreased the opportunity to include more in-depth analysis that is possible through including comprehensive insights in the study. The execution of primary data has provided first-hand information regarding the consumers behaviours but the presentation of close-ended questions to the consumers has been restricted to provide detail of their experience or suggestions in adoption of EVs for environmental sustainability. The selection of the mono-method for quantitative data collection has maintained the accuracy of the findings but resisted the chance of including more perspectives of consumers through including mixed-methods.

4.10 Time horizon

Cross sectional time horizon has been utilised in the study to complete the research within the given assigned time. In this regard, Wang and Cheng (2020), stated that cross sectional time horizons are observational studies that guide research to analyse data from a given population within a single point in time and are easy to conduct and inexpensive. The cross-sectional time horizon has assisted the study in analysing the factors influencing consumer behaviour towards electric vehicles in India. However, the cross-sectional time horizon does not follow individuals up over time (Wang and Cheng, 2020). Despite having a drawback, the cross-sectional time horizon has been adopted in the research. It has guided the study to easily conduct the research and examine the opportunities and barriers of electric vehicles in India within the allocated time and in turn meet the research objectives.

4.11 Ethical considerations

The primary quantitative data has been gathered by following all ethical guidelines of the research in terms of research integrity, honesty and credibility. Consent was taken from all the participants before participating in the survey and all participants have agreed to take part in the research after approving the consent form. The data was stored in a cloud storage in an encrypted form and has been kept confidential with a strong password and was not shared with anyone. The Data Protection Act 2018 is an act for making provision for regulating the processing of information related to individuals (UK Government, 2018). The necessary protocols of Data Protection Act, 2018 and General Data Protection Regulation (GDPR) have been followed appropriately in order to perform the research. The necessary guidelines of the University handbook have been followed effectively for maintaining research validity, accessibility and reliability.

4.12 Summary

Focusing on the overall chapter, it can be stated that the primary quantitative data collection method has been effective for the study as it has assisted in examining the patterns, trends and behaviour of consumers towards electric vehicles in India. Additionally, cross sectional time horizon and effective maintenance of ethical considerations has helped in smoothly performing the research within the required time.

Chapter 5: Data analysis

5.1 Introduction

Data analysis and findings is a crucial part of studies as it effectively summarises the data collected for presenting the key findings that helps to address the research question and fulfil the knowledge gap in respective subject areas. In this regard, this chapter has executed the primary quantitative data analysis and provided the relevant findings through aligning with the research objectives. The key findings of the study have been presented with matching up with the uncovered literature for showing the value and importance of the insights produced by findings. This section also included the comparison between the uncovered literature with the findings that have addressed the research questions and fulfilled the knowledge gaps in the existing literature.

5.2 Significance of questionnaire compared to previous literature

The questionnaire established for gaining quantitative data has revealed unique perspectives and aspects regarding the consumer behaviour in adoption of EV that has fulfilled significant gaps in literature. Questions such as regarding the awareness of the consumer regarding government incentives for purchasing EVs has revealed the level of awareness among Indian consumers regarding benefits of EVs that has been a significant gap in previous literature. Other questions such as the importance of availability of different body styles of EVs for purchasing an EV has helped to understand the demand of different car models such as SUV, sedan and hatchback among consumers that has not been analysed in previous studies. The variables such as government incentives, environmental impact, technological features and primary factors such as low operating costs and environmental concern have been included in the questionnaire to discover the unexplored areas regarding consumer behaviour for EV adoption that has not been covered in existing literature.

5.3 Frequency analysis

Question 1

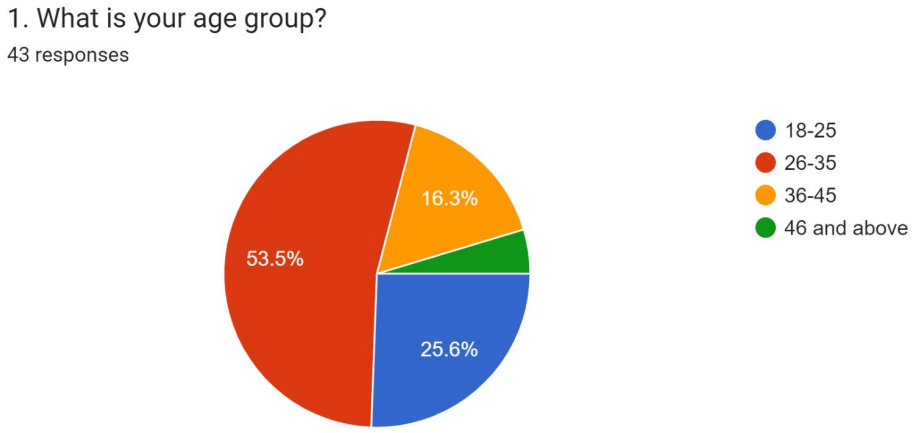

Figure 11: Age group

The above pie chart shows that the majority of the Indian consumers are within the age group of 26 to 35 years, followed by the age groups of 18-25 years, 36-45 years and more than 46 years. It can be interpreted that the maximum range of employees are youth who have a greater knowledge regarding the adoption of electric vehicles in India and its opportunities and barriers in the Indian market. However, less responses have been gathered from consumers who belong to the age group of more than 46 years that is the older generation.

Question 2

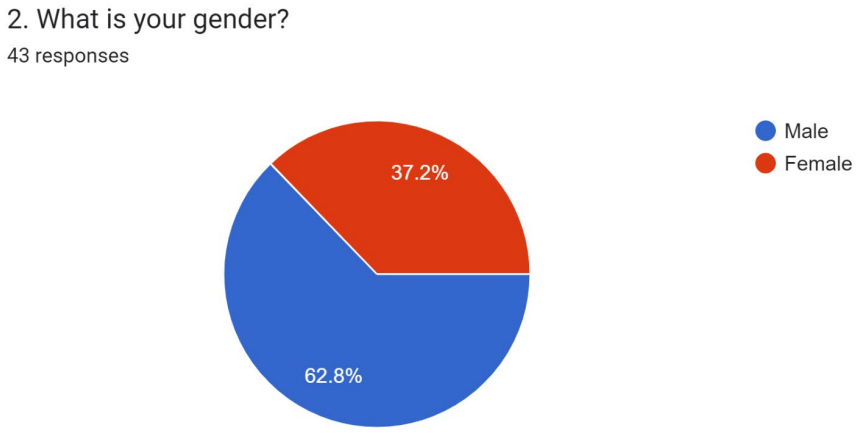

Figure 12: Gender

Figure 12 shows that the majority of the Indian consumers are male whereas minority are female participants who have provided responses on survey questions actively. This depicts that the male population are more aware about the adoption and importance of electric vehicles in India and its environmental benefits than the female population.

Question 3

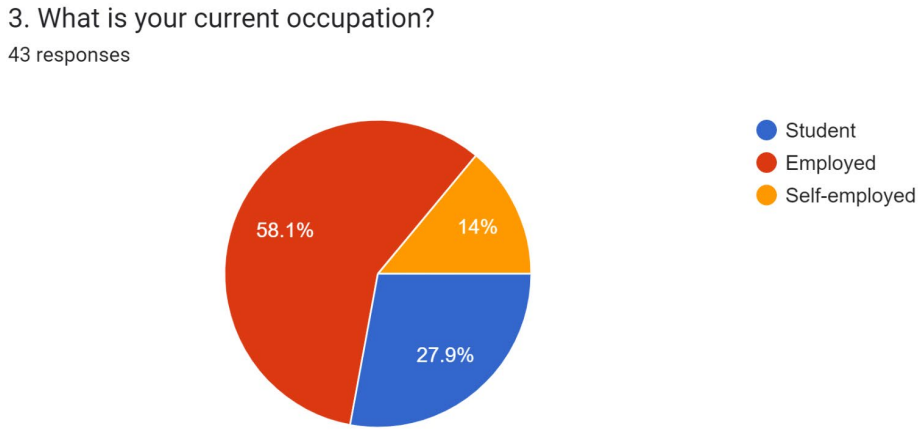

Figure 13: Current occupation

Centred on the above graph, it has been analysed that maximum Indian consumers are employed, that is they work in organisations. It can be interpreted that the Indian consumers, being employed, value the electric vehicles more and have more knowledge about its adoption in the Indian market and advanced technology. However, some consumers have responded that their current occupation is self-employed.

5.3.1 Objective 1: Examination of factors that either foster or impede the adoption of EVs within the diverse segment in the Indian market focusing on preference and attitude of millennials and Gen Z

Question 4

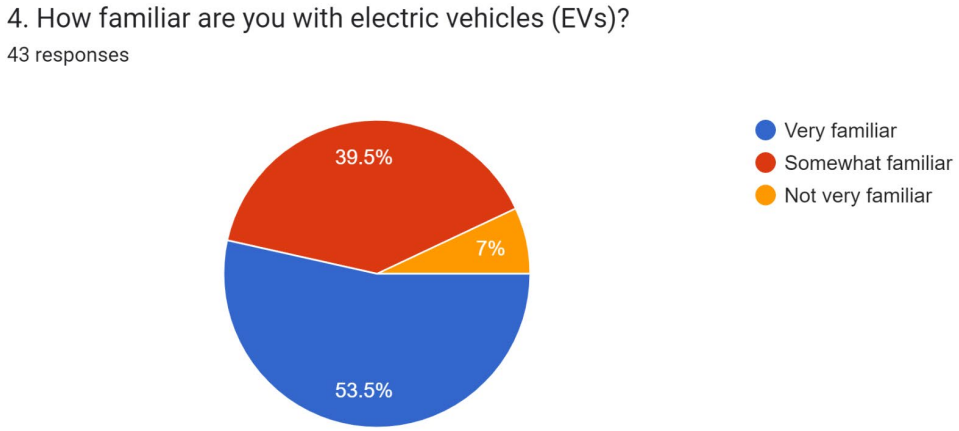

Figure 14: Familiarity with electric vehicles

Based on the above graph, it has been understood that the Indian consumers are very familiar with electric vehicles in the Indian market. This shows that the consumers are very much aware about the trends of the adoption of electric vehicles and they have a lot of interest in adopting EV technology in the Indian market. On the contrary, some consumers are not very familiar with EVs, which shows their less knowledge and less acceptance of technology use.

Question 5

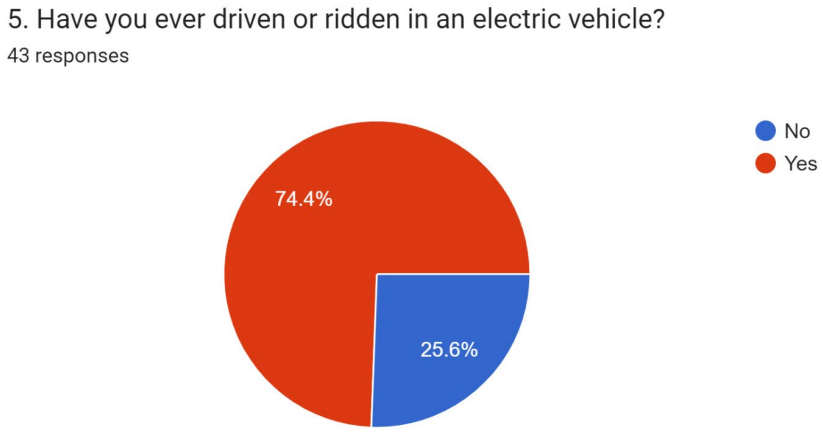

Figure 15: Driven or ridden in an electric vehicle

The above pie chart represents whether Indian consumers have driven or ridden in an electric vehicle in the Indian market. In this context, maximum Indian consumers have driven or ridden an

electric vehicle. This depicts that the high level of engagement of Indian consumers with electric vehicles enhances the familiarity and acceptance of the adoption of electric vehicles in the Indian market. However, some consumers are of the opinion that they have never driven or ridden in an electric vehicle.

