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# A CONCEPTUAL STUDY OF THE IMPACT OF CONSUMER PERCEPTION REGARDING THE ADOPTION OF EV IN BANGALORE

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**Abstract**

The Indian automotive industry is witnessing a shift to electric vehicles due to the growing demand for sustainable mobility solutions. This research paper aims to understand consumer perceptions and purchasing behaviour towards EVs in India. A survey was conducted among his 133 respondents in different cities in India to collect primary data. According to the study, consumer awareness and awareness of EVs is growing in India, but there are still significant barriers to adoption. Lack of charging infrastructure, high initial cost and limited range are the main obstacles to adoption. However, research shows that consumers are willing to pay a premium for electric vehicles because of the environmental benefits. The study also found that government incentives and policies play a key role in driving EV adoption in India. The paper concludes with recommendations for policy makers and automakers to promote EV adoption in India.

## 1. Introduction

One of the world's largest markets for automobiles, India mostly relies on unsustainable modes of transportation powered by fossil fuels. Concerns about global warming are rapidly growing as a result of the transportation industry's emission of carbon dioxide. In 2022, the world's CO2 emissions increased by a significant 1.3%, which has resulted in numerous appalling climate-related extremes, such as drought, storms, and food. With 7.9% of the world's emissions, India is third among the top emitters. It wants to lower the magnitude of its GDP emissions by 33-35% in 2030, compared to 2005 figures. India is one of the world's largest oil consumers; between FY2023-24, the country's petroleum consumption increased by 4.7 percent. The Government of India (GOI) is currently implementing a number of initiatives to shift toward sustainable mobility and, as a result, significantly reduce its use of fossil fuels. Together, electrifying transportation and utilizing renewable energy sources will significantly reduce CO2 emissions.

India has unveiled the National Electric Mobility Mission Plan 2020 in this regard, and as

part of the mission, India is now witnessing a stupendous shift in interest in electric mobility. Since zero-emission vehicles (ZEVs) are still a new technology in India, the infrastructure and market structure needed for them are still unclear. Due to heavily priced batteries, EVs are significantly more expensive to buy than comparable conventional vehicles (CVs). Norway being the world's biggest electric vehicle market has accomplished high market entrance of EVs not just through wide bundles of impetuses like free parking, exemption from road tax etc., However, since consumers will only be willing to purchase this new technology if they perceive it to be superior to CVs, they determined that it was necessary to reduce the price difference

between EVs and CVs. Therefore, it is essential to comprehend the consumer's perception of the benefits and obstacles associated with EV adoption for the market's success.

As nations and cities all over the world look for ways to combat climate change and reduce greenhouse gas emissions, the adoption of electric vehicles has emerged as an important research topic.

Bengaluru, a major city in southern India, is one of these cities that has been of interest in this regard. Bengaluru, in the same way as other different urban communities in India, faces difficulties connected with air contamination and gridlock. These problems may be solved by electric vehicles, which have the potential to cut emissions and improve air quality. However, there are a lot of things that need to be taken into consideration in order to encourage the widespread use of electric vehicles in Bengaluru, which is still in its infancy.

By examining consumer attitudes and behaviours, the availability of charging infrastructure, government policies and incentives, and other factors that may influence the adoption of electric vehicles, this study aims to investigate the adoption of electric vehicles in Bengaluru. The review will accumulate information through studies and meetings with occupants of Bengaluru and different partners, as well as through examination of existing information on electric vehicle reception in the city.

The Karnataka Electric Vehicle and Energy Storage Policy of 2017 is one of the most important initiatives. Its goal is to make the state a centre for EV production and adoption. Manufacturers of electric vehicles are encouraged by the policy, which includes exemptions from a variety of taxes and duties. It also offers incentives for installing EV charging stations and subsidies for individuals who purchase electric vehicles. The number of EV charging stations in Bengaluru has also increased, with both public and private companies establishing charging infrastructure throughout the city. Additionally, the city is home to a number of startups working on EV-related technology, such as electric motors and battery management systems.

The Times of India reported that Bengaluru sold approximately 72,544 EVs in 2022, placing it 3rd among all the states in India. To further accelerate the adoption of electric vehicles in Bengaluru.

## 2. Literature Review

**Jain et al. (2016)** found that lack of charging infrastructure, high cost and range concerns are the main barriers to EV adoption in India. The survey also revealed that consumers are interested in maintaining and maintaining electric vehicles. **Yadav and Yadav (2020)** explored consumer perceptions of EV adoption. The survey found that consumers were interested in adopting EVs, but were concerned about high costs, lack of charging infrastructure, and range concerns. The authors found that consumer perceptions of EV adoption are influenced by demographic variables such as age, income, and level of education. **Françon Rio, Eric Morin, Breck Van Wie (2016)** despite many governments highlighting relatively low EV penetration, implementing a strong advertising policy. The paper presents a comprehensive review of consumer preference for electric vehicles and pursuit of better policies and research within this area. **Pretty Bhalla and Inass, J (2018)** focused on manufacturing and distribution of an electric car. Many Factors Influence your purchase decision like environmental issues, cost, trust, technological progress, infrastructure and social acceptance. Electric vehicle sales promotion Government must play a leading role in politics, infrastructure, subsidies and sub-banks interest rate etc. Instead of making a drastic adjustment, India can invest in small-scale reinforcements to handle the load difficulties locally. Home charging ought to be promoted. Planning for location, population, traffic volume, and safety must be done properly. Prior to putting in place the large-scale charging infrastructure. **(Dash, 2013)** It is crucial to integrate activity in the transportation and energy sectors. Through many creative policies and programs, development goals can be achieved. For example, drivers of electrical cars are provided with financial incentives, such as tax credits, purchase subsidies, and reduced tolls . **(Philippe Lebeau, 2015)** Urban movement is significantly impacted by goods transport. The potential use of electric cars in urban logistical operations was investigated by researchers. A fleet with a variety

