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A Study of the Role of Attitude in the Adoption of Electric Vehicles in Bangalore, India

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ABSTRACT

This research paper talks about the adoption of electric vehicle in Bangalore, India. We will try to find as to what are the various thing that the effect the decision of customer when they think of EV. With the help of google form I had distributed a set of 8 close-ended and 2 open-ended questions which was circulated among the people who are working or studying.

Total 106 people had responded to the questionnaire and the results of that was interpreted further to get more knowledge as to what are the various factors that influence when it comes to adoption of EV. I made use of Power Bi so as analyze the results obtained out of it.

Keywords: Electric Vehicles, Bangalore

INTRODUCTION

Electric vehicle (EV) adoption has become a major focus in India's efforts to find environmentally friendly modes of travel in recent years. The environment, energy savings, as well as the necessity to wean the country off of fossil fuels are all driving forces behind the dramatic increase in the popularity of electric vehicles. Being one among the world's greatest and most rapidly expanding auto sectors, India is at a crossroads that will shape the country's transportation system going forward.

To fully grasp the structure of this emerging market, it is crucial to learn how people's attitudes affect the rate of acceptance of electric vehicles. Many people throughout the world are interested in electric vehicles because of their capacity to lessen the world's reliance on fossil fuels and soften the blow of global warming. The transport sector is an important cause of pollution, energy use, and greenhouse gas emissions in India, a country experiencing increasing urbanization and industrialization. Therefore, the Indian government along with other interested parties are pushing for widespread adoption of EVs as a solution to these critical problems.

An individual's attitude, which can be defined as their propensity to react positively or negatively to a given product, thought, or action, is an important factor in their purchasing decisions. When discussing EVs, customer attitudes include thoughts, feelings, and convictions about the vehicles' merits and shortcomings as a means of transportation.

The purpose of this research is to add new information to the discussion on using electric vehicles in Bangalore, India. Eventually, these findings will be in line with India's hopes for a more environmentally conscious automotive future, as they will not only influence market approaches but also help shape legislation and programs that promote an easier switch to environmentally sound transportation options.

LITERATURE REVIEW

When compared to a traditional car of the same size and function, the high price of EVs represents a barrier to entry. Evidence from studies suggests that the incentives provided do encourage the use of an EV. It is argued that BEVs will become more popular because to their low operating and repair expenses. According to Aasness and Odeck (2015). The advantages of hybrid vehicles were examined by Beresteanu and Li (2011), who drew the conclusion that taxation of income benefits contributed to a growth in the market share of fusion electric vehicles in the U.S. In their research, Wang, as well as González (2013) examined the prices of energy of various sizes of electric buses. Alternative fuel vehicles had an energy expenditure which was nearly eight times that of electric automobiles. Lower operating costs are a direct outcome of low energy use and power tariff. Therefore, the initial higher cost of an electric vehicle is more than offset by the overall savings in the long run. Long-distance drivers will benefit more than short-distance drivers on a daily basis.

Concerned citizens are more likely to adopt EVs, as discovered by Kahn (2007); this conclusion is supported by Pierre, Jemelin, along with Louvet (2011). Adoption intent is highest among those who already display pro-environmental and pro-energy-saving behaviors. Schuitema, Anable, Skippon, & Kinnear (2013) found that consumers that care about the planet are the most likely to purchase EVs. According to a German consumer poll (Peters & Dütschke, 2014), the positive effects on the ecosystem are a major factor in the growing popularity of electric vehicle. Sang as well as Bekhet (2015) and Jensen et al. (2013) both found that the increased use of EVs had a beneficial effect on the spread of the technology. Additionally, environmental conservation served as a major motivator, a crucial aspect in attracting customers (Beck et al., 2016). Electric vehicles (EVs) should not only emphasize conserving energy, but additionally stress safeguarding the environment, that may increase their rate of acceptance.

It's a broad concept that includes things like peer pressure, social pressure, subjective norms, influences from one's neighbors, and one's culture. People want their loved ones to approve of what they're doing. Many people base their purchasing decisions on the recommendations of those closest to them, such as family and friends (Nysveen, 2005; Venkatesh & Davis, 2000). According to Axsen, Orlebar, as well as Skippon (2013), a crucial factor in EV marketing is the impact of people's behavior on their choices of those within their social network. As Rasouli and Timmermans (2016) found, a person's social network has a significant effect on their likelihood of adopting a new behavior.