Question 6

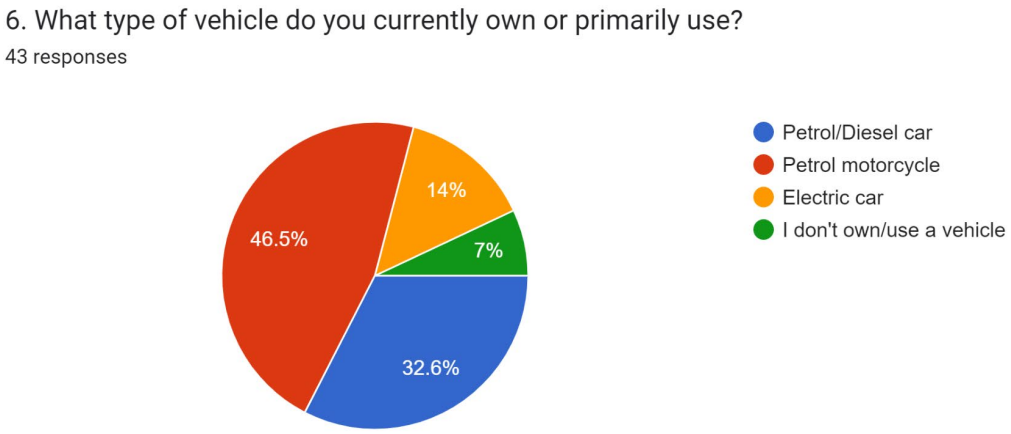

Figure 16: Type of vehicle currently owned or primarily used

Centred on the above graph, the majority of the Indian consumers currently own or primarily use petrol motorcycles, followed by petrol or diesel cars, electric cars. This depicts that in spite of the increasing significance of the adoption of electric vehicles in India, Indian consumers still prefer traditional petrol and diesel vehicles currently and are hoping to adopt electric vehicles in the near future. However, some consumers are already using electric cars currently due to its enhanced environmental benefits.

Question 7

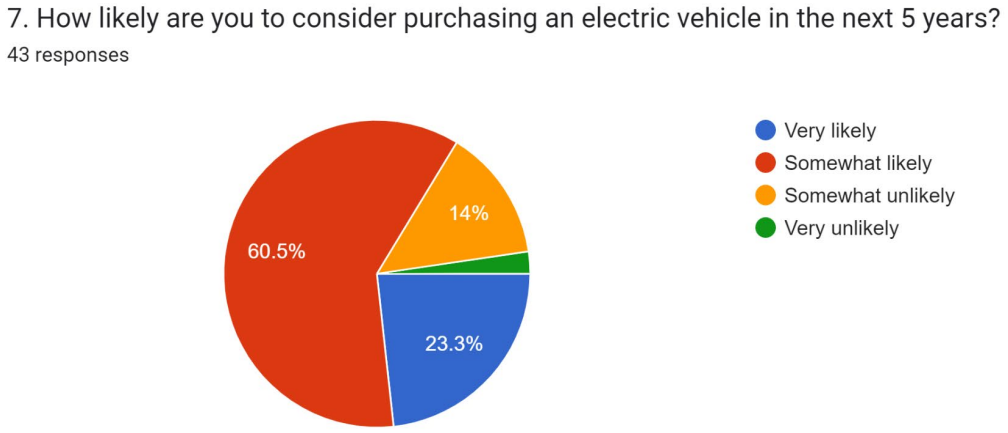

Figure 17: Likeliness to consider purchasing an electric vehicle in next 5 years

Figure 17 shows the likelihood of Indian consumers considering the purchasing of an electric vehicle in the next 5 years. The majority of consumers have responded to purchase an electric vehicle somewhat likely in the next 5 years, followed by some consumers who are very likely to purchase. This trend depicts a positive view for adopting electric vehicles in the Indian market by consumers in the future. However, minimum responses have been achieved by consumers that they are very unlikely to purchase electric vehicles in the next 5 years.

Question 8

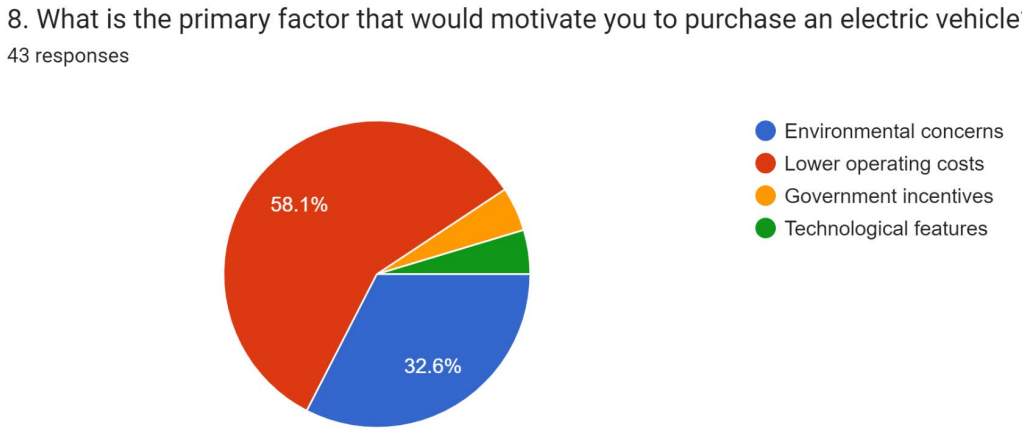

Figure 18: Primary factor to motivate for purchasing electric vehicle

Focusing on the above graph, the main primary factor that motivates Indian consumers to purchase an electric vehicle is to lower operating costs. This indicates a strong focus on the economic benefits that mainly concern the consumers for purchasing electric vehicles. However, some consumers feel that government incentives and technological features are primary factors that motivate them to purchase an electric vehicle.

Question 9

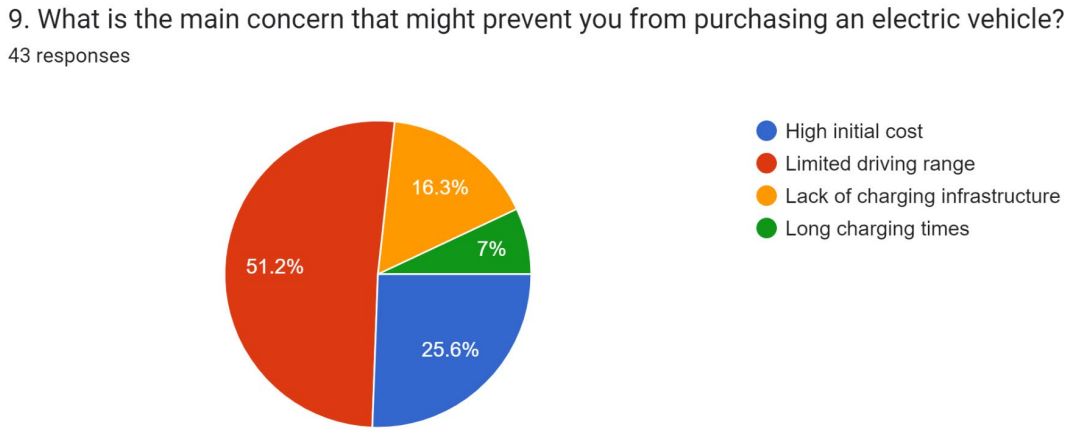

Figure 19: Main concern that might prevent to purchase an electric vehicle

Centred on the above graph, the majority of Indian consumers stated that the main concern that might prevent them from purchasing an electric vehicle is limited driving range. This shows a significant hindrance to consumers for the widespread adoption of electric vehicles in India. Other consumers have responded that high initial cost, lack of charging infrastructure and long charging times are other concerns that might prevent them from purchasing an electric vehicle.

Question 10

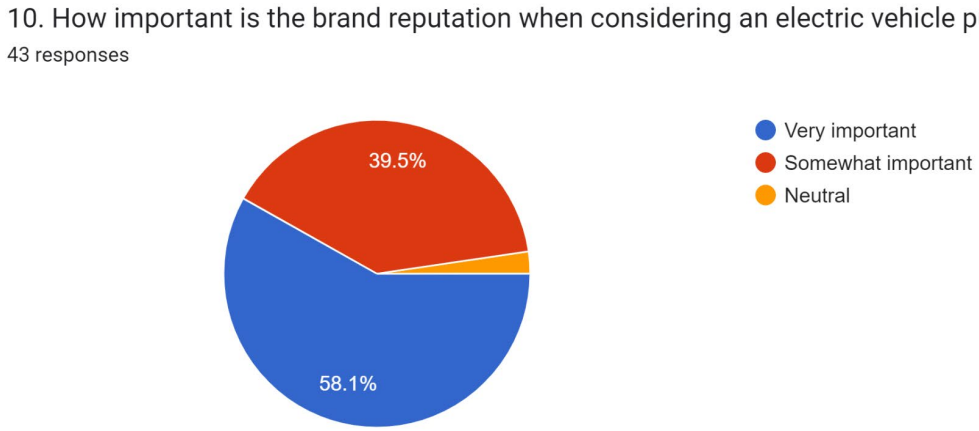

Figure 20: Importance of brand reputation in considering electric vehicle purchase

Figure 20 represents the importance of brand reputation in considering electric vehicle purchase. In this regard, the majority of Indian consumers feel that brand reputation is very important when considering an electric vehicle purchase. This depicts that the role of trust along with brand perception goes with brand reputation that allows consumers to make a decision about purchasing an electric vehicle. However, some consumers are not sure about the importance of brand reputation to purchase an electric vehicle.

Question 11

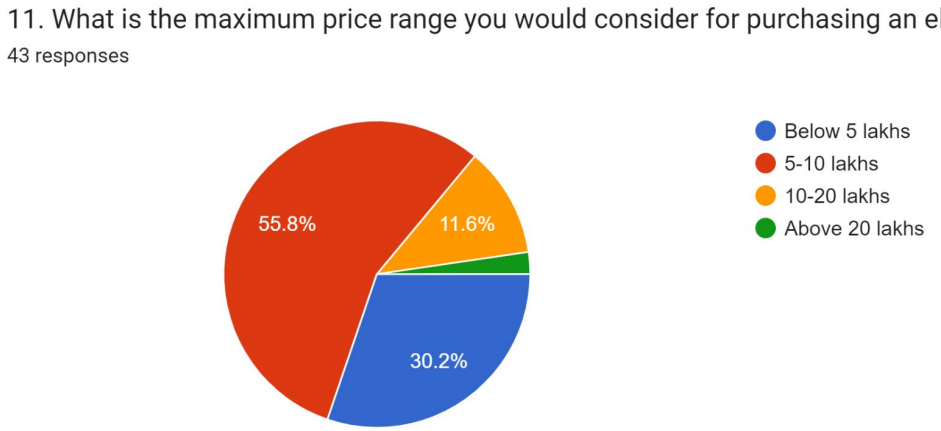

Figure 21: Maximum price range considered for purchasing an electric vehicle

The above pie chart demonstrates that 5 to 10 lakhs is the maximum price range that is considered by the majority of Indian consumers to purchase an electric vehicle. This shows that maximum responses obtained within this price range means that the Indian consumers mostly focus on budget friendly and affordability options. However, above 20 lakhs have been responded by minimum consumers to set it as a maximum price range to purchase an electric vehicle.

Question 12

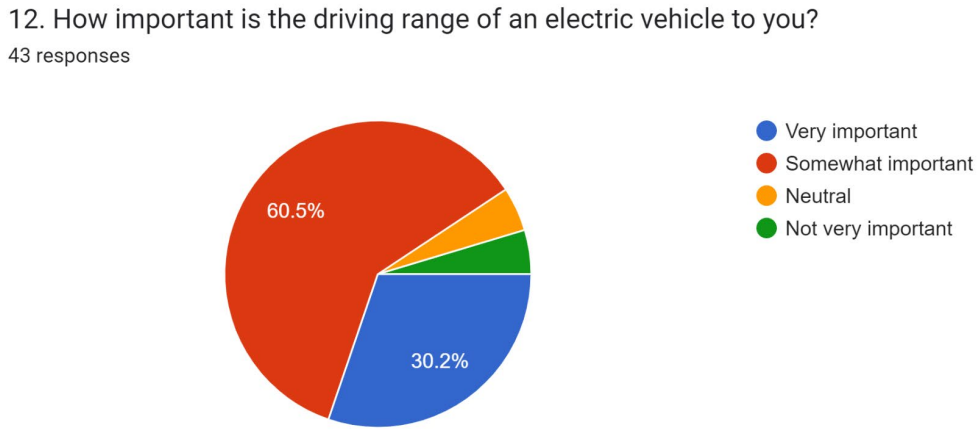

Figure 22: Importance of driving range of an electric vehicle

Figure 22 indicates that the driving range of an electric vehicle is somewhat important to the majority of Indian consumers. This implies that driving range of an electric vehicle is a relevant factor, however not considered as the primary concern to the consumers in the Indian market. On the contrary, some consumers think that the driving range of an electric vehicle is neutral or not very important to them.