of technologies has the potential to lower last-mile expenses. A fleet size and mix vehicle routing problem with time windows for EVs was provided by the researcher. The author's primary contribution was taking into account the range fluctuation of EVs. Electric vehicles are frequently the most competitive technology in the compact van categories. In the market for large vans, diesel has emerged as the most lucrative option because electric cars would need to go farther to be costcompetitive .

**(Lingzhi Jin, 2017)** The nascent EV market is still growing, but various obstacles are preventing adoption. These barriers include the high price of new technology, the relative effort compared to range and charging time, and consumer ignorance about technology, practicality and availability. This last point, often called "customer awareness", is very important.

**Bharathi Motwani and Abhishek Patil (2019)** focused on benefits of electric vehicles as a new means of transportation without noise and air pollution. An eco-friendly way to commute in India is an important market and in this study. Conducted to check people's acceptance of electric vehicles and their acceptance of electric vehicles impact on the automotive industry. This research focuses on people's opinions.

**Korakrich Montain and Nanthi Sutjikarnnarunai, (2019)** The need for infrastructure and financial components was understood to be of critical importance as the increasingly serious problems of energy, air pollution and global warming are mitigated by rapidly developing modern vehicle technology. This study helps us understand the relationship between demographic variables and future electric vehicle purchase intentions.

**Mishra.S and Malhotra, (2019)** identified the potential need to introduce alternative technologies to vehicles such as electric vehicles. The study focuses on the role of features, economic benefits, environmental concerns, social impacts and running costs on Indian consumer's EV purchase intentions. **Mrinal Pandey, Midhun Mohan, Dr.K.Subha (2021)** as it is well known, the automotive industry is dynamically changing with changes and shifts in resource utilization where renewable energy is used as a key factor. Purchase intent varies for reasons such as risk, level of innovation, costs incurred, and environmental benefits. Even the government has taken steps to start electric vehicles by setting deadlines for vehicle users.

**Chun Yang, (2019)** Energy saving and environmental protection are the main reasons why 40% of people buy electric vehicles. Consumer price comes first, but interior design, storage capacity and the car's engine are also considered performance. More educated consumers prefer hybrid vehicles in terms of market share.

**Moyo.N (2018)** analyzed how environmental concerns have a significant role in EV buying decisions, survey results reflect consumers, and environmentally conscious people are highly motivated to purchase electric vehicles.

Protect the environment from air pollution. Some of the most influential values orientation relates to selfishness, social altruism, and biosphere in purchasing.

Intentions for electric vehicles.

**Nagraj Navalgund and Gurudas Nulkar (2020)** there is a serious problem of neglect of the natural environment, which is predicted to be a serious proposition of all forms of pollution and natural resource disasters. As a result, there is growing concern for the environment and responsible consumer behaviour to combat environmental degradation. This current study is an attempt to understand the underlying attitudes and behavioural factors that influence consumer acceptance of electric vehicles (e-mobility) in Karnataka.

**2.2 Rational:**

This study's findings will shed light on the difficulties and opportunities associated with encouraging the use of electric vehicles in Bengaluru and may help shape future policies and strategies. The ultimate objective of this study is to contribute to efforts to promote environmentally friendly transportation and cut emissions in Bengaluru and other global cities.

Additionally, the study will investigate the impact of price, range, charging infrastructure, environmental issues, and government policies on EV adoption in Bengaluru. This study's findings can be used to inform policy decisions and marketing strategies

aimed at promoting the adoption of this technology. They will provide valuable insights into the factors that are likely to drive or hinder the adoption of EVs in the city. Several initiatives have been launched by the government of Karnataka to encourage the use of electric vehicles (EVs).

## 3. Research Methodology

### 3.1 Research Method:

The research methodology for the study on consumer perception regarding the adoption of EV in Bengaluru city is conducted through a descriptive research approach. Data were collected from undergraduates, service class and business class peoples. The data were collected from a sample of 133 respondents through online questionnaires. The survey questionnaire comprised 36 statements, including close ended questions. The questionnaire was designed to gather information on the following aspects:

- Perception and Understanding of EVs.
- Perception of EV Strengths and Weaknesses.
- Factors Influencing EV Purchase Decisions.
- Concerns and Challenges Regarding EVs.
- Willingness to Adopt EVs in the Future.

