

# Electric Scooters Vis-A –Vis Ice Scooters; Market Replacement Potentiality Study Among College Students

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## Abstract:

Six of the world's 10 most polluted cities are located in India. 12.5 lakh people in India die every year due to air pollution. Air pollution in the transportation sector remains as the most important factor causing it. Coimbatore, being one of the largely populated cities in India, Pollution level is increasing day by day. With EV technology and charging infrastructure improving every day, electric two-wheelers are the best way for consumers to contribute towards improving air quality in Coimbatore and all over India. This Paper studies about preference level and knowledge of students towards electric scooters with special reference to Coimbatore city. Knowing the mentality, attitude, awareness and perception of students in Coimbatore, Electric scooter industries will be able to penetrate the market using customized strategies and ways of approach towards students and improve sales and marketing.

**Keywords:** Electric scooter, awareness, Potentiality, Replacement, EV Technology, Market, Customer Preference.

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## I. Introduction

India is home for 15 out of the 20 most polluting cities around the world (Panwar, Kumar, & Chakrabarti, 2019). 6 of the world's 10 most polluted cities are located in India. 12.5 lakh people in India lose their life every year due to air pollution (Broom, 2020). It is not something to be ignored as it will have serious negative environmental and health effects soon. India is the second largest producer and manufacturer of two-wheelers in the world which stands next to Japan and China in terms of two-wheelers production and domestic sales (Gugloth D, 2012). Despite of Indian two-wheeler industry going through an enormous growth in the last few years, major problems like falling of automobile sales and industry in present, the rising cost of fuel in India, increasing levels of pollution (Fiona Rajé, 2018) and congestion in transport system especially in urban areas, (Cornelius Hardt, 2019) higher running and maintenance cost of the vehicles etc. Electric bikes and scooters have very bright future in area of personal transportation (Mahesh S. Khande, 2020).

**There are certain reasons for preference of scooters over bikes.** Scooters are more comfortable for people going for short rides or to offices as it offers more ease of use as less effort is needed due to the absence of

clutch and brake lever in the foot rest. As scooters are very simple and not as complicated to use as a bike, it is easy to learn to ride it for beginners. Rider can comfortably place and their foot in the platform below which can also be used for carrying luggage, small goods, groceries etc. Scooters have got a storage space under its seat which can hold the documents of the vehicles, helmets etc. The small wheels in scooters are easy to steer. It protects the rider's pants and foot wears from wind, dirt, mud (Albrecht, 2020) and dust as it has got extra protection (Shaik Amjad, 2011) on offer. Women riders in India can ride their scooters while wearing sarees without any issues which is not possible with a motorbike.

### **Why only electric scooters are manufactured more in India compared to electric motor bikes and why only electric scooter dealers are there in Coimbatore?**

In Coimbatore, majority of people using two-wheelers ride on an average of less than 25 kilometers per day and only a few exceeds that (Shaik Amjad, 2011). But in the case of motorbikes, there are more numbers of users who ride more than 25 km's/day on average and long rides are also done. The large-scale espousal of electric two-wheelers may lessen congestion on road as well as traffic noise but may require reworking of urban infrastructure as well as regulations on safety (Martin Weiss, 2015). Currently the technology in India does not provide battery for longer range of travel, which is a greatest drawback. So the in the present situation manufacturing bikes won't be leading to success in sales. Hence manufacturers and industries that perform import and assembly of electric two wheelers show more interest in production and assembly of electric scooters than electric bikes.

**There are few advantages of electric scooters compared to petrol scooters.** Its Silent engine, less components resulting in less maintenance costs, More and latest technology imparted, Convenient to recharge at home and Environmentally friendly. (Justin D.K. Bishopa, 2011) And the disadvantages are Higher prices, undeveloped infrastructure, time taken to recharge when compared to refilling a petrol scooter's tank, servicing might be a problem as there are no experts in local and nearby workshops to repair minor issues caused and hence the vehicle has to be taken to the showroom or experts from the showrooms have to be coming home for the repair to be done. Majority of the electric scooters are capable of travelling only at low speeds and only for shorter distance in present. (Albrecht, 2020) There are large varieties of electric bikes, scooters and superbikes but availability in this market is very less.