Question 13

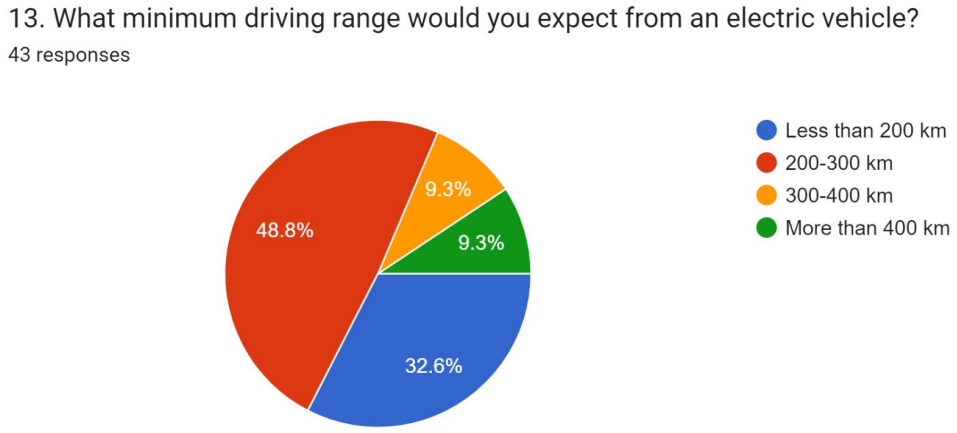

Figure 23: Minimum driving range expected from an electric vehicle

Based on the perspectives of Indian consumers, the minimum driving range expected from an electric vehicle is 200-300 km. This reflects the preference of Indian consumers towards sufficient range for meeting the daily driving needs by an electric vehicle. However, some consumers have responded that 300-400 km and more than 400 km are the minimum driving range that would be expected from an electric vehicle.

5.3.2 Objective 2: Investigation of primary preferences of mainstream consumers concerning features, pricing and performance aspects

Question 14

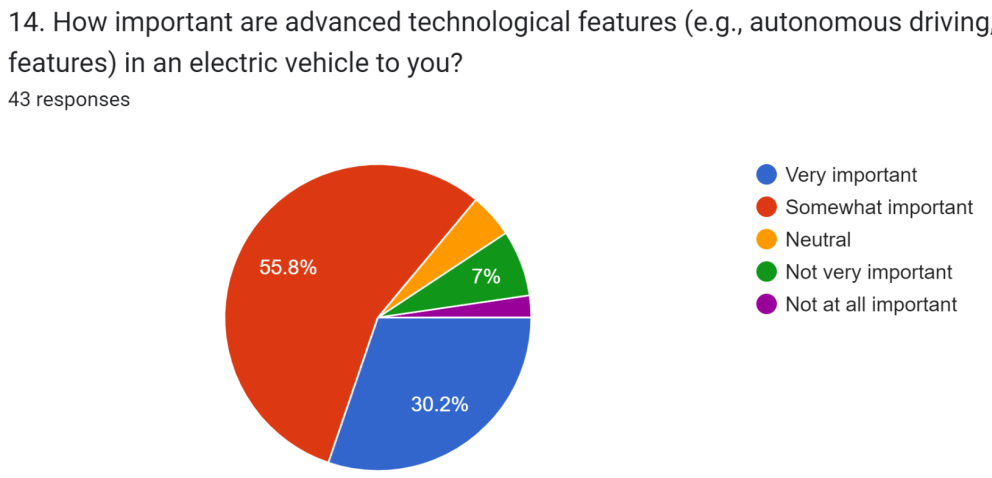

Figure 24: Importance of Advanced technological features in an EV

From the viewpoints of the Indian consumers, it can be interpreted that the advanced technological features are essential to be installed in an EV. The advanced features such as autonomous driving and connected car features are beneficial for consumers for better operating an EV through making a purchasing decision. Therefore, the advanced technological features in EVs can lead consumers to make their primary preference of EV over a conventional vehicle.

Question 15

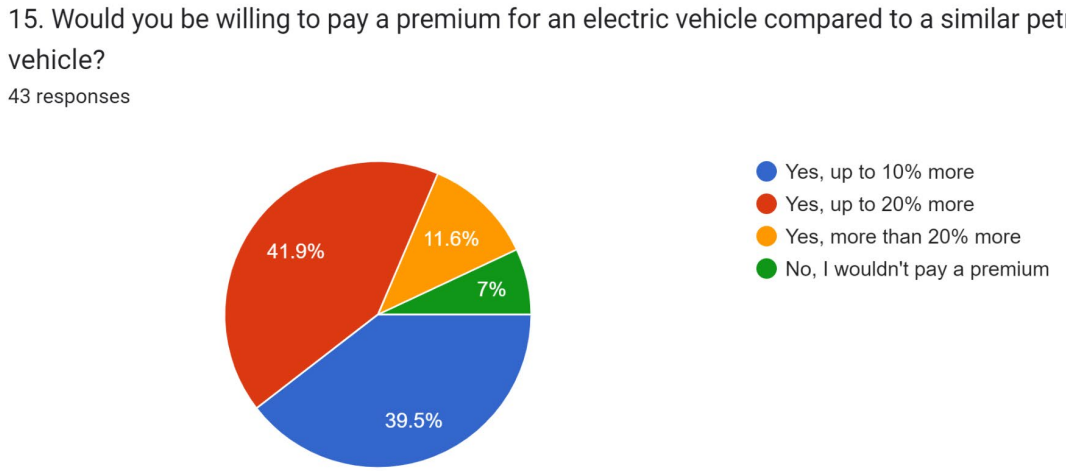

Figure 25: Willingness of consumers to pay premium for EV rather than for conventional cars

Depending on the perceptions of consumers, it can be analysed that there are certain levels to which consumers are willing to pay a premium for an EV compared to a similar conventional vehicle. The Indian consumers are mostly able to pay a good amount as a premium to purchase an EV rather than paying for a petrol/diesel vehicle. Therefore, there is an effective level of willingness of consumers to pay a premium for an EV rather than for a conventional car.

Question 16

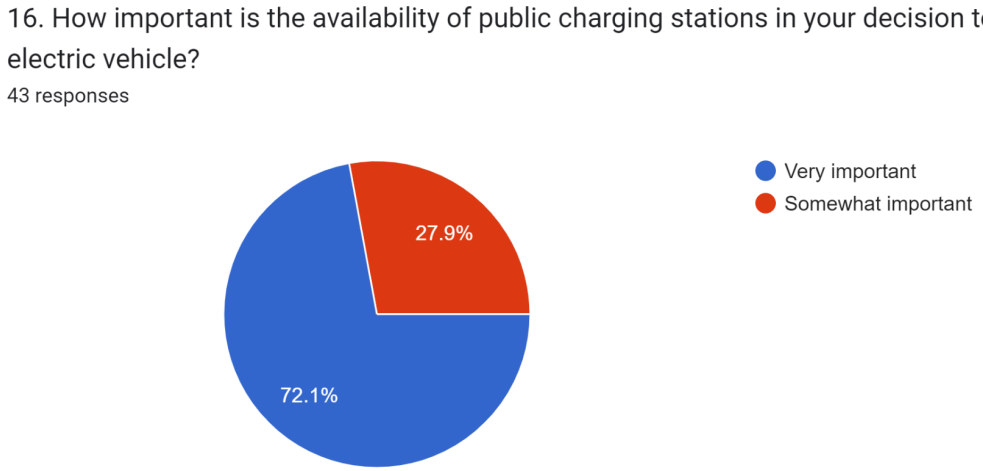

Figure 26: Significance of public charging stations for purchasing an EV

The above graph shows that the availability of public charging stations is helpful for consumers to increase their feasibility for purchasing and using EV. However, some of the Indian consumers consider availability of public charging stations is somewhat important to make purchasing decisions of EVs. Therefore, depending on overall opinions of the Indian consumers, accessibility of public charging stations influences them to purchase EVs.

Question 17

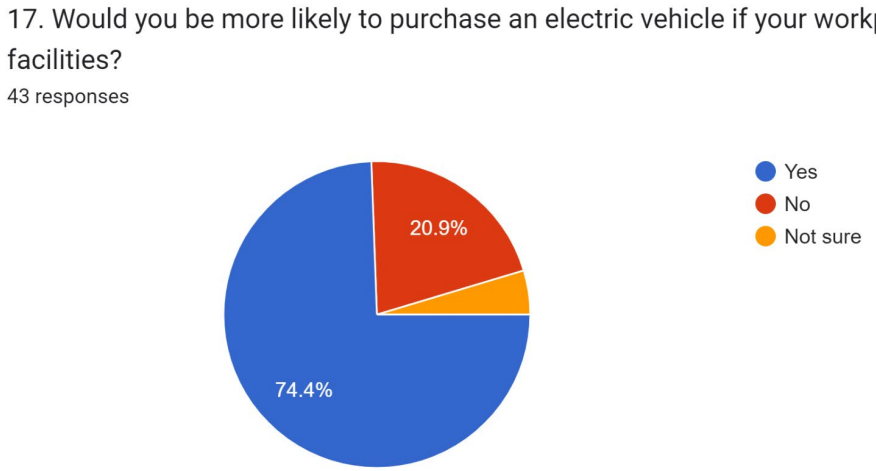

Figure 27: Influence of workplace charging facilities on EV purchase

Depending on the consumer's perspective, if workplaces or organisations provide charging facilities, then the purchase of EVs is more feasible to customers. However, some viewpoints are against the fact that charging facilities provided by workplaces leads individuals to purchase an EV. Therefore, there are mixed opinions regarding the influence of charging facilities in workplace purchasing decisions of consumers.

Question 18

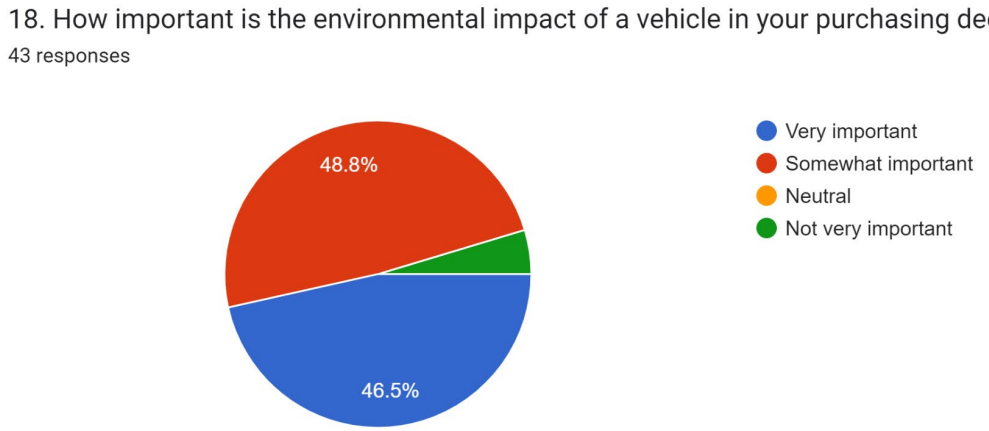

Figure 28: Importance of environmental impact of a vehicle on consumer purchasing decision

Depending on the viewpoints of the Indian consumers, it can be observed that the impact of vehicles on the environment is an essential aspect considered by them during making any purchasing decision. The contribution of a vehicle on betterment of the environment can influence consumers and attract them to purchase vehicles. Hence, the purchasing decision of consumers depends on the environmental impact of a vehicle.