The questionnaire was divided into two sections. The first section collected demographic data such as age, gender, income and consumer awareness and perception towards EVs. The second section collected data on factors that influence consumer willingness to adopt EVs. Based on the sample, it was assumed that the population as a whole had a good understanding of the technology used in their fuel vehicles and the potential benefits of using electric vehicles. The sample had significantly higher participation of males (60.2%) and the female number was only (39.1%). Respondents sample were under the age group of 25 years and above 56 years, where around (82%) of the respondents belongs under the age of 25 years and had a better perception towards EV. The sample mainly consists of the undergraduates students (60.9%).

The study will combine qualitative and quantitative research methods in a mixed-methods approach. In-depth insights into the reasons for consumer attitudes toward EVs will be gathered using qualitative research methods like focus groups and interviews. Surveys and other quantitative research methods will be used to gather information on how consumers in the city perceive EVs as a whole.

### 3.2 Sampling Techniques:

The sampling technique used for this research are probability sampling technique known as cluster random sampling. The population are stratified into different categories based on age, income, gender, and education level. The researchers conducted a pilot study on the survey curated and tested value of

Cronbach alpha for it was 0.837 which signifies the acceptance of the instrument. Further, the questionnaire was floated to 175 potential respondents. The sample size are determined using a formula for calculating the sample size from a given population. A sample of 133 respondents are selected from the population of Bengaluru city based out of valid respondent details and this was surveyed in a period of 6 months.

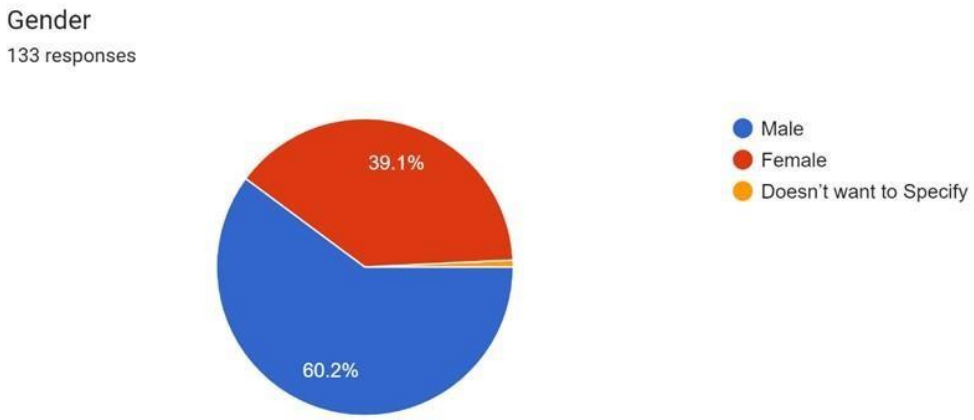
### 3.3 Hypothesis Testing:

The following hypothesis will be tested in the study:

- There is no significant relationship between consumer perception of EV adoption based on battery replacement, electricity consumption, resale value, residential infrastructure, office infrastructure.

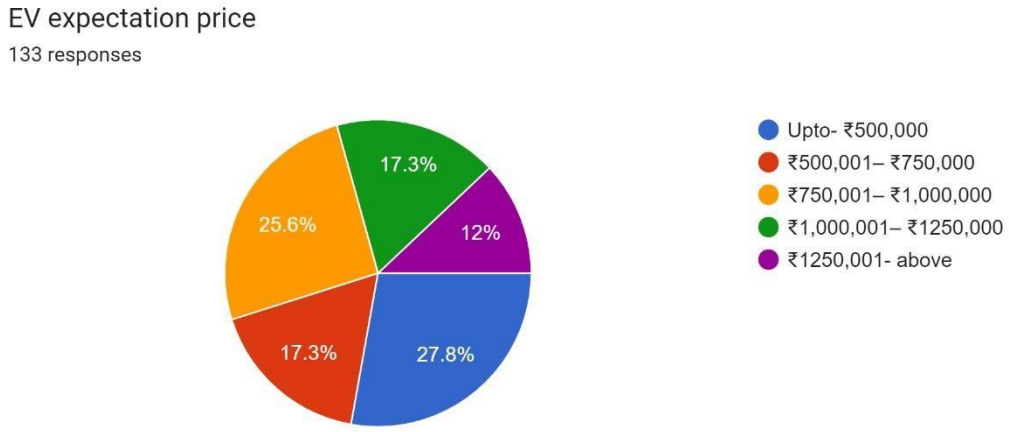
- There is a significant relationship between consumer perception of EV adoption based on battery replacement, electricity consumption, resale value, residential infrastructure, office infrastructure.
- There is a significant relationship between consumer perception of EV adoption based on degradation of battery, time usage, and consensus.
- There is a significant relationship between consumer perception of

EV adoption based on degradation of battery, time usage, and consensus. To test the hypothesis, Anova two factor is used to determine whether there is a significant association between the variables. The results of the study will help to determine the factors that influence consumer perception regarding the adoption of EV in Bengaluru city. These hypotheses focuses specifically on the factors that may affect consumer perception regarding the adoption of EV's. **4. Data Analysis & Interpretation**