RESEARCH METHODOLOGY

DESIGN ABOUT RESEARCH

The key aim of this paper is to know as well as examine the influence of mindset on the uptake of EVs in Bengaluru, India using a quantitative research methodology. It entails giving people who are busy with school or work a well-structured questionnaire.

DATA COLLECTION

A questionnaire with 10 questions (eight closed-ended along with two open-ended) was designed to collect information from responders. A total of 106 people were sought out and asked to fill out the survey after it was circulated in academic and professional circles.

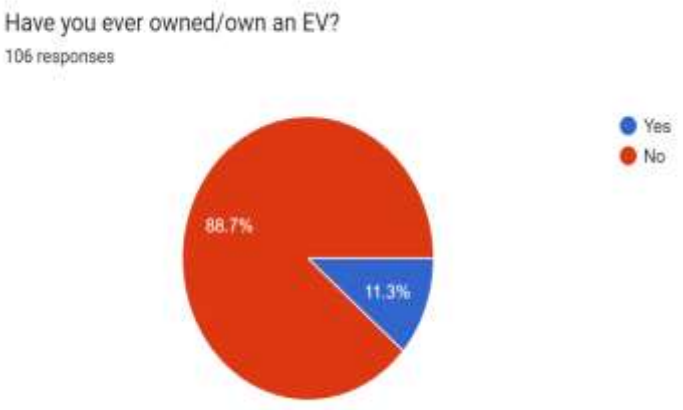
SAMPLE SELECTION

Both students and working professionals are represented in the data set. There is a wide range of ages, levels of education, and professions represented in this survey, making it possible to get a full picture of the public's thoughts on EVs.

LIMITATIONS

The small sample size and dependence on self-reported data are two major weaknesses of this study that must be recognized. The sample characteristics may cause the results to be less than generalizable to the total population.

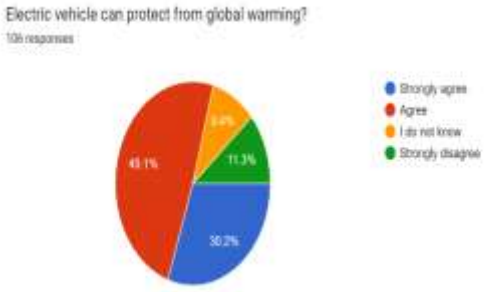
DATA AND INTERPRETATION



Yes	No
11.3%	88.7%

- 11.3% of people say that own an EV
- 88.7% of people say that they don’t own an EV

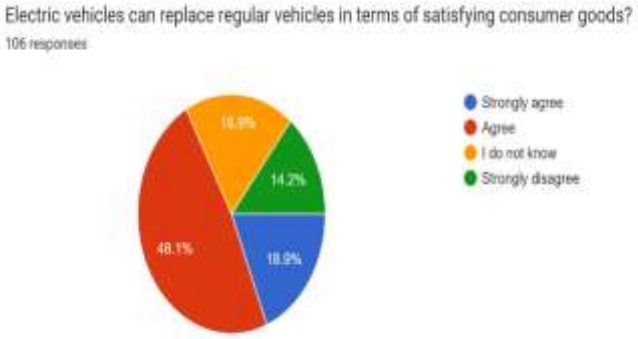
According to this we can say that there are still majority of people that do not own an EV.



Strongly agree	Agree	I do not know	Strongly disagree
30.2%	49.1%	9.4%	11.3%

- 30.2% of people strongly agree that EV can protect them from global warming
- 49.1% of people agree that EV can protect them from global warming
- 9.4% of people don't know whether EV can protect them from global warming or not
- 11.3% of people strongly disagree that EV can protect them from global warming

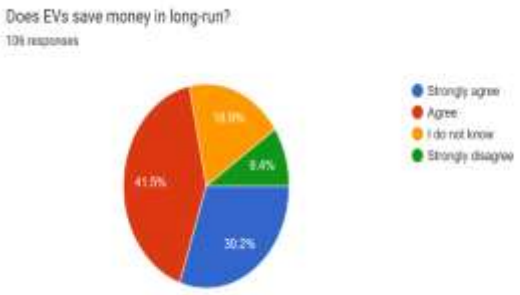
According to this we can that there are majority of people who say that they EV can protect them from global warming which states that people do know that if they own an EV, they can be safe from global warming as a whole because ultimately it will protect the environment.