## **II. Statement of the problem**

According to TNPCB, In the 38 total air pollution tests conducted from Jan 2019 2 May 2019, the mixed sampling of residential and industrial areas the results were majority satisfactory. But with increasing population and condition and raising of new industries chances of worsening up air pollution is possible. Increase in population of India it is also being a problem. According to [indiapopulation2020.in](http://indiapopulation2020.in), the population of Coimbatore in 2018 was 1.928 million and in 2019 the population has been increased to 1.9616 million. Majority of vehicle section in India is two-wheeler sections which cause congestion and pollution. (Shahab, 2006) With high traffic and not so well-built roads, two wheelers are the most convenient, efficient and cost-effective mode of transportation globally. (Maria Vittoria Corazza, 2016) People all over the country prefer to travel on bikes, which give them utility and cost-efficient mode for transport. When it comes to electric bikes, the cost efficiency of these bikes is even better than normal bikes as there is no fuel consumption in electric

bikes(Christian Gorenflo, 2017) and in countries like India where their majority are of middle-class families who cannot afford high fuel prices, electric bikes are the solution. Automobile sector is facing a decline stage resulting in very limited job opportunities causing problems to most of the students and employees. Constant increase in price of petrol and diesel is making it hard for middle class families to face the expenses, which can be solved by electric scooters. Global warming is an issue that is being noticed nowadays globally and automobiles are an important factor in causing it.(Shyam Sundar, 2017) Electric two wheelers can be a solution to it. But most of the current generation students are unaware of most of electric scooters available and they do not have in depth knowledge about electric scooters as much as regular petrol operated scooters.

### **III. Objectives and Scope of the study**

The study aims to put light on the student's perception towards electric scooters in Coimbatore City.The study also aims to find the level of awareness among students in present.The study aims to bring out the factors motivating and the motivating students in in purchase of electric scooters to improve sales and sales promotion and marketing strategy etc. The objectives are

1. To know the awareness, knowledge, interest and preference and probability of purchase and scope of electric scooters among the students of Coimbatore.
2. To find the effective source of marketing of electric scooters in the two-wheeler market.

### **IV. Methodology of the study**

The primary data has been collected through questionnaires filled by 320 respondents who are Students in Coimbatore City and Coimbatore based students. The secondary data has been sourced from various journals and websites. All the respondents have been chosen from the Coimbatore city based on random sampling from students from various colleges, pursuing various courses. Various tools like Simple Percentage Analysis, Chi- Square Test I – ( $\chi^2$ ), One-Way Anova Classification, Karl Pearson's Correlation etc.

### **V. Limitations**

The sample size has been restricted to 320 responses. The survey is based on the respondents chosen at random from Coimbatore city. Hence the results of the study cannot be generalized.The respondent's views and opinions may hold good for the time being and may vary in future.The respondents do not include school students.

### **Review of Literature:**

A study on the Perception towards Electric Bikes concludes that there is a combination of both positive and negative effect on consumer perception (Rajiv P, 2016). It also identifies that maximum number of respondents is not aware of Genxt Electric bikes. So various promotional activities are needed to be taken so that the awareness level gets increased resulting in increase the sales. On purchase of a bike, most of the respondents consider the cost and the mileage and hence good potential to electric bike in two-wheeler sectors is present. But some factors that are being barriers in sales of electric vehicles are their battery performance, speed and appearance are the major factors.

Electric two wheelers with low costs and limited driving range are suited for intra city driving since the trip lengths are shorter. Large scale penetration of EVs will require both demand side incentives and improved infrastructures (Subash Dhar, 2017). Higher EV penetration will result in an increase in electricity demand. Finally, the substantial uptake and adoption (Fanchao Liao, 2019) of electric vehicles depends on global technological advances, awareness of citizens and support from national and local governments.

An eco-friendly product is more suitable for city with a purpose in reduction of emission of harmful gases and reduction of air pollution (Selvi, 2017). Due to frequent increase of prices of fuels electric vehicle seen to be cheaper compared to traditional vehicles. E bikes are more suitable for rural areas where the number of petrol pumps is inadequate. Rural people charge their vehicle at their home with the help of electricity. An analysis of consumer attitudes and perceptions towards electric vehicles exhibits the fact that although sustainability and environmental benefits of electric vehicles have a major influence on the electric vehicles adoption, they are taken over by cost and performance considerations. (Anil Khurana V, 2019) Current government policies on electric vehicles such as vehicle cost and fuel taxes may impact little in market penetration. Educating people about benefits of green energy and investing in required infrastructure, warranties on the production is necessary.