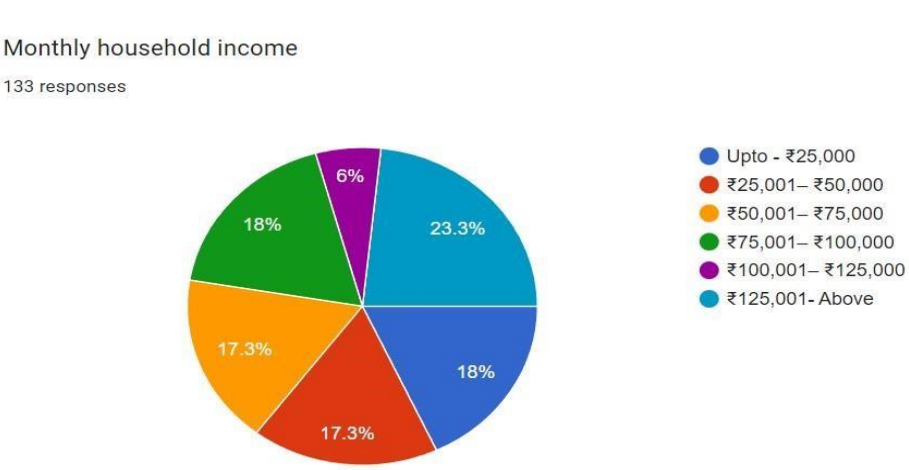

According to the given data, 60% of men and 39% of women prefer to buy an electric car, while only 1% of the "other" witnesses prefer electric cars. This data provides insight into consumer preferences for electric vehicles based on gender identity. It is interesting to note that the proportion of men who want to buy electric cars is significantly higher than the proportion of women. This could be due to a number of reasons, such as the "green" or ecological image associated with electric cars, which may appeal more to men. In addition, the higher price of electric vehicles may act as a deterrent to some female consumers, whose average income may be lower than that of men. The data also shows that only 1% of people who identify as "other" prefer to buy electric cars. This category can include people who do not identify as male or female, or people who identify as non-binary or gender queer. The low popularity of electric cars in this group may be due to a lack of targeted marketing or representation in the electric car market, where electric car manufacturers could intervene to attract a more diverse consumer base. Overall, the data suggest that gender identity may play a role in consumers' preferences for electric cars. However, it is important to note that these percentages are based on self-reported gender identities, which may not reflect biological sex. In addition, other factors such as income, education and environmental concerns may influence consumers' preferences for electric cars. To better understand consumers' preferences for electric cars, further research could be conducted to identify the factors that influence electric car purchase decisions in different population groups. This could include surveys or focus groups to gather more detailed information about consumer attitudes and behaviour towards electric cars. In addition, electric car manufacturers could conduct market research to better understand the needs and preferences of different consumer groups and develop targeted marketing strategies to reach a wider audience. Taken together, the data show that men are more likely to buy electric cars than women, while those

who identify as other dislike electric cars. This data provides valuable information for EV manufacturers and marketers who want to better understand their target audience and develop effective strategies to reach a larger number of consumers.




According to the data provided, the majority of individuals expect the price of an electric car to be below ₹1,000,000, with 27.8% expecting a price of up to ₹500,000, 17.3% expecting a price between ₹500,001 and ₹750,000, and 25.6% expecting a price between ₹750,001 and ₹1,000,000.

This data suggests that affordability is an important consideration for many consumers when purchasing an electric car. It is also emphasized that electric car manufacturers must continue to lower the prices of electric cars and make them more accessible to a wider range of consumers. However, it is important to note that 29.3% people expect an EV to cost more than ₹ 1,000,000 and 12% expect an EV to cost at least ₹ 1,250,001. This suggests there is a market for more expensive electric cars, perhaps for consumers willing to pay a premium for advanced features or luxury models. In conclusion, most people expect an electric car to be priced below ₹ 1,000,000, which shows that affordability is important to many consumers. However, there is also a market for more expensive electric cars, which emphasizes the need for electric car manufacturers to offer different models with different prices and features to meet different needs and preferences of consumers.



The chart shows that the largest proportion of respondents (23.3%) had a monthly household income above ₹1, 25,001, which suggests a significant portion of the respondents have a relatively high spending power. Additionally, the chart shows that 18% of the individuals had a monthly income between ₹75,001- ₹1, 00,000, and 17.3% of individuals had a monthly income between ₹50,001 - ₹75,000.