Question 19

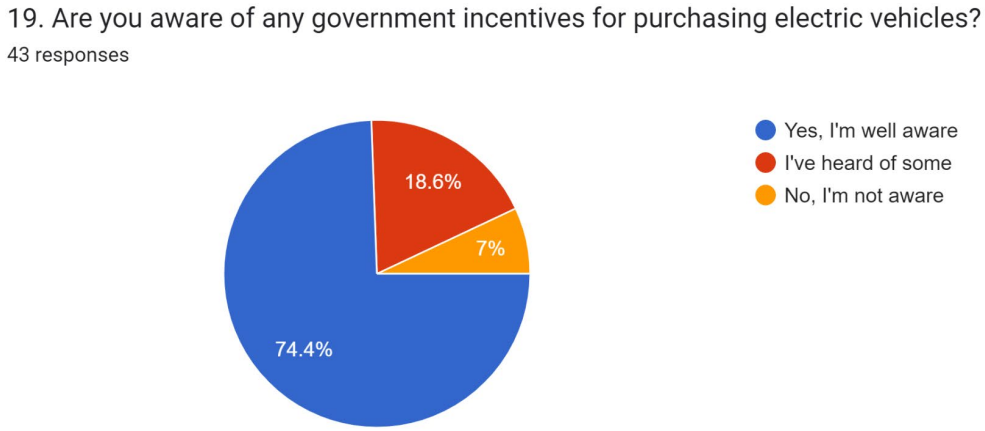

Figure 29: Awareness of government incentives for purchasing EVs

Through concentrating on the above figure, it can be inspected that there is a high level of awareness among the Indian consumers about the government incentives available for them to make the decision for purchasing EVs. However, some perspectives showed lack of awareness of the incentives provided by the Indian government to purchase EV. Therefore, there is a significant level of awareness among the Indian automotive customers regarding the government incentives to purchase EV.

Question 20

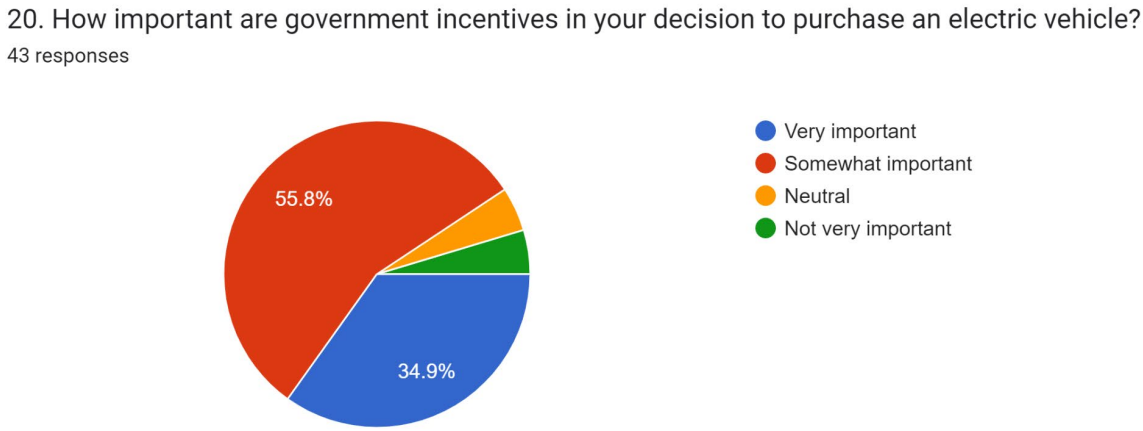

Figure 30: Importance of government incentives for EV purchasing decision

From the above figure, it can be analysed that for the consumers obtaining incentives from the government of India by purchasing an EV is very important for them. The incentives provided by the government to the consumers can lead them to shift from conventional cars to electric vehicles. Hence, through the government incentives the Indian automotive consumers can make their primary preference to purchase EVs.

5.3.3 Objective 3: Strategies that automakers can employ to enhance appeal of EVs among both mainstream consumers and automotive enthusiast including both car and motorcycle enthusiasts

Question 21

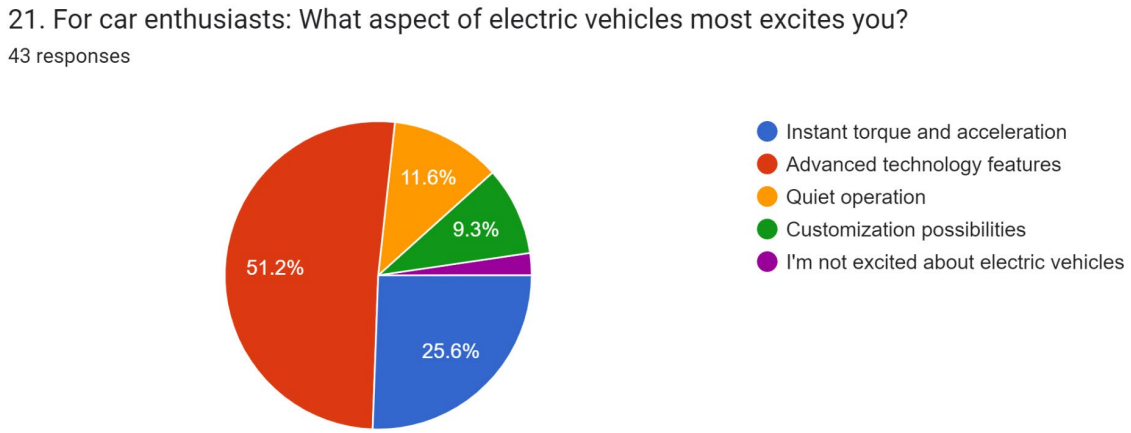

Figure 31: Aspects of electric vehicles that exits consumers

All the consumers participating in the data collection process are car enthusiasts and showed interest to provide opinion about the factors that attract them to purchase cars. Depending on the opinion of the consumers, there are several aspects such as advanced technology features and instant torque and acceleration that leads to attracting the car enthusiasts for influencing them to purchase EVs. Silent operation and customised possibility in EVs are also existing features for car enthusiasts and influence them to adopt EVs. Therefore, these are the features that can be employed by automakers to attract car enthusiasts and make them potential consumers of EVs.

Question 22

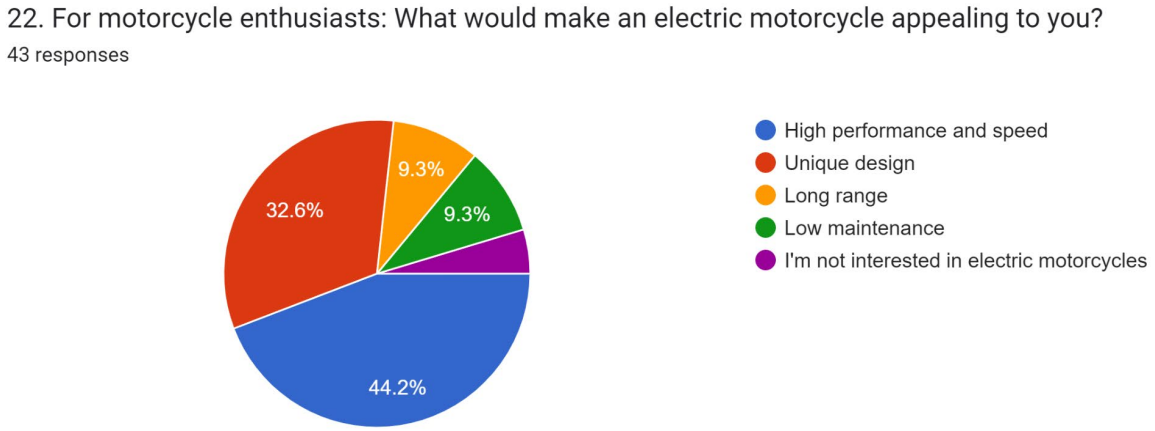

Figure 32: Factors make electric motorcycle appealing to motorcycle enthusiasts

Depending on the perspectives of the Indian consumers, especially motorcycle enthusiasts, it can be interpreted that high performance and speed with unique design makes electric motorcycles more appealing to the consumers. Long range and low maintenance are also considered by the motorcycle enthusiast consumers during purchasing electric motorcycles. Hence, these strategies can be implemented by automobile producers for making their electric motorcycle more appealing to consumers.

Question 23

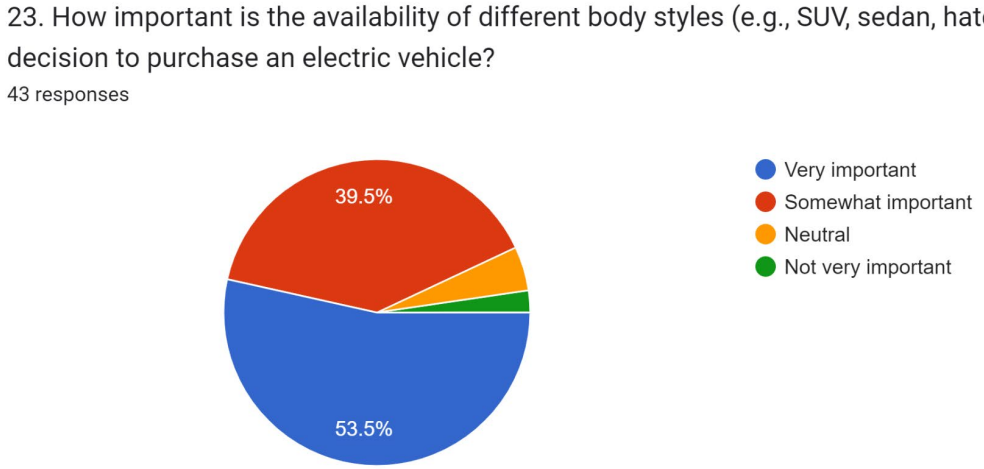

Figure 33: Importance of availability of multiple car body styles in purchasing decision-making

Based on the viewpoints of the consumers, the different body styles of EVs such as SUV, sedan and hatchback is very essential as it can help consumers to make their purchasing decision depending on their choices regarding the body styles of cars. The availability of the different body styles of EVs in the Indian automobile market has been very crucial for consumers to make better purchase decisions and use the cars seamlessly by shifting from conventional vehicles. Hence, the accessibility of different models of EVs is beneficial for Indian consumers to initiate their purchase.

Question 24

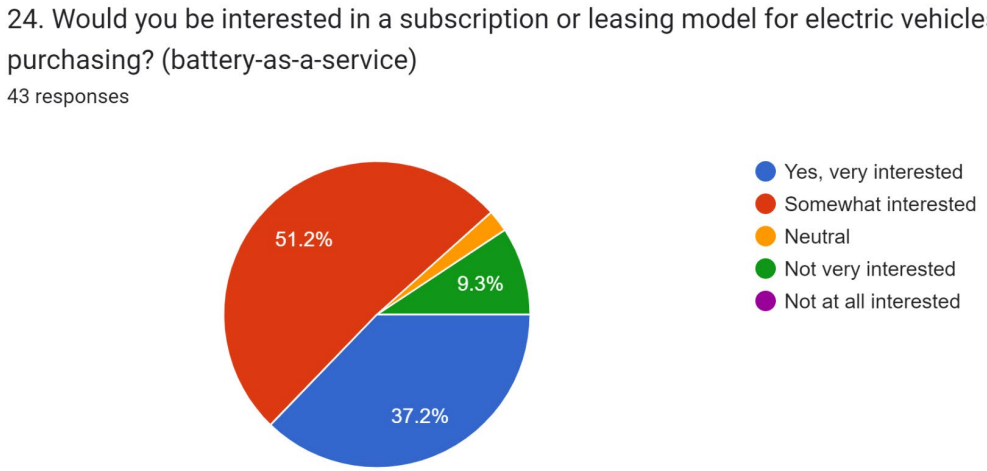

Figure 34: Interest in a subscription model for EVs instead of purchasing

From the above figure, it can be observed that according to the preference of consumers, the subscription model of EVs is more appealing and feasible for them rather than purchasing an EV and using the battery as a service. As through the perspectives of consumers it has been clarified that behaviour of consumers are more inclined towards obtaining and using electric vehicles and batteries from EV service providers rather than being the owner of an EV permanently. However, there are few negative perceptions regarding using the subscription model of EVs instead of purchasing. Therefore, consumers are more interested in leasing EVs for their usage compared to purchasing eclectic cars.