Strongly agree	Agree	I do not know	Strongly disagree
18.9%	48.1%	18.9%	14.2%

- 18.9% of people strongly agree that EVs can replace consistent vehicles when it comes to satisfying consumer goods
- 48.1% of people agree that EVs must replace regular vehicles when it comes to satisfying consumer goods
- 18.9%% of people do not know whether EVs must replace regular vehicles when it comes to satisfying consumer goods or not
- 14.2% of people strongly disagree that EVs must replace regular vehicles when it comes to satisfying consumer goods

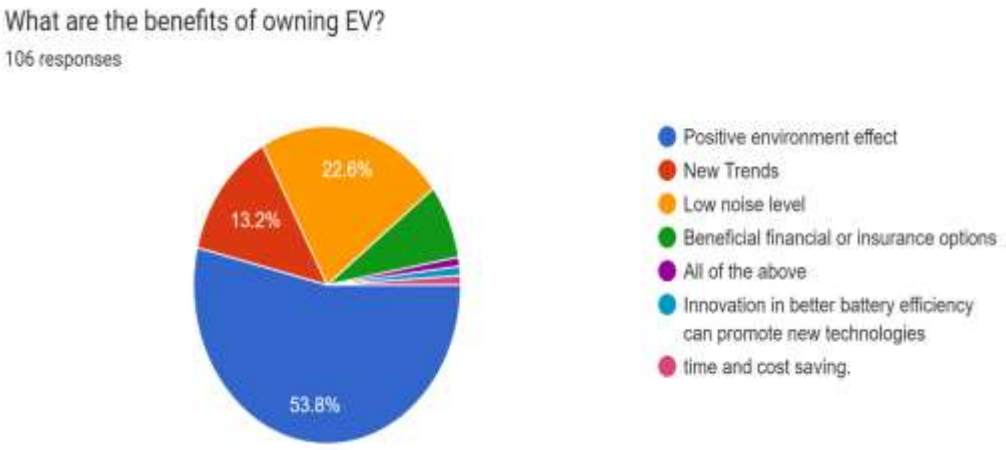
According to this we can say that there are majority of people who agree that Electric Vehicles must replace the regular vehicles when it comes to satisfying the consumer goods which tends to be a good sign as because by this we can say that more and more people are believing this fact that EVs are better than the regular vehicle.



Strongly agree	Agree	I do not know	Strongly disagree
30.2%	41.5%	18.9%	9.4%

- 30.2% of people strongly agree to this fact that the EVs can save cash in long run
- 41.5% of people agree to this fact that the EVs can save cash in long run
- 18.9% of people don't know whether the EVs can save cash in long run
- 9.4% of people strongly disagree to this fact that the EVs can save cash in long run

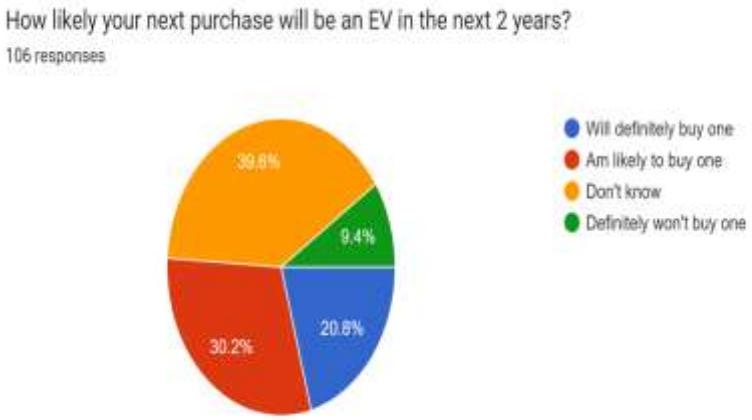
According to this we can say that there are majority of people who do agree to the fact they can save money in long run. Which states that people do have the knowledge about EV and how it can help in saving money in long run.