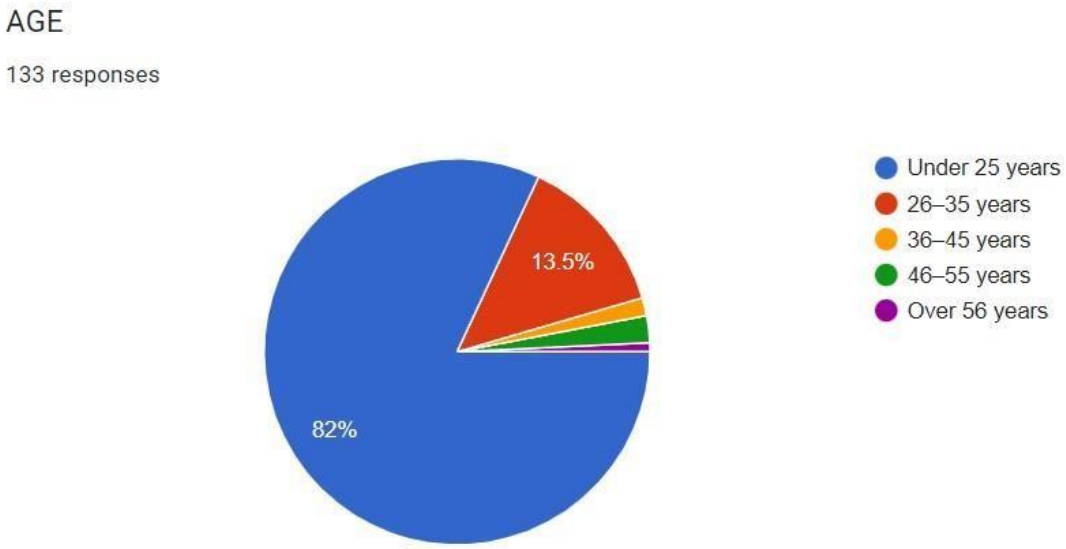
This information could be useful in analysing the potential buying behaviour of consumers towards EVs. For example, individuals with higher monthly household incomes may be more likely to consider EVs due to their relatively high cost. Alternatively, individuals with lower monthly household incomes may be less likely to consider EVs due to their limited purchasing power.

The monthly household income data presented in the chart for the "An

Exploratory Study on the Consumers' Buying Behaviour towards E-Vehicles in the Bengaluru city" could provide insights into the respondents' spending behaviour towards EVs. Higher-income respondents may be more willing to invest in EVs due to their higher purchasing power and potential interest in eco-friendly products. Conversely, lower-income respondents may be less likely to invest in EVs due to their higher cost and the availability of other affordable transportation options.

The data presented in the graph can also provide valuable information to EV manufacturers and dealers in Bangalore. Businesses can use this data to develop strategies to target specific income groups and adjust pricing and marketing techniques accordingly. For example, a manufacturer may develop affordable EV models aimed at middle-income households, while a luxury EV dealer may target high-income households.

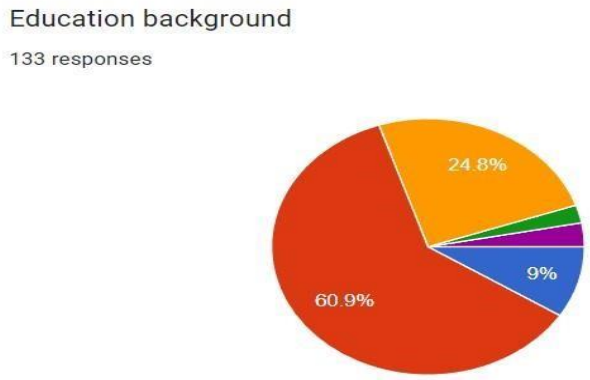
It's also important to note that the monthly household income data shown in the chart is just one of the factors that can influence consumer purchasing behaviour towards electric vehicles. Other factors, such as EV technology, charging facility infrastructure and availability, and government policy, may also play an important role in the decision-making process.




The data suggests that the majority of respondents are under the age of 25, with 82 falling into this age group. This may indicate that younger generations are interested in green technologies such as electric vehicles. It may also indicate that this age group is more receptive to new technologies and willing to try new things.

The data also show that the proportion of respondents in the 26 to 55 age group is smaller, while in the 36 to her 45 age group is down only 1.5%. This may indicate that middle-aged people may be less enthusiastic about purchasing electric vehicles due to concerns such as affordability and practicality. Manufacturers and retailers may need to adjust their marketing and pricing strategies to appeal to this age group.

Finally, the data show that her percentage of respondents over the age of 56 is very small, with only 0.8% of them falling into this age group. It is important to note that this data gap may limit research insights on potential EV markets for the elderly group. Overall, the age group data presented in the chart could provide valuable insight into the target EV market in Bangalore. However, it is important to consider other factors such as income, lifestyle, and environmental awareness when analysing consumer EV purchasing behaviour.