Question 25

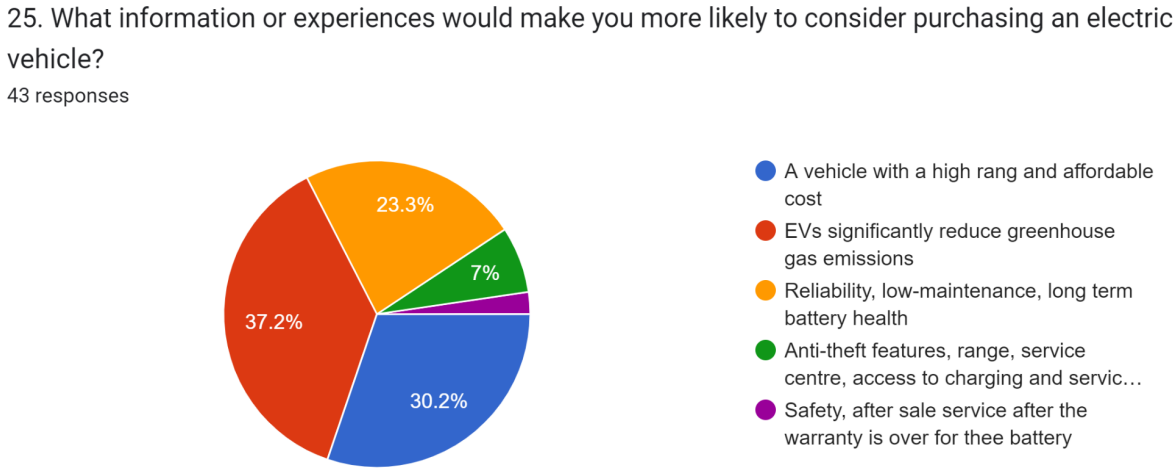

Figure 35: Information considered while purchasing electric vehicle

Based on the opinions of consumers, it can be interpreted that reduction of greenhouse gas emissions is an important aspect that is considered during purchasing an electric vehicle. High range and reasonable price of EVs also influence behaviour of consumers for making purchases. Moreover, reliability of cars with low maintenance and sustainable battery health also leads consumers to purchase an EV. Therefore, these aspects can be concentrated by automobile companies for EVs among mainstream and automotive enthusiast consumers.

5.4 Statistical analysis

Descriptive statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
8. What is the primary factor that would motivate you to purchase an electric vehicle?	43	1	4	1.81	.732
5. Have you ever driven or ridden in an electric vehicle?	43	1	2	1.74	.441
4. How familiar are you with electric vehicles (EVs)?	43	1	3	1.53	.631
6. What type of vehicle do you currently own or primarily use?	43	1	4	1.95	.872
9. What is the main concern that might prevent you from purchasing an electric vehicle?	43	1	4	2.05	.844
7. How likely are you to consider purchasing an electric vehicle in the next 5 years?	43	1	4	1.95	.688
12. How important is the driving range of an electric vehicle to you?	43	1	4	1.84	.721
14. How important are advanced 4 (e.g., autonomous driving, connected car features) in an electric vehicle to you?	43	1	5	1.95	.925
13. What minimum driving range would you expect from an electric vehicle?	43	1	4	1.95	.899
24. Would you be interested in a subscription or leasing model for electric vehicles instead of purchasing? (battery-as-a-service)	43	1	4	1.84	.871
25. What information or experiences would make you more likely to consider purchasing an electric vehicle?	43	1	4	2.12	.956
Valid N (listwise)	43				

Table 2: Descriptive Statistics

Based on the descriptive statistics, it can be analysed that the mean value of the factors shows the options factors are near to, such as if the mean value of a factor is 2 that depicts that the factor is inclined on option 2. From this study, factors such as the primary factor that would motivate EV purchase has a mean value point of 1.81 that is close to 2 that shows this factor is close to its second factor that is 'lower operating concerns'. This means the primary motivating factor for consumers to purchase an EV is low operating costs of it. The factor familiarity with electric vehicles has a mean value of 1.53 that is close to 1 that depicts it is near to the first aspect 'very familiar'. This shows the Indian consumers are very familiar with the EVs and its effectiveness compared to conventional cars. Other factors such as importance are advanced and have a mean value of 1.95 that is also close to the second aspect 'somewhat important. It can be observed through this, the presence of advanced technological features in EV such as autonomous driving and connected car features are important for consumers.

Correlation

Correlations

		4. How familiar are you with electric vehicles (EVs)?	5. Have you ever driven or ridden in an electric vehicle?	6. What type of vehicle do you currently own or primarily use?	7. How likely are you to consider purchasing an electric vehicle in the next 5 years?	10. How important is the brand reputation when considering an electric vehicle purchase?	9. What is the main concern that might prevent you from purchasing an electric vehicle?	19. Are you aware of any 3 for purchasing electric vehicles?	20. How important are 3 in your decision to purchase an electric vehicle?
4. How familiar are you with electric vehicles (EVs)?	Pearson Correlation	1	-.267	.133	.497**	.540**	.176	.406**	.347*
	Sig. (2-tailed)		.084	.395	.001	.000	.259	.007	.023
	N	43	43	43	43	43	43	43	43
5. Have you ever driven or ridden in an electric vehicle?	Pearson Correlation	-.267	1	-.341*	-.353*	-.211	-.351*	-.304*	-.095
	Sig. (2-tailed)	.084		.025	.020	.175	.021	.047	.546
	N	43	43	43	43	43	43	43	43
6. What type of vehicle do you currently own or primarily use?	Pearson Correlation	.133	-.341*	1	.234	.144	.327*	.255	.169
	Sig. (2-tailed)	.395	.025		.130	.358	.032	.099	.280
	N	43	43	43	43	43	43	43	43
7. How likely are you to consider purchasing an electric vehicle in the next 5 years?	Pearson Correlation	.497**	-.353*	.234	1	.435**	.086	.436**	.400**
	Sig. (2-tailed)	.001	.020	.130		.004	.584	.003	.008
	N	43	43	43	43	43	43	43	43
10. How important is the brand reputation when considering an electric vehicle purchase?	Pearson Correlation	.540**	-.211	.144	.435**	1	.264	.417**	.467**
	Sig. (2-tailed)	.000	.175	.358	.004		.088	.005	.002
	N	43	43	43	43	43	43	43	43
9. What is the main concern that might prevent you from purchasing an electric vehicle?	Pearson Correlation	.176	-.351*	.327*	.086	.264	1	.388*	.472**
	Sig. (2-tailed)	.259	.021	.032	.584	.088		.010	.001
	N	43	43	43	43	43	43	43	43
19. Are you aware of any 3 for purchasing electric vehicles?	Pearson Correlation	.406**	-.304*	.255	.436**	.417**	.388*	1	.526**
	Sig. (2-tailed)	.007	.047	.099	.003	.005	.010		.000
	N	43	43	43	43	43	43	43	43
20. How important are 3 in your decision to purchase an electric vehicle?	Pearson Correlation	.347*	-.095	.169	.400**	.467**	.472**	.526**	1
	Sig. (2-tailed)	.023	.546	.280	.008	.002	.001	.000	
	N	43	43	43	43	43	43	43	43

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3: Correlation

Based on the above table, the correlation value between factors that is 0.5 and more have a high degree of relativity and are statistically significant. The factors such as awareness of any government incentives and important government incentives have a correlation value of 0.526 that is slightly more than 0.5 and shows high degree of relativity and both the factors are statistically significant. This shows that awareness of consumers regarding availability of government incentives for EVs leads to purchase of EV cars by them. Other factors such as familiarity and importance of brand reputation have a correlated value of 0.540 that is 0.5 and depicts statistical significance and have a high degree of relativity. This shows that the familiarity of the EVs among consumers based on the reputation of EV brands that leads them to use and adopt EVs. Moreover, the correlation value of the factors such as familiarity with EVs and likely to consider purchasing an EV in the next 5 years is 0.497 that is almost 0.5 that shows statistical significance and high

degree of relativity. This shows that consumers who are familiar with EVs are likely to consider purchasing an EV in the next 5 years.

Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.431[a]	.186	.166	.629

a. Predictors: (Constant), 21. For car enthusiasts: What aspect of electric vehicles most excites you?

Table 4: Model Summary

Depending on the model summary, it can be observed that the R square value is 1.86 that depicts a perfect value has been obtained and that depicts the variables are statistically significant. This shows that the consumer behaviour is totally dependent on the adoption of electric vehicles in the Indian market. This shows that the purchase of EVs by the car enthusiasts depends on the presence of the features of EVs such as torque and acceleration, advanced technology acceleration. That implies that the value of R square has been accurate for the study as there is a significant influence of consumer behaviour towards the adoption of electric vehicles. Therefore, it can be stated that the alternative hypothesis (H1) that is 'There is a significant influence of consumer behaviour towards the adoption of electric vehicles in India' is accepted. However, the null hypothesis (H0) that is 'There is no significant influence of consumer behaviour towards the adoption of electric vehicles in India' is rejected.

ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.702	1	3.702	9.367	.004[b]
	Residual	16.205	41	.395		
	Total	19.907	42			

a. Dependent Variable: 7. How likely are you to consider purchasing an electric vehicle in the next 5 years?

b. Predictors: (Constant), 21. For car enthusiasts: What aspect of electric vehicles most excites you?

Table 5: ANOVA

In terms of model specification, the ANOVA test has been conducted for understanding the statistical significance between the dependent and independent variables. Based on the ANOVA test, it has been observed that all the F values of variables are greater than 1 that depicts that the alternative hypothesis is accepted and the null hypothesis is rejected. The significance value of ANOVA test is less than 0.05 that is considered as significant and in this context the significance value is 0.04 that is less than 0.05 and shows that is statistically significant. This shows that for the car enthusiasts considering purchasing an EV in the next 5 years depends on the factors of EVs such as advanced technology features, instant torque and acceleration. Hence, it can be stated that the alternative hypothesis (H1) that is 'There is a significant influence of consumer behaviour towards the adoption of electric vehicles in India' is accepted. On the contrary, the null hypothesis (H0) that is 'There is no significant influence of consumer behaviour towards the adoption of electric vehicles in India' is rejected.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.313	.230		5.704	.000
	21. For car enthusiasts: What aspect of electric vehicles most excites you?	.303	.099	.431	3.061	.004

a. Dependent Variable: 7. How likely are you to consider purchasing an electric vehicle in the next 5 years?

Table 6: Coefficients

In the coefficients, the value of Unstandardised B if it is less than 0.5 shows statistical significance and strong relationship between the variables. Depending on the above table, the value of unstandardised B is 0.303 that is less than 0.5 and shows the variables are statistically significant. This shows the presence of advanced technological features, instant torque and acceleration and quiet operation in an EV influence car enthusiasts to consider purchasing an EV. Therefore, it can be stated that the alternative hypothesis (H1) that is 'There is a significant influence of consumer behaviour towards the adoption of electric vehicles in India' is accepted. On the contrary, the null

hypothesis (H0) that is 'There is no significant influence of consumer behaviour towards the adoption of electric vehicles in India' is rejected.