Positive environment effect	New trends	Low noise level	Beneficial financial or insurance options
53.8%	13.2%	22.6%	7.5%

- 53.8% of people say that the benefit of owning an EV is positive environment effect
- 13.8% of people say that they benefit of owning an EV is new trends
- 22.6% of people say that the benefit of owning an EV is low noise level
- 7.5% of people say that the benefit of owning an EV is the beneficial financial or insurance options

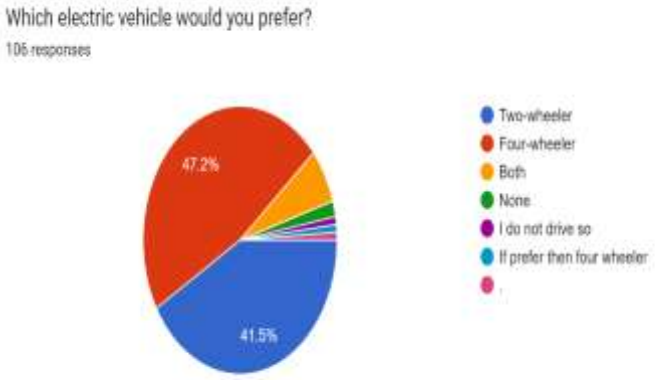
According to this we can say that there are a greater number of people who believe that knowing an EV poses the positive environment effect as a benefit. Which happens to be a good thing.



Will definitely own one	Am likely to buy one	Don't know	Definitely won't buy one
20.8%	30.2%	39.6%	9.4%

- 20.8% of people say that they will definitely make a purchase of an EV in the next 2 years
- 30.2% of people say that they will likely to make a purchase of an EV in the next 2 years
- 39.6% of people say that they don't know whether they will make a purchase of an EV in the next 2 years
- 9.4% of people say that they definitely not make a purchase of an EV in the next 2 years

According to this we can say that there are majority of people who don't know whether their next purchase will be an EV or not.



Two-Wheeler	Four-Wheeler
47.2%	41.5%

- 47.2% of people say that they will prefer a two-wheeler in an EV.
- 41.5% of people say that they will prefer a four-wheeler in an EV
- While the other responses include both as well as none

According to this we can say that there are majority of people who want to own a two-wheeler as far as EV is concerned.

This questionnaire is an open-ended question wherein the respondents were asked to tell about there preferred brand in terms of EV.

	Which brand of electric vehicle would you prefer?	Number of responses
2	TATA	9
3	HONDA	4
4	HYUNDAI	6
5	TESLA	4
6	TOYOTA	2
7	KIA	2
8	AUDI	1
9	BMW	1
10	MERCEDES BENZ	2
11	MORRIS GARAGE	2
12	OLA	3
13	ATHER	3

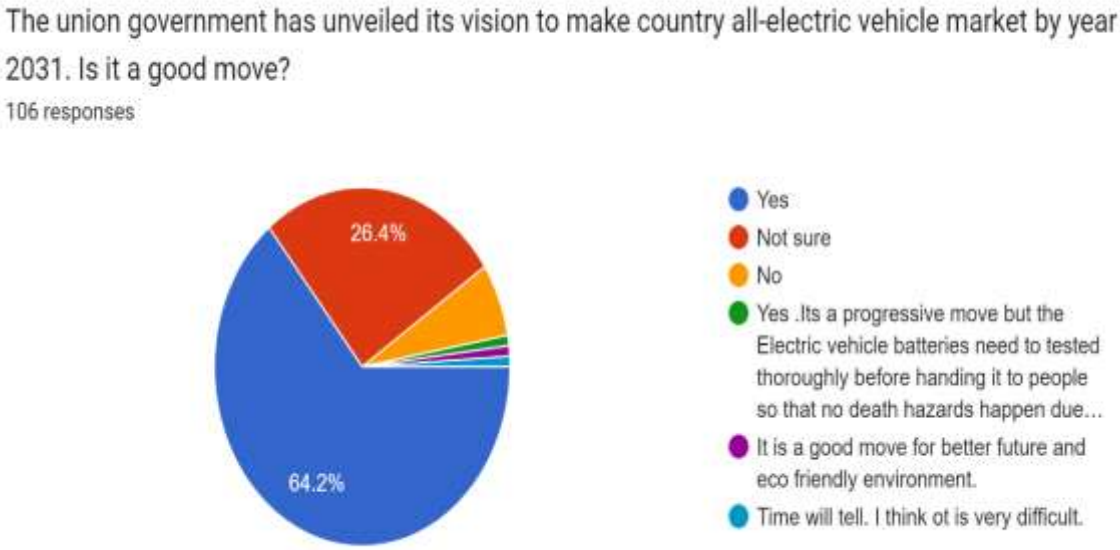
According to this the brand which most of the people preferred was TATA which is a very prominent brand of automobiles which states the people have higher trust in TATA as compared to any other brand. Below is one of the EV that TATA offers which ranges from 9.23 lakhs in Bengaluru.