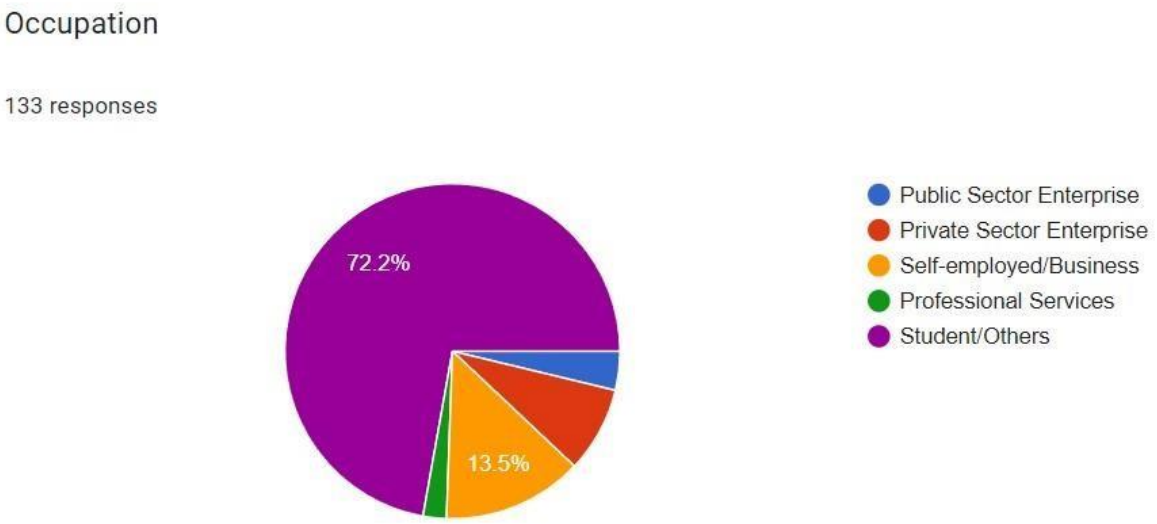



This data suggests that the majority of survey respondents are college students, with 60.9% falling into this category. This may indicate that younger generations who are still educated are interested in green technologies such as electric vehicles. It could also indicate that people currently studying are more aware of the environmental impact of their actions and are more willing to try new sustainable technologies.

The data also show that 24.8% of the respondents are graduate students, suggesting that higher education does not necessarily have a significant impact on interest in electric vehicles. Additionally, 9% of respondents had a school diploma/diploma and 2.3% had professional qualifications. Only a small portion (3%) of the respondents had a PhD or other qualifications. Overall, the occupancy data presented in the chart could provide valuable insight into Bangalore's target EV market. However, it is important to consider other factors such as income, lifestyle, and environmental awareness when analysing consumer EV purchasing behaviour.

Manufacturers and retailers may need to consider adjusting their marketing and pricing strategies to appeal to a wider range of occupations and educational levels.

Educational background data may provide valuable insights to electric vehicle manufacturers and dealers wishing to target potential customers in Bangalore. For example, you may need to adjust your marketing strategy to appeal to a highly educated demographic and emphasize the environmental benefits and the latest technological advances in electric vehicles. However, it is important to consider other factors such as income, lifestyle and transportation needs when analysing the consumer's EV buying behaviour.




This data shows that the majority of respondents are students and others, accounting for 72.2% of the sample. This may be due to the fact that Bengaluru is known as a centre of technology and education and many students and young professionals live in the city. The high proportion of students may also indicate a potential market for electric vehicles among young, environmentally conscious people.

The data also show that 13.5% of her respondents are self-employed or entrepreneurs, 8.3% work in the private sector and 3.8% work in the public sector. Only a small percentage of respondents (2.3%) were involved in freelancing services. The occupancy data could provide valuable insights to electric vehicle manufacturers and dealers looking to target potential customers in Bengaluru. For example, you may need to adjust your marketing strategy to appeal to younger students or self-employed people interested in electric vehicles. However, it is important to consider other factors such as income, lifestyle, and environmental awareness when analysing consumer EV purchasing behaviour.

It's important to note that these are potential trends, not absolutes. Factors such as personal preferences, lifestyle and access to charging infrastructure can all influence an individual's decision to purchase an electric vehicle.

Overall, the occupancy data provides a useful starting point for analysing the potential electric vehicle market in Bangalore. By combining this data with other factors such as income, education and age, stakeholders can gain a more comprehensive understanding of consumer behaviour and preferences for electric vehicles in cities. This helps manufacturers and dealers adjust their marketing and sales strategies to effectively reach their target users and drive EV adoption in their region.

**Correlation of the important factors that plays an important role towards consumer perception.**

| | BATTERY REPLACEMENT | ELECTRICITY CONSUMPTION | RESALE | DEGRADATION | TIME USAGE | RESIDENTIAL INFRA | OFFICE INFRA | PRIDE |
|---|---|---|---|---|---|---|---|---|
| BATTERY REPLACEMENT | | | | | | | | |
| ELECTRICITY CONSUMPTION | 0.555039 | | | | | | | |
| RESALE | | 0.585846 | | | | | | |
| DEGRADATION | | 0.469243 | | | | | | |
| TIME USAGE | | | | 0.555427 | | | | |
| RESIDENTIAL INFRA | | | 0.416399 | | 0.408006 | | | |
| OFFICE INFRA | | | | | | 0.68615 | | |
| CONSENSUS | | | | | | | | 0.573009 |

## 5. Findings and Discussions

**5.1** The cost incurred on Electricity consumption is imperious while driving EV- Research suggests that the cost of battery replacement can be a significant factor for many consumers when making a buying decision. The cost of battery replacement can vary depending on the type of device and the manufacturer. Some manufacturers may offer low-cost replacement options, while others may charge more for replacement batteries. In addition to the cost of the battery itself, you may also need to consider the cost of labour if you plan to have the battery replaced by a professional.