5.5 Findings

The major findings have focused on the factors that influence consumers and their behaviour to adopt electric vehicles in the Indian market. In this regard, from this research findings, it has been observed that the Indian consumers are mostly familiar with electric vehicles as most of the consumers have driven or ridden in an electric vehicle. This shows that the Indian consumers have a high level of engagement with electric vehicles that increases their familiarity with adoption of electric vehicles. However, most of the Indian consumers currently are connected with using petrol motorcycles, in spite of the prevalence of electric vehicles. Osman Gani *et al.* (2019), figured out that environmental concerns of customers depict their emotional responses towards environmental issues that stimulate the customer interests in EVs due to its sustainable benefits. This creates a significant knowledge gap in the previous and uncovered literature regarding the intention of consumers to purchase electric vehicles in the upcoming nature. The research findings also imply that environmental benefits are not the only factor that motivates customers to purchase electric vehicles in the Indian market as other factors are also present. The findings have added additional information regarding the attitudes of consumers that they are somewhat likely to purchase electric vehicles in the next 5 years as they get the motivation to purchase due to lowered operating costs. It has been evaluated from the findings that the consumers might be prevented from purchasing electric vehicles due to limited driving range that can hinder widespread adoption of electric vehicles. The research findings have added information regarding the preferences of consumers to purchase those electric vehicles that have a good brand reputation as trust and brand perception matters to the consumers. On a different note, it has been observed that the mainstream customers of the EVs believe that the performance, features and pricing are somewhat important for making purchase decisions. However, it has been also found that the lack of proper charging infrastructure in India, along with lack of consumer awareness and low rate of acceptance results in disrupting the overall process of EV adoption in the Indian market. Consumers are suitable with the maximum price range of 5 to 10 lakhs in order to purchase electric vehicles and minimum price range is within 200-300 km. Driving range of electric vehicles are somewhat important for the Indian consumers that influence them to adopt electric vehicles. Additionally, it has been found that the Indian automotive or motorcycle customers mainly focus on purchasing the mid-range vehicles

based on their accessibility. Following the conducted analysis, it has been also found that most of the Indian customers prefer to choose or adopt EVs for its low operating costs in terms of traditional diesel and petrol vehicles. These are the factors obtained from these research findings that motivate customers and influence them to purchase and adopt electric vehicles in India that fulfil the gap in literature and that has not been met in literature.

The findings have disclosed that the advancement of technological features in EV such as autonomous driving and connected car techniques are very essential to be implemented in EVs. The Indian consumers are able to pay a significant amount of premium for an Electric vehicle compared to petrol/diesel. Public charging stations availability for the consumers leads them to make positive purchasing decisions for adopting EV. Supporting that, workplace charging facilities also contribute to influencing their purchasing behaviour regarding EVs. The availability of sufficient public charging stations is essentially required for allowing the Indian customers to adopt EVs. However, the lack of charging infrastructure in India, hinders the buying decisions of the EV customers in India due to the fear of discharge. The above analysis expressed that the Indian customers are focused towards paying 20% more for the EVs in comparison to that of the traditional, petrol and diesel cars. The main reason behind such a high tendency towards electric vehicles is to promote environmental-sustainability. Therefore, it can be stated that the customers in the Indian automotive industries are willing to pay more for reducing the utilisation of fossil fuels and further carbon emission. Comparing existing literature Chawla *et al.* (2023), has revealed that the government support to the consumers for purchasing and adopting EVs such as financial and non-financial incentives and increasing awareness are mostly influencing purchasing decisions towards EVs. It was identified that most Indian customers believes that the availability of different designs of EVs such as SUV, sedan and hatchback are very important for them to make appropriate purchase decisions through selection of the appropriate model as per their need. This shows a significant knowledge gap in this existing literature regarding the impact of technological advancements, public and workplace charging facilities on purchasing of EVs that is fulfilled in the findings.

The car and motorcycle enthusiast have been found excited by multiple features such as instant torque and acceleration, customization possibilities in cars and high performance and speed in motorcycles that leads them to purchase EVs and motorcycles. It has been found that the motorcycle enthusiasts prefer the adoption of electric vehicles for their unique design that help in

maintaining innovation within the vehicles. It has been further analysed that the electric motorcycles contribute to reducing the carbon emission through avoiding the utilisation of fossil fuels. Apart from that, car enthusiasts are tending towards EV adoption to address the interest towards advanced technologies. Moreover, the environment-friendly performance of the EVs performs a significant role in influencing the Indian customers towards the prioritisation of electric cars and motorbikes. Additionally, it has been also found that the most EV customers in India consider the information based on reduced air pollution and emission of greenhouse gases while purchasing electric cars and motorcycles. This has added new perspectives to the literature regarding the factors influencing consumers to increase adoption of EVs that has been lacking in the previous theories. During purchasing an electric vehicle, the Indian consumers have been found to seek for anti-theft features, better after service and make purchases as it decreases greenhouse gas emission. These factors that are considered by the consumers during purchasing EVs are not disclosed in the existing literature that shows the findings have provided additional insights and fulfil these knowledge gaps.

5.6 Summary

Centring on the overall analysis of the chapter, it can be stated that consumer behaviour is influenced by various factors that motivate them to purchase electric vehicles in the Indian market. Additionally, it has been observed that the Indian consumers are mostly familiar with electric vehicles and the main factors that influence EV adoption are technological advancements, reduced operating costs, availability of charging facilities and brand reputation. However, concerns related to limited driving range and affordability prevent consumers from purchasing electric vehicles in India. The findings have addressed the gaps in the existing literature by incorporating reliable and new perspectives on consumer behaviour along with technological impacts.

Chapter 6: Discussion

6.1 Introduction

The discussion chapter within a study significantly contributes in discussing the findings carried out from the data analysis in a specific way with having a relevance to the objectives. Here in this chapter, the specific knowledge gathered from the SPSS analysis of the recorded survey responses, have been effectively discussed with relevance to the study objectives. Moreover, the discussion is supported by various evidence from the literature review section and other studies addressing the study scope. Furthermore, the chapter has also focused on analysing the relevance and efficiency of the chosen theories in the literature review section in relation to the study objectives.

6.2 Discussion

6.2.1 Factors influencing and hindering the adoption of EVs in different vehicle segments in India in relevance to preferences of the millennials and Generation Z

The customers of India have been inclined to the adoption of EVs due to their financial concerns and also to get the benefits of government subsidiaries. Indian customers majorly purchase EVs mostly for responding to the government subsidies and benefits compared to the positive contribution towards the environment, due to their financial gain (Sahoo *et al.*, 2022). The above findings highlighted that the customs of Generation Z majorly have their concern for the environment and always want to positively contribute towards the reduction of negative environmental impact. They prioritise sustainable products even for daily use and are also inclined to choose those products, which have less environmental impact (Manley, Seock and Shin, 2023). In the context of EV, the millennials are choosing EVs compared to the other traditional vehicles. It has been observed from the above analysis that most of the Indian consumers are familiar with the concept of EVs and also have their interest to accept this technology. It has been also figured out that, the Indian customers are also prioritising the effectiveness of these EVs compared to the traditional cars and also considered this an important aspect to consider. It can be also discussed from the ***theory of Planned behaviour*** that the environmental concerns of Generation Z consumers have modified their purchase behaviour and make them more inclined towards the EVs, which can satisfy their intention to reduce environmental impact. As per the view of Jena (2020), the feelings and sentiments of the consumers are the major factors for impacting the adoption of EVs. The Indian consumers have their positive feelings and behaviour towards the acceptance of EVs, as it can help them to showcase their contribution towards the mitigation of climate change issues in

the concerned country. The major three factors for adapting EVs by Indian consumers include 'Price', 'Maintenance' and 'Safety'.

For example, in India, millennials tend to lead a sustainable lifestyle, here they are prioritising the eco-friendly products and services. Most of the millennials in India are willing to pay more for sustainable products (The Times of India, 2023). As per the above findings, it can be also discussed that, most of the Indian consumers are still using the Petrol cars or motorcycles, instead of having the realisation about the importance of adapting EVs. Although, very less numbers of consumers are using the EVs for accepting the environmental benefits these vehicles have and also to combat the climate changes. Based on the findings of the survey, it was observed that the Indian customers strongly consider the information of reduced greenhouse gases emission and decrease in negative impacts for making an effective purchasing decision.

It has been observed that the negative personal motives of consumers sometimes hinder the adoption of EVs. These factors include the high initial cost, lack of reliability of this new technology, which ultimately negatively influences the purchase behaviour of consumers toward the electric vehicles (Anastasiadou and Gavanas, 2022). The lack of awareness among the customers regarding the environmental aspect restricts them from the utilisation of advanced technology based EVs and it also contributes in enhanced greenhouse gas emission. Additionally, there are also some other factors and features of these EVs, which has hampered the adoption. The factors include the poor charging infrastructure, lower disposable income of consumers and limited driving range of EVs. Desai et al. (2023), observed that the market of EVs is slowly growing in India and the demand rate of EVs is also estimated to be high. Although, the high rate of energy consumption is also increasing, which has developed the risk for the adoption of EVs. The changing infrastructure of EVs needs to be modified as per the energy demand estimation, which can enhance the EVs adoption. According to the report of the Indian Government (2023), the poor charging infrastructure is a major challenge for the adoption of EVs, which need to be tackled effectively. The availability of sufficient charging stations in India has a possibility to gain an effective increase in the EV adoption in the market. There are certain factors influencing the integration of better charging infrastructure such as policy and regulatory environment.

The above findings outlined that, in the next five years, most of the Indian consumers are willing to purchase electric vehicles. It has indicated that the adoption of EVs are positive and also growing, which can lead to a development of a better EV market. Moreover, it can also be stated

that the Indian customers are concerned and focused towards the adoption and utilisation of EVs. Additionally, the lower operating cost is the key factor which positively influences the adoption of EVs for the Indian consumers. On the other hand, high initial cost replacement of the battery is the factor, which can prevent the Indian consumers from purchasing EVs. According to Gupta and Sharma (2023), the millennials and Generation Z have been aware of EVs from the information available on the internet due to the easy access, which has made the adoption rate higher. Although, the adoption and landscape of EVs in India might hamper due to other factors like cost, lack of infrastructure, and lack of experience. Thus, it has been observed that there are various factors such as, 'initiatives and policies of the Indian government', 'environmental concern of Generation Z consumers', 'effectiveness and benefits of EVs', 'poor charging infrastructure of EVs', 'lack of reliability of this new technology'. It can enhance and also hamper the adoption of EVs by the millennials and Generation Z Indian customers.

6.2.2 Strategic ways for improving EV adoption by automakers within both mainstream consumers and automotive enthusiasts to involve both car and motorcycle enthusiasts

The above findings highlight that the EV adoption in the Indian market is supported by multiple factors such as government initiatives to promote EVs, and lower operating costs. The enhanced tendency of the customers towards the EV adoption has also been found to be one of the key aspects facilitating the adoption of EV among mainstream customers and automotive enthusiasts. It has been observed that, in India the adoption of EV has been boosted up after the outbreak of COVID-19. For instance, the share of EV sales in India was recorded at 0.5% in 2018, which increased to 6.3% in 2023 (Zandt, 2024). On a different note, it has been further analysed that the Indian government has implemented the strategy of incentives and subsidies to the persons owning EVs in the country. It has further resulted in expecting a growth of 125% in the EV adoption followed by the government subsidies and different regulatory catalysts such as FAME and PLI (Times of India, 2024). Apart from that, it has been also found that the customers adopt the EVs in India for reducing carbon emissions (Tu and Yang, 2019). All these mentioned concerns also allow the automakers to develop the EVs as per the preferences of the customers.

The car enthusiasts mainly tend to adopt the EVs for their advanced technological features and innovations. On the other hand, the motorcycle enthusiasts strongly focus on EV adoption for its unique design. According to Tass et al. (2023), in India, the automotive customers adopt EVs for promoting environmental sustainability by minimising the air pollution. Apart from the

environmental concerns the focus towards advanced technology and the attitude towards being updated encourages the Indian car enthusiasts towards the involvement of EVs. Deka et al. (2023), addressed that the Indian motorcycle enthusiasts are focused towards adoption of hybrid electric motorcycles due to its unique and creative designs. Additionally, the creative designs in the vehicles significantly allows the customers in maintaining environmental standards and reducing negative influence on the environment. On a different note, the study by Hema and Venkatarangan (2022), discussed that the different factors associated with the EV adoption in India are reduced carbon emission, decreased air pollution, low cost maintenance and technological adoption. The reduction in negative impacts on the environment and cost optimisation performs a vital role in terms of influencing the Indian customers towards the adoption of EVs. The addition of sustainability has a strong influence on the government towards promoting EV adoption and utilisation in the Indian market.

The policies imposed by the Indian government are observed as the main factors or strategies that enhance the volume or pace of EV adoption within the Indian automotive market. It has been observed that the Indian government has reduced the overall GST within the EVs in comparison to that of the traditional vehicles (Li and Wang, 2023). Moreover, this phenomenon has also resulted in increasing the sales of EVs in the Indian automotive industry as the customers have to pay less in comparison to the traditional vehicle. On the contrary, Michael et al. (2022), discussed that the adoption of EVs also face some challenges within the Indian market that includes lack of acceptance among the customers, and lack of public charging infrastructure are observed as the key barriers in terms of EV adoption in India. Qadir et al. (2024), further stated that the Indian government acts as one of the key drivers in promoting the EV adoption in the country. Additionally, the reduced taxes and financial incentives have generated an interest among the Indian customers regarding the utilisation of advanced electric vehicles associated with different technologies. Moreover, the provision of these types of benefits strategically assist the customers in terms of achieving multiple opportunities like cost saving.