Source: Autocar India

	A	B
1	How far (kilometers) would you expect to be able to drive an electric vehicle on a fully charged battery for you to consider buying one?	Number of responses
2	100-200	28
3	200-300	7
4	300-400	4
5	400-500	2
6	500+	17

According to this we can say that there are majority of people who say that in a full charge the EV should atleast run for 100-200 km and that they could consider buying. Below are some of the EVs that offer highest range in terms of kms as of 2021.

Source: Go Mechanic



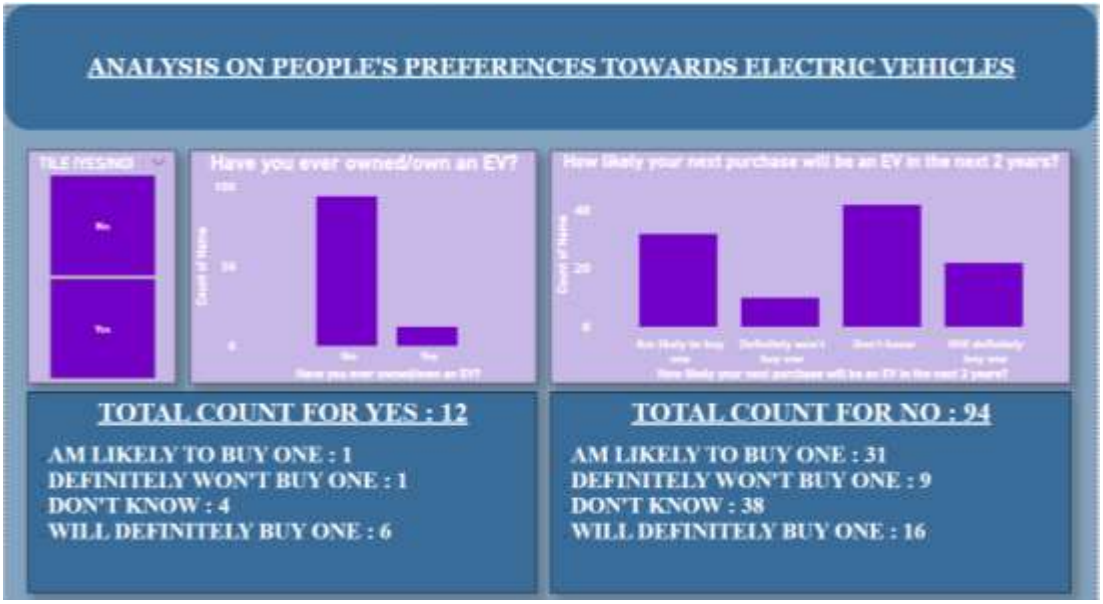
Yes	Not sure	No
64.2%	26.4%	6.6%

- 64.2% of people find the move making country all-electric vehicle market by the year 2031 as a good move
- 26.4% of people don't know whether the move of making country all-electric vehicle market by the year 2031 is good move or not

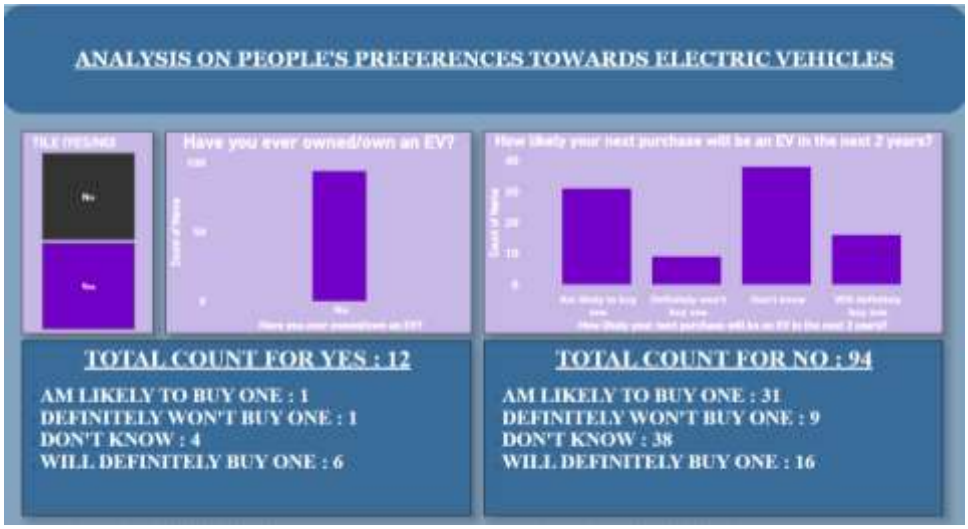
By this we can say that there are majority of people who find it to be a good move as because it can help the environment as a whole.