When making a buying decision, it's important to factor in the potential cost of battery replacement over the lifetime of the device. Consider the estimated lifespan of the battery and the frequency with which you'll need to replace it. If the cost of replacement is prohibitive or the battery life is shorter than you'd like, it may be worth considering alternative devices or brands that offer more affordable or longer-lasting battery options.

Ultimately, the cost of battery replacement is just one factor to consider when making a buying decision. You'll also want to consider the features, performance, and overall value of the device before making a final choice. **5.2** The resale value of Electronic Vehicle's before making a buying decision- Research has shown that electric vehicles (EVs) typically have higher resale values than their gas-powered counterparts, but the specific resale value can vary based on several factors. One key factor is the model and brand of the EV. Some models may have higher resale values due to their popularity, reliability, or features. Additionally, EVs from more established brands may have higher resale values than newer brands or lesser-known models. Another factor is the condition and age of the EV. Just like with gas-powered cars, EVs that are in good condition and have low mileage tend to have higher resale values. Finally, government incentives and subsidies can also affect the resale value of EVs. In areas where there are significant incentives for purchasing EVs, the resale value may be higher because there is more demand for them. Overall, it is important to research and compare the resale values of different EV models before making a buying decision. This can help you make a more informed decision and potentially save you money in the long run.

**5.3** The battery lifespan caused by degradation which is assembled in the electronic vehicle while making a buying decision- Research studies have shown that battery degradation is a common issue in electric vehicles and can significantly affect the lifespan of the battery. Battery degradation occurs when the battery loses its ability to hold a charge, resulting in decreased range and performance over time. Several factors can contribute to battery degradation, including temperature, charging patterns, and the depth of discharge. Higher temperatures can cause accelerated degradation, and frequent fast charging or charging to 100% can also contribute to faster degradation. Research has also shown that the type of battery chemistry used in the electric vehicle can impact the rate of degradation. For example, lithium-ion batteries, which are commonly used in electric vehicles, tend to degrade faster than other types of batteries. When making a buying decision for an electric vehicle, it is important to consider the expected lifespan of the battery and the potential for degradation. It is also essential to understand the warranty and support options for the battery, as replacing a degraded battery can be costly. Additionally, it is important to consider the driving and charging patterns to minimize the potential for degradation and maximize the lifespan of the battery.

**5.4**It is relevant to ask the sales team for time usage to fully charge an Electronic Vehicles before making a purchase- Research has shown that one of the main concerns for potential buyers of electric vehicles (EVs) is the charging time required to fully charge the vehicle's battery. Asking the sales team about the time required to fully charge an EV before making a purchase can provide important information that can help the buyer make an informed decision. The charging time for an EV depends on several factors, including the capacity of the battery, the type of charger used, and the current charge level of the battery. In

general, most EVs can be fully charged in several hours, but this can vary widely depending on the specifics of the vehicle and the charging infrastructure available. By asking the sales team for information about the charging time required for a specific EV model, potential buyers can better understand the practical considerations of owning an electric vehicle. This information can help the buyer decide whether an EV is a good fit for their lifestyle and driving needs, and can also help them plan for any potential inconvenience associated with charging an EV.

**5.5** Electronic Vehicles are convenient enough in terms of charging infrastructure in residence communities- In recent years, the availability of charging infrastructure for EVs has been steadily increasing, both in public spaces and in residential communities. Many newer residential communities are now being built with EV charging stations as a standard feature, and existing communities are also installing charging stations to meet the growing demand for EVs. Having charging infrastructure in residential communities can be very convenient for EV owners, as they can easily charge their vehicles overnight or while they are parked at home. This eliminates the need for them to go out of their way to find a public charging station, which can be time-consuming and inconvenient. However, the convenience of charging infrastructure in residential communities may depend on factors such as the number of charging stations available, the speed of the charging, and the demand from other EV owners in the community.

In some cases, there may not be enough charging stations to meet the demand, which can lead to long wait times or the need to charge elsewhere. **5.6** Buying electric vehicle will show beliefs for what an individual stand for (consensus) - It's important to note that the perception of EV ownership may vary depending on the specific social and cultural context. In some communities, owning an EV may be seen as a status symbol and a way to signal wealth and sophistication. In other communities, however, EV ownership may not be seen as particularly noteworthy. It's also important to note that the decision to purchase an EV should not be solely based on the desire to improve one's image. While owning an EV may have some social benefits, the primary motivation for purchasing an EV should be based on its environmental and economic benefits, as well as its suitability for one's personal transportation needs.

The survey found that respondents (85%) are aware of electric vehicles and their benefits. The majority of respondents believe that electric vehicles are environmentally friendly, and (75%) of them agree that electric vehicles are better for the environment than petrol or diesel vehicles. However, respondents were concerned about the high cost of their EVs, with 40.6% of respondents saying their EVs were too expensive and concerns about long charging times were key factors in buyers' purchasing decisions. One of the factors he said. (46.6%) of respondents said their EV takes a long time to charge. Other factors such as EV maintenance infrastructure. (32.3%) of respondents said that EV maintenance infrastructure is well developed in India. The study's focus group discussion found that around (38.3%) of the respondents who participated in the survey are planning to purchase their EV within the next 5 years and believe that EV are the best alternative for the petrol or diesel vehicles. However, they also expressed concern about the lack of charging infrastructure, especially on highways and intercity roads.