Here, in this area, the alignment of ***theory of reasoned action*** has been identified as appropriate for identifying the key reasons behind the increased preference towards the adoption of EVs in India. The theory of reasoned action is based on three important components that includes behavioural beliefs, normative beliefs and control beliefs that contribute in observing the intentions of the customers towards any particular action (LaCaille, 2013). The alignment of this theory has

contributed to the study in terms of gaining insights regarding the factors influencing the Indian customers towards the adoption of electric cars and motorcycles. Based on the discussed points, it can be stated that the government policies such as financial incentives, reduction in GST and environmental concerns are observed as the key strategies that effectively contribute to the Indian automotive industry in developing EVs. Besides, it also results in generating an interest among the Indian motorcycle enthusiasts and car enthusiasts in adoption of EVs for gaining multiple benefits like less tax, government incentives, and less operating costs.

6.2.3 Primary choice of the mainstream consumers in context of pricing, features and performance areas

As per the above findings, various attributes and features are there, which influences the choice of mainstream consumers for purchasing EVs. The initiatives and policies introduced by the Indian government such as financial incentives, reduction of GST for electric car chargers and stations has its positive impact on the purchase decision of Indian consumers. The tax and loan interest are comparatively lower than the traditional cars, in terms of EVs. The GST rate for EVs has also decreased from 12% to 5%, which makes the purchase of EVs more preferable for Indian consumers (PIB, 2024). As figured out from the above analysis, most of the mainstream consumers of India are well aware of government incentives and policies. This has made them realise the benefits they can get, while purchasing the Electric vehicles. According to Singh et al. (2021), the Indian government has proposed the EVs as a better alternative for petrol and diesel vehicles and, which also has its positive impact on the consumer purchase decision, resulting in increased sales rate of EVs. The initiatives of the government are also considered as the major factors for influencing the pricing of EVs. It has been figured out from the survey findings that almost the majority of the consumers are willing to pay premium prices for the EVs compared to petrol/diesel cars. It indicates that the relaxation on tax and loan interest has acted as a positive area for mainstream consumers of India to buy Electric vehicles.

It has been also observed that EV adoption is prioritised buy millennial customers for the subscription-based services. The subscription-based EV vehicle encourages the Gen-Z customers in terms of adopting electric vehicles and cars (Chakravorty, 2022). Furthermore, the consideration of all these services significantly help the customers in terms of getting financial benefits in comparison to that of the traditional vehicles. On the other hand, Mishra and Malhotra (2019), discussed that the advanced features within the electric vehicles strategically influence the

customers towards the adoption of EVs as the features have made it easy for the customers to use the EVs in an efficient way. Additionally, features such as comfort, ease of driving, convenience of use and automatic transmission are observed as the influencing factors of mainstream customers towards EVs. On a different note, the study by Kushwah and Tomer (2021), claimed that the rate of adoption of EVs in India is very low due to multiple reasons that includes high pricing, lack of charging infrastructure as well as inadequate awareness among the customers. Thus, it can be stated that the high pricing strategy acts as a barrier or obstacle in terms of adoption of EVs in the Indian market, however the availability of sufficient public charging stations have the possibility to boost the sales of EVs.

Despite having a high pricing of EVs in India, the government policies and regulations significantly encourages the customers towards the adoption of EVs. As investigated by Dixit and Singh (2022), the enhancement of government focus towards the EVs have resulted in reducing the taxes such as GST along with subsidies and incentives in order to provide the customers with financial benefits. Moreover, all these benefits to the customers also results in enhancing their interest towards the adoption of EVs as they have to pay less taxes in comparison to that of the traditional vehicles. On a different note, the study by Chawla et al. (2023), discussed that the environment-friendly performance of EVs through reducing air pollution and carbon emission strategically influences the customers towards electric cars in the Indian market. Moreover, these types of performances also result in enhancing the knowledge of the customers regarding environmental sustainability. The sustainable performance of the EVs contributes in reducing the air and noise pollution and assists the customers in having a smooth driving experience. Thus, it can be stated that the sustainable performance of the EVs significantly encourages the Indian customers towards adoption of such cars. Apart from that, Higueras-Castillo et al, (2023), discussed that the prioritisation of advanced technologies also influence the Indian customers towards choosing EVs as the young populations tend to focus more on innovation. Here, in this area, the government policies and regulations can also be stated as the key areas that influence the Indian customers towards the adoption of EVs for enhancing sustainability.

Here, in this context, the ***theory of planned behaviour*** has been considered in this study as it has helped in observing the preferences and behaviour of the customers towards adoption of EVs in the Indian market. Additionally, the three components of the theory such as normative beliefs, cultural beliefs and behavioural beliefs has helped the study in terms of gaining a knowledge

regarding the factors such as government regulations, and technological advancements that performs a vital role in generating an interest among the young Indian customers towards the adoption of electric vehicles. Apart from that, Digalwar, Thomas and Rastogi (2021), discussed that the sustainable performance or the environment-friendly operations of the electric vehicles are observed to strongly regulate and influence the Indians towards purchasing electric vehicles. Thus, based on the discussed points, it can be stated that both the factors, pricing, features and performance significantly influence the mainstream customers towards the purchase and adoption of electric vehicles.

6.3 Summary

The above key insights summarise that the adoption of electric vehicles in India are influenced by multiple factors that include reduced air pollution and carbon emission, government incentives and focus towards digital technologies. However, the adoption of the EVs in India also faces multiple barriers that include lack of awareness among the customers, lack of acceptance and inadequate public charging infrastructure. Moreover, it has been also found that the performance, features and pricing perform a vital role in terms of influencing the mainstream customers towards the purchasing of the EVs. The high pricing of the EVs creates difficulties for the Indian customers in accessing the vehicles however, the strategies like government incentives and reduction of taxes also generates an interest among the young customers towards electric cars and bikes.

Chapter 7: Conclusion and Recommendations

7.1 Conclusion

The above discussion pointed out various factors associated with the preferences of Indian millennials and Gen Z consumers in order to adopt EVs. These factors have both positive and negative impact, which can enhance and impede the adoption of EVs respectively. The most influential factors include, 'initiatives and policies of the Indian government', 'environmental concern of Generation Z consumers', 'effectiveness and benefits of EVs', 'poor charging infrastructure of EVs', 'lack of reliability of this new technology' and many more. Among all these factors, the government initiatives have its positive impact, as through these consumers can gain financial benefits such as lower rate of tax and interest rates. Additionally, most of the consumers of Generation Z have their desire to contribute positively to reduction of environmental impact. They always prefer to purchase those items, which are sustainable and also provide benefits, compared to the other conventional products. Electric vehicles are also not excluded from this, because most of the Indian customers have their proper knowledge regarding the technology advantages of using EVs. The sustainable features of EVs have also influenced the purchase intention and perception of customers about eco-friendly vehicles. The purchase of EVs has made Indian consumers especially, Generation Z customers capable enough to reduce environmental impact through their own contribution. On the other hand, the feelings and sentiments of the consumers regarding environmental concerns are also other factors, which influenced the adoption of EVs in a positive way. The major three factors 'Price', 'Maintenance' and 'Safety' have influenced the feelings of customers. Although, it has been also observed that, there are also some wide number of consumers who are purchasing petrol cars instead of EVs. This is due to the negative factors and features of EVs, such as the poor charging speed and also the lack of reliability of the new technology. Furthermore, the Indian government also supported this fact and was willing to develop strategies of resolving these issues. Additionally, the high demand of energy can also restrict the adoption of EVs within the Indian market, but instead of this the preference of EVs has been growing slowly.

Numerous strategies are utilised by the automakers in order to promote the EV adoption across the motorcycle and car enthusiasts. The development of creative and unique designs is considered as the key strategies that result in influencing the Indian motorcycle enthusiasts as it helps them in maintaining high standards along with maintenance of innovation. Moreover, it has been observed

that car enthusiasts prefer electric vehicles for its focus towards advanced technologies and features such as automatic transmission, ease of use, and convenient to drive. Apart from these, the regulation of Indian government such as reduction in taxes and GST are also observed as the key factor influencing the adoption of EVs as they have to pay less taxes in comparison to the traditional petrol and diesel cars. It has been further identified that the government incentives and subsidies such as FAME performs an important role in terms of increasing the interest of the customers towards EV. It has been also found that the utilisation of EV has increased in India, after the occurrence of COVID-19 pandemic in order to decrease air pollution and operating costs. Furthermore, the Indian customers mainly prioritise the utilisation of EVs due to the low maintenance costs in comparison to that of the traditional diesel and petrol vehicles. Despite having such financial benefits provided by the government, the EV adoption also faces some challenges in India that include lack of public charging infrastructure, lack of acceptance and high price. Moreover, the lack of awareness among the Indian customers regarding the EV utilisation leads in disrupting the smooth adoption of the electric motorbikes and cars in India. Furthermore, in this study the theory of reasoned action has been identified as effective for identifying the reasons and the intentions of individuals towards purchasing the EVs. Based on the theory, it is found that customer intentions towards EV are influenced by sustainability, government incentives and the advanced technological advancements. Additionally, the advanced features associated with the EVs such as ease of use, convenient driving and automated transmission are the important aspects associated with EVs that influence the customers towards positive buying decisions. The customers of EVs in the Indian market mainly considers the environmental concerns and sustainability factor while purchasing electric cars and motorbikes. The above findings have also reflected that the Indian customers focus on purchasing mid-range electric vehicles for a long term usage. Additionally, the Indian customers believe that the availability of model options such as sedan, SUV and hatchback are important for them to choose the appropriate model as per their convenience and need. It has been observed that the availability of sufficient public charging stations in India has the possibility to influence the customers to make positive purchase decisions of EV with consideration to pricing, features and performance. Therefore, based on all these discussed areas it can be stated that multiple strategies facilitate the EV adoption in India that includes government incentives, reduced GST, sustainability, advanced technology and unique designs.

In conclusion, it can be concluded that the adoption of electric vehicles (EVs) in the Indian market is influenced by a variety of factors, with a focus on the interaction between price, features, and performance. The above investigation has highlighted that government programs are crucial in influencing the way consumers feel about electric vehicles which can further impact on the performance of the electric vehicle business sector within the countries and regions. Further, it has been found that financial incentives including lower tax burden and lower GST rates have significantly boosted the appeal of EVs to Indian consumers. These regulations, which are intended to reduce the financial burden of buying electric vehicles, have been successful in encouraging consumer interest and purchase intent. Although EVs are more expensive to buy initially than conventional cars, consumers are showing that they are prepared to pay more for the long-term advantages and environmental sustainability that EVs provide. This change is partially caused by people becoming more aware of government incentives and the growing popularity of electric vehicles as more environmentally friendly alternatives to petrol and diesel cars. The increased interest from consumers including millennials and Gen-Z in particular who are more drawn to subscription-based EV services and cutting-edge EV services and cutting-edge technological features demonstrates the beneficial effects of these policies. However, a number of factors continue to limit the rate of EV adoption which include lack of consumer awareness, charging infrastructure, and expensive prices of the electric vehicles. The study has also emphasised lack of workplace and public charging stations is a serious issue since it affects the perceptions of consumers regarding the feasibility of owning an electric vehicle. Although connected car features and autonomous driving are attracting tech-savvy consumers, these technological advancements in EVs also emphasise the need for additional infrastructure development to facilitate widespread adoption. Additionally, the study also shows that consumers are highly motivated by environmental factors such as lower air pollution and carbon emissions. The focus on sustainability is aligned with more general trends in society and makes electric vehicles more appealing to consumers who care about the environment. However, it is evident that addressing the real-world drawbacks of electric vehicle ownership, such as infrastructure difficulties and range anxiety, is essential to boosting adoption rates. The above investigation has mentioned that advanced technologies like connected car features and autonomous driving can satisfy the appetite for innovation in both car and motorcycle enthusiasts. Further, it has also been found that due to their ability to address issues with range anxiety and charging convenience, public and workplace

charging stations are also very important in influencing purchasing decisions. The EV makers are also required to provide a positive shopping experience for the consumers with adequate infrastructure for charging EVs for increasing the adoption rate of the electric vehicles. Therefore, based on the above discussion, it can be concluded that automakers can increase the overall appeal of EVs by coordinating their strategies with the varied presences of both mainstream consumers and enthusiasts.