ANALYSIS AND INTERPRETATION

Analysis on Electric Vehicle and preferences about their purchase.

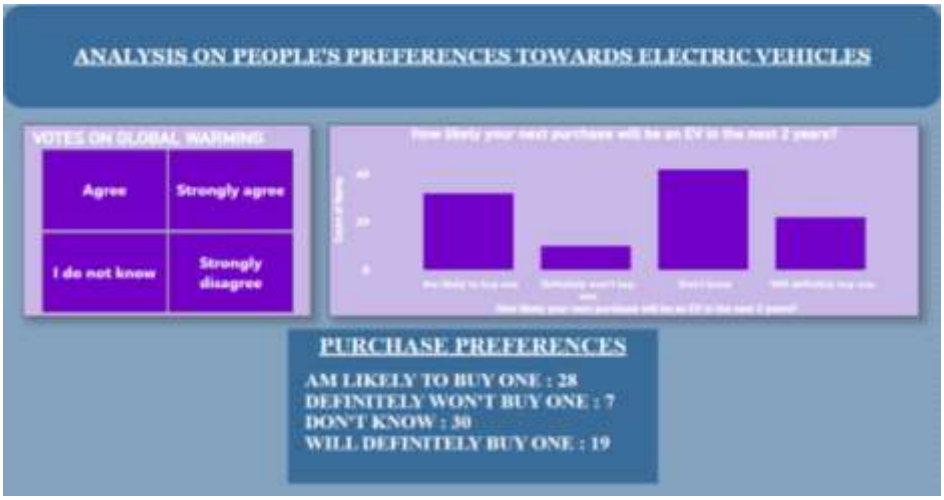


This dashboard represents the count on customers using Electric Vehicles and their preferences on their next purchase.



Through this analysis we can see that people with NO as responses are the highest, this states that Electric Vehicles are not widely used in India. But on the other hand, when asked if their next purchase would be an EV, we can see that about more than half the responses are positive which states that people are ready to invest on Electric Vehicles. This states that people are moving towards an Eco-friendly environment by using E-Vehicles.

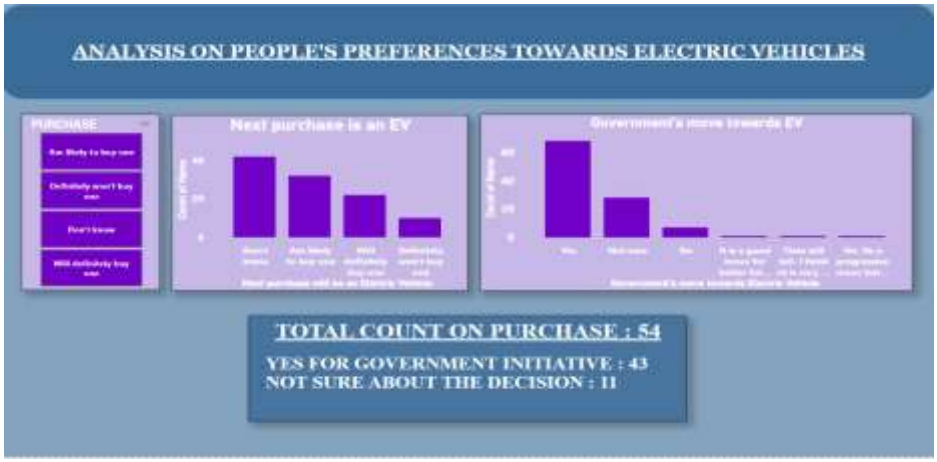
Analysis on people's perception towards Global Warming and their Electric Vehicle purchase.