## 6. Conclusion and Recommendations:

The study aimed to explore the consumer perception regarding the adoption of electric vehicles (EVs) in Bengaluru. The results of the survey showed that consumers in Bengaluru have a positive perception towards EVs and are willing to adopt them provided that there is an adequate charging infrastructure and the cost of EVs is competitive with conventional vehicles. The study also found that environmental concerns and government incentives were significant predictors of consumer willingness to adopt EVs.

This also highlights the government's role in promoting the spread of electric vehicles. Governments can encourage adoption of electric vehicles by offering tax breaks, rebates and subsidies. These incentives will help make EVs more affordable and attractive to consumers. Additionally, governments can invest in the development of charging infrastructure and other supportive measures to promote electric vehicle adoption. One of the key findings of this study is that environmental concerns are a key indicator of consumer willingness to use electric vehicles. This highlights the importance of promoting the environmental benefits of electric vehicles to consumers. Electric vehicles have significantly lower emissions than conventional vehicles, which can have a positive impact on air quality and public health. It is important for policy makers, manufacturers, and other stakeholders to highlight the environmental benefits of electric vehicles in their awareness campaigns and marketing efforts.

Based on the results, it is evident that there is a need to promote the adoption of EVs in Bengaluru. The following recommendations are proposed to facilitate the adoption of EVs:

- Develop a comprehensive charging infrastructure plan that includes both public and private charging stations. This will address the range anxiety concerns of consumers and increase their willingness to adopt EVs. ● Implement policies and incentives that encourage the adoption of EVs. This could include tax incentives, rebates, and subsidies that make EVs more affordable and attractive to consumers.
- Conduct awareness campaigns to educate consumers about the benefits of electric vehicles and their role in promoting sustainable transportation. This will help dispel the myths and misconceptions surrounding electric vehicles and increase their acceptance. ● Encourage the development of indigenous EV technology and manufacturing. This will not only boost the adoption of electric vehicles, but also create employment opportunities and boost the local economy. Adoption of electric vehicles will require concerted efforts by various stakeholders, including policy makers, manufacturers, academic institutions and consumer groups. Therefore, there is a need to develop partnerships and collaborations that can help accelerate the adoption of electric vehicles. In summary, the study highlights the need to boost EV adoption in Bangalore and identifies factors influencing consumer perceptions of EVs. The findings have important implications for policy makers, manufacturers and other stakeholders involved in promoting sustainable transport in India.

## 7. Limitations and Future Scope:

The sample size of the survey was of 133 respondents, which may not be representative of the entire Bengaluru population. The study used a questionnaire-based survey to collect data. Other data collection methods such as interviews, focus groups, and observational studies were not used. The study focused solely on consumer perceptions and behaviors towards EVs in Bangalore. The results may not be transferable to other cities or regions with different economic, social and cultural characteristics. This study followed a cross-sectional design was not paid that much importance to examine changes in consumer behaviour over time. The study was conducted over a period of six months, which may not be long enough to capture the long-term changes in consumer perceptions and behaviour towards EVs.

This research focuses only on consumer perceptions and does not explore the perspectives of other stakeholders such as policy makers, manufacturers and retailers.

Long-term study: Future studies could follow a longitudinal design to examine changes in consumer behaviour over time and the effectiveness of different strategies to drive EV adoption.

A mixed method approach: Future research may use a mixed-methods approach
that combines both quantitative and qualitative data to gain a more comprehensive understanding of consumer behaviour and EV perceptions. Comparative study: Future research could compare consumer perceptions and behaviors in
Bengaluru with other cities and countries in India to identify regional and cultural differences.
A multi-stakeholder perspective: Future research could examine the perspectives of other stakeholders, such as policy makers, manufacturers and dealers, to gain a more comprehensive understanding of the factors that influence EV adoption.
Technological advances: Future research could examine the impact of technological advancements in the electric vehicle sector on consumer perceptions and behaviors regarding the adoption of electric vehicles. Economic analysis: Future research could conduct economic analysis to assess the cost-effectiveness of electric vehicles compared to conventional vehicles, including factors such as fuel costs, maintenance costs, and incentives. Behavioural intervention: Future research could investigate the use of behavioural interventions such as nudges and social norms to promote EV acceptance. These interventions can be designed to encourage green behaviour, reduce range anxiety, and increase the perceived benefits of EVs. Impact of COVID-19: The COVID-19 pandemic has significantly impacted transportation patterns and consumer behaviour. Future research could examine the impact of the pandemic on EV adoption and assess potential longterm impacts on the EV market.
Future research could use in-depth interviews to examine consumer perceptions and attitudes towards electric vehicles in more detail. These interviews may provide insight into the underlying factors that influence consumer decisionmaking and identify potential barriers to EV adoption. Cooperation with stakeholders: Future research could include working with stakeholders such as policy makers, manufacturers and retailers to jointly develop research questions and design interventions tailored to local conditions. I have. This collaboration will help ensure that research results are relevant and actionable, and may increase the likelihood of successful interventions to promote EV adoption.

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