7.2 Limitations of the study

The limitations of this study are mentioned below:

- This study has developed its findings in a country specific manner, where India was only focused. This country specific approach has limited this study to develop comparative findings and results. The particular focus on the country India has restricted this study to provide insights reading the consumer behaviour towards Electric vehicles in worldwide context for in depth understanding.
- This study has only prioritised consumer behaviour towards Electric vehicles instead of other vehicles such as sports cars, luxurious cars and many more. This specification has restricted this study to develop the findings for the overall automotive industry. Additionally, the study has also not emphasised the other alternatives of traditional cars like EVs.
- In addition, with this, the estimated time duration has also limited this study to take only one research strategy for collecting data. The wider data collection has been confined due to time constraints, which might hamper the establishment of effective research findings.
- This study has developed majorly focused on collecting only primary quantitative data, which has limited this study to analyse the historical data and also to develop generalised findings.
- This study has analysed the consumer behaviour towards EVs from only the feedback of 43 survey respondents. Due to time constraints, the study has only conducted the survey on small sample size, which bounded to study to collect a wider range of quantitative data. The analysis of more diversified feedback was not done in this study, which might hinder the reliability of the results.

7.3 Recommendation for further research

- It can be recommended that the study can also consider the other geographical region including India for analysing the consumers behaviours towards the electric vehicle. These countries might involve UK, USA, China and many more. This can establish the research outcomes on a worldwide basis.
- This study can put it focus on other vehicles also in order to investigate the consumer behaviours. There are several alternatives of Electric vehicles present in the automotive industry such as 'CNG vehicles', 'Hydrogen fuel cell vehicles', 'Flex fuel vehicles' and many more. The involvement of these vehicles can help the study to develop more comparative findings and be beneficial for the overall automotive industry.
- It can be suggested that the study may use both primary and secondary data both for getting an in depth findings. The utilisation of secondary qualitative data can help the study to mitigate the issues of the time constraints. It is because the collection of secondary data is easier compared to primary methods and also cost and time effective.
- Additionally,, this study can collect secondary qualitative data, which can guide this study to conduct the survey on more participants such as 150-200 by resolving the issues of time constraints.

7.4 Future scope of the research

The scope of the research is limited to the investigation of consumer behaviour to sustainable automotive products, which is electric vehicles specifically in India. This study has explored the factor influencing both positively and negatively the adoption of EVs by the Indian millennial and Generation Z consumers. Additionally, the pricing, features and performance areas of EVs have been also explored, which are the major focus for customer purchasing EVs. The findings and outcomes of this study can help the Indian manufacturer, markets and sellers of EVs to realise the customer perceptions towards these products. It can also help them to modify their product features and pricing range according to customer preferences and needs. The study has also explored the effective ways, which can improve the adoption of EVs by automakers within both mainstream consumers and automotive enthusiasts. The results of this research will help the future researchers to get an in-depth idea, while conducting future research based on this subject area. Therefore, the future studies can put focus to analyse consumers behaviour on not only electric cars, but also

other alternatives available in the market on a worldwide context. This will make the findings of future studies more generalised and comparative.

Glossary

Electric Vehicles	An electric vehicle uses a battery to store electrical energy that is ready to use.
Technological advancement	Technological advancement occurs when technologies or applied sciences become more precise, accurate, efficient, or more powerful or capable.
Consumer behaviour	Consumer behavior is the study of the elements that influence individuals' purchasing decisions, including environmental, psychological, and societal factors.
Greenhouse gas emissions	Carbon dioxide (CO_2) makes up the vast majority of greenhouse gas emissions from the sector, but smaller amounts of methane (CH_4) and nitrous oxide (N_2O) are also emitted.

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Appendices

Appendix 1: Approximate market share of EVs in India

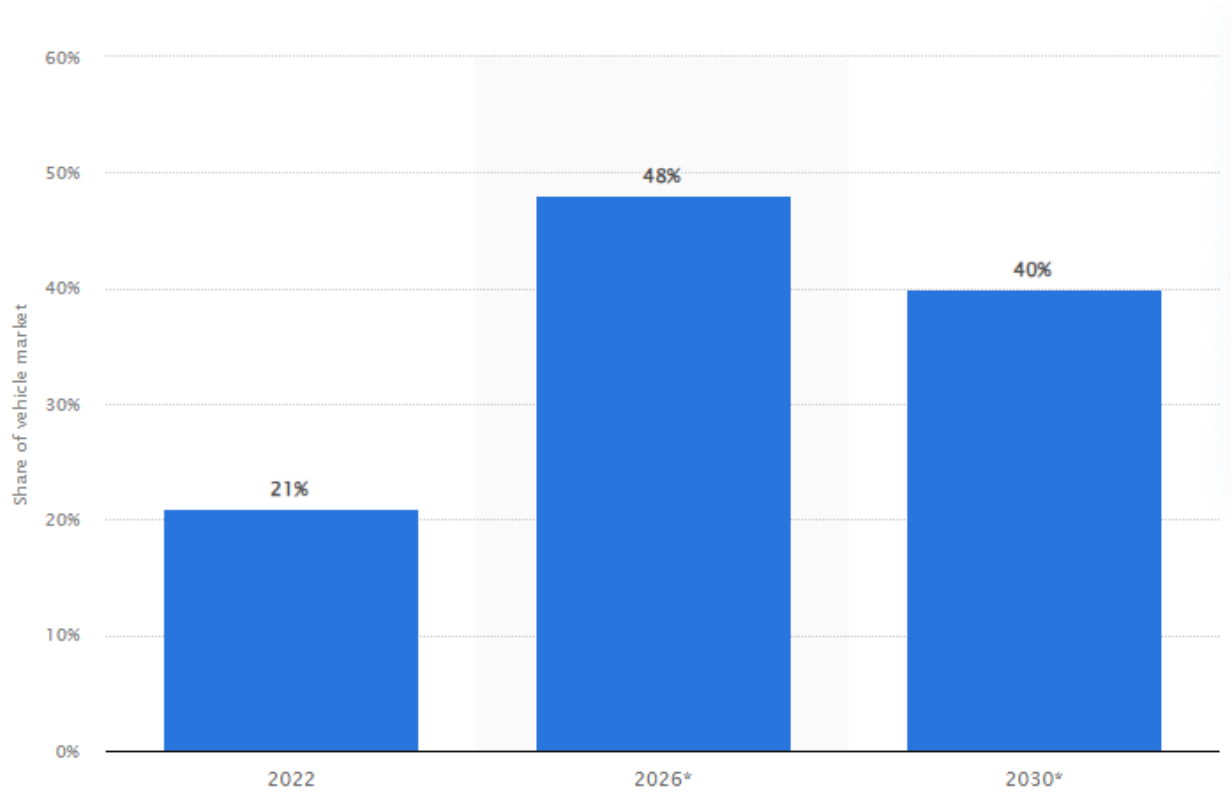

Figure 36: Approximate market share of EVs in India

(Source: Sun, 2023)

Appendix 2: Goal of Indian government in reducing price of EVs

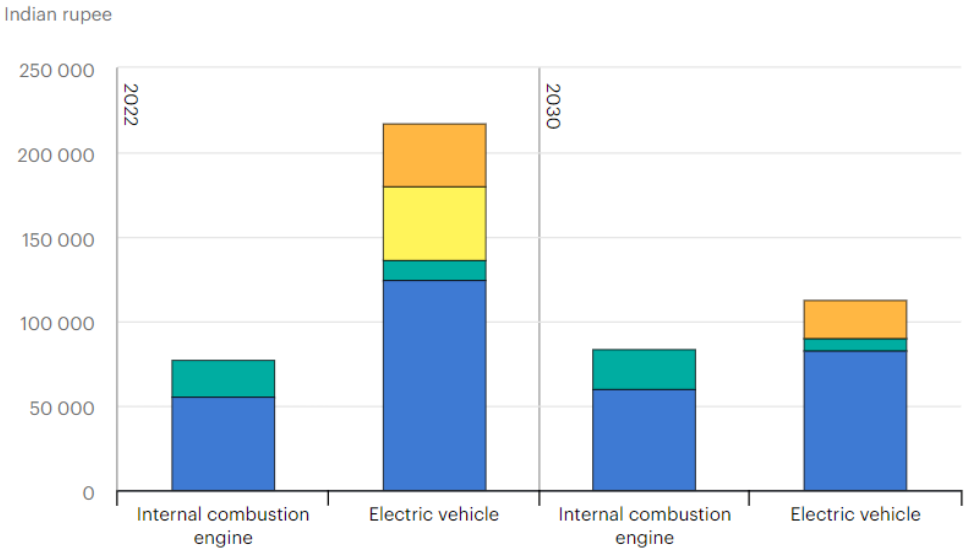

Figure 37: Goal of Indian government in reducing price of EVs

(Source: IEA, 2023)

Appendix 3: Lower investment momentum to EV industry of India

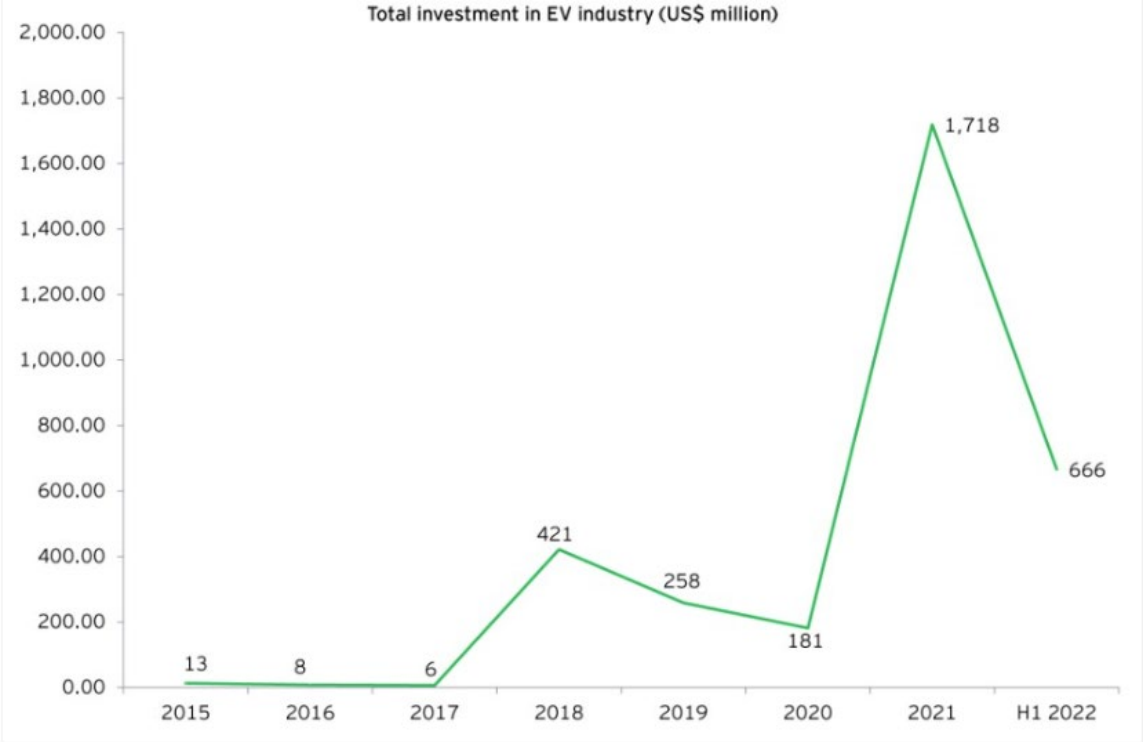

Figure 38: Lower investment momentum to EV industry of India

(Source: Mulgund, 2022)