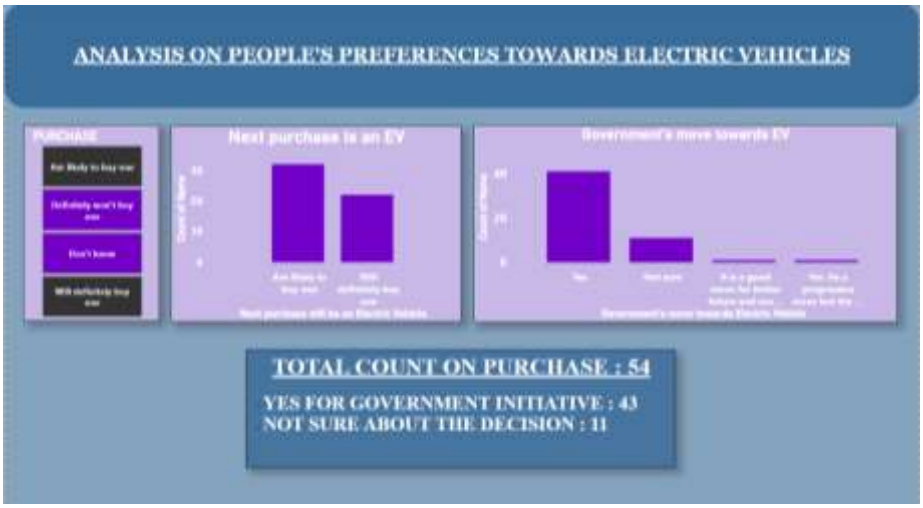
This dashboard represents people's perception towards Global Warming and people's preference towards purchasing an Electric Vehicle.

Through this analysis we can see that people with who STRONGLY AGREE and AGREE that Global warming is a concerning issue and their shift towards Electric Vehicles. We can see that the maximum number of votes for people's next purchase being an Electric Vehicle are about 77 responses, this states that they are investing towards Eco-friendly vehicles because of Global warming. Only 7 responses are negative, this can be since they do not rely on Electric Vehicles's.

Analysis on purchase of Electric Vehicle and the impact created by the Government towards Electric Vehicle initiative.

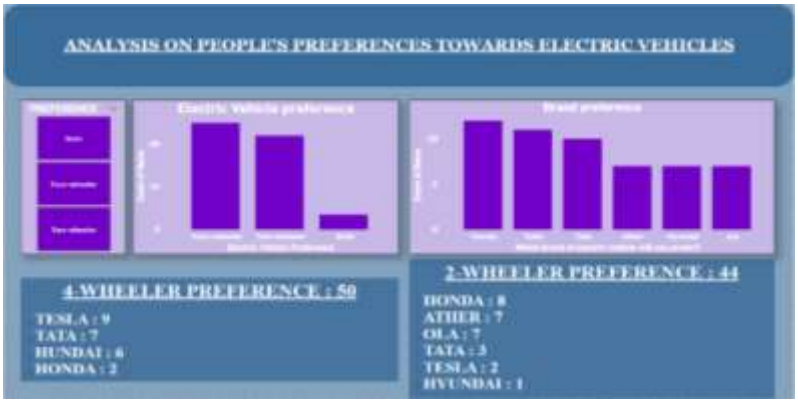


This dashboard represents people's perception towards purchase of an Electric Vehicles and the Government initiative towards Electric Vehicles.

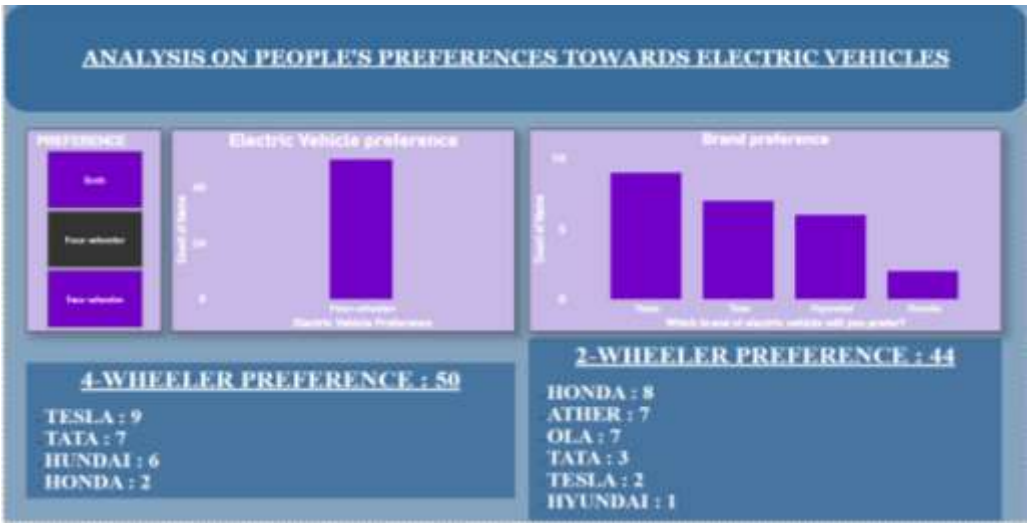


Through this analysis we can see that people who responded with their next purchase being an Electric Vehicle are a total of 54 responses and their perception towards Government initiative being YES is 43, this shows that the Government's initiative has changed the minds of the people to move towards an Electric Vehicle. The Government is also playing a major role in helping this shift towards EV's.

Analysis on which vehicle consumers would prefer and their Brand preferences.

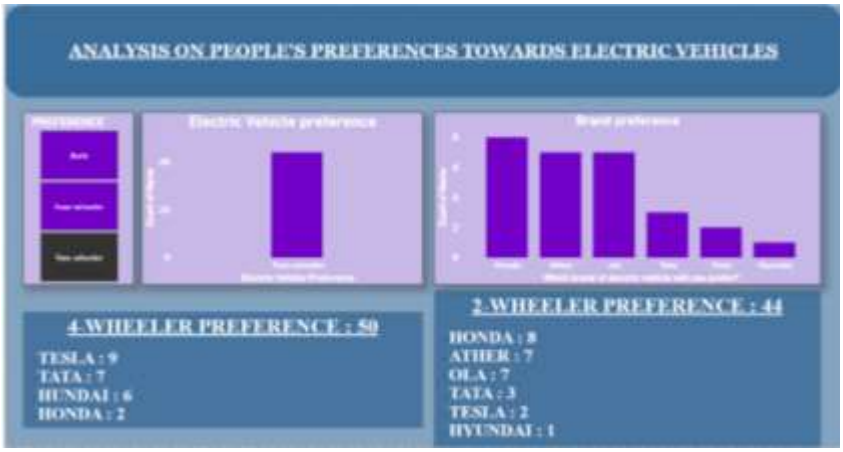


This dashboard represents people's preference towards Electric Vehicles and their Brand preferences.



Through this analysis we can see that when it comes to Four-wheeler vehicles, people prefer TESLA and it is one of the most well-known Brands when it comes to Electric Vehicles. TESLA being an International Brand is seeking it's entry in India, this can be an added advantage for TESLA company.

Next in line is TATA which is one of the most trusted Brands in India when it comes to their products they produce, this gives TATA an advantage as TESLA is not presently in India and there can be many purchases of EV's for TATA.



Through this analysis we can see that when it comes to Two-wheeler vehicles, people prefer HONDA and it is one of the most well-known Brands when it comes to Two-wheeler Vehicles. HONDA being a major producer of Two-wheeler vehicles can invest and start their research towards Electric Vehicles.

Next in line is ATHER which is one of the famous Brands in India when it comes to Electric Vehicles, this gives them an advantage as HONDA is not presently famous for EV's and there can be many purchases of EV's for ATHER.

Some of the Marketing Strategies that can be followed by them are listed below:

Promoting Knowledge:

- Spread the word about the many advantages of EVs, including their low maintenance costs, low environmental impact, and available tax breaks.
- Describe the charging system in India, focusing on the growing number of charging stations.

Feature Money-Savings:

- Focus on the money you will save by switching to an EV in the long run. Evaluate the long-term savings of charging versus spending money on conventional fuel. Make savings estimation tools or calculators available on your website.

Show Your Results:

- Make it possible for interested parties to try out electric two as well as four-wheelers at organized test ride events. Post videos as well as reviews that highlight the vehicles' features and performance.

Effects on the Environment:

- Stress the beneficial effects of EVs on the ecosystem, including decreased pollutants as well as carbon emissions. Link forces with green groups to spread the word.

Focus on the Future:

- Share the company's dedication to electric vehicles and its goals for sustainable transportation in India.

CONCLUSION

In conclusion we can say that when it comes to adoption of electric vehicle in Bangalore or in India as a whole it is going to time the for the people to fully adopt EVs in India. We have seen that there is growth in the number of people who have adopted for EV but as whole there is a requirement for awareness as to why people need to adopt EVs and what can be the ill effects of the carbon emission which can cause pollution and impact the ecosystem as a whole.

We also see in this research that people prefer TATA more in Bangalore, India. Which tells us about the trust that people have for that particular brand. In the end we can say that the initiate of making all Indian automobile market is a good initiative which can be successful if people understand and are aware of the positive outcomes of owning an EV.

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