A study on two and three wheeler electric vehicles in India, has instituted that E-scooters require great support both on the government and from the manufacturers in India if it has to compete with regular scooters. Production of large number of e scooters requires huge capital investments by the manufacturers (Saxena, 2019). Therefore, unless Indian Government and manufacturers discuss the issue and get a solution for the present situation, India will continue to have very disturbing trends regarding growth of e-scooters.

The unique features of the Indian context would mean that the types of vehicles that could more easily go electric, and the most suitable mechanisms for re-energizing batteries, will be different from the rest of the world, especially the developed countries (Prabhjot Kaur, 2019). A comprehensive and well-coordinated set of policies and regulations that promote a shift to electric mobility will be required from the central, state and local governments, with the common objective of providing the needed initial stage support for new technologies to compete with established ones. The present scenario may not be a guide to understand the road to future of their electric two wheelers as they still are in evolutionary stage. (S. Seethalakshmi, 2019) The electric vehicle industry is growth opportunity and challenge to the Indian automobile industry. Consumers are prepared to shift to electric two wheelers. There will be lot of savings in foreign exchange on import of crude oil. India will have an opportunity to export electric two wheelers and employment opportunities will be increased.

(Albrecht, 2020) reveal in their study on "prospects of electric vehicles in developing countries" concludes that the electric two wheelers hold on the potential to reduce congestion and GHG emissions without infrastructure investment. The electric two wheelers could be a successful option in developing countries such as India and Pakistan. Electric two wheelers face diverging restricting forces such as lack of awareness, electricity block outs, strong gasoline based two-wheeler market and inferior characters

### **Analysis and Interpretation**

Demographic analysis on Gender reveals that that 59.68 % of the students are male and 40.31 % of students are female. It is found that the majority (60%) of the respondents are male and marital status shows that

97.81% of the respondents are single and 2.19 % of the respondents are married. It is found that the majority of the students are single.

**Opinion Regarding Electric Scooters on Pricingvariables.**

<b>Electric scooters are costlier than regular petrol operated scooters</b>	<b>Number of respondents</b>	<b>Percentage</b>
Strongly disagree	17	5.3
Disagree	68	21.3
Neutral	65	20.3
Agree	144	45
Strongly agree	26	8.1
<b>Total</b>	<b>320</b>	<b>100</b>

**Table 1 Respondents opinion about electric scooters being costlier than regular petrol operated scooters**

The above table shows that the majority of the students 45% agree that electric scooters are costlier than regular petrol operated scooters.

**Replacement of Petrol Scooters**

<b>Electric scooters can replace regular scooters in future</b>	<b>Number of respondents</b>	<b>Percentage</b>
Strongly disagree	6	1.88
Disagree	14	4.38
Neutral	38	11.8
Agree	155	48.44
Strongly agree	107	33.44
<b>Total</b>	<b>320</b>	<b>100%</b>

**Table 2 Respondents opinion about regular petrol operated scooters being replaced by electric scooters**

The above table shows that majority of students (48.4 %) agree that electric scooters can replace regular scooters in future.

**CHI- SQUARE TEST I – ( $\psi^2$ )**

Chi-square is the sum of the squared difference observed (o) and the expected (e) data (or the deviation, d), divided by the expected data in all possible categories.

**Null hypothesis (Ho):**

There is no relationship between electric Scooters are costlier than regular petrol operated scooters and electric scooters can replace regular scooters in future

**Alternate hypothesis (H1):**

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Electric Scooters are costlier than regular petrol operated scooters * Electric scooters can replace regular scooters in future	320	100.0 %	0	0.0%	320	100.0%

There is relationship between electric Scooters are costlier than regular petrol operated scooters and electric scooters can replace regular scooters in future

**Chi-Square Tests**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.170 <sup>a</sup>	16	.002
Likelihood Ratio	35.001	16	.004
Linear-by-Linear Association	3.449	1	.063
N of Valid Cases	320		

a. 11 cells (44.0%) have expected count less than 5. The minimum expected count is .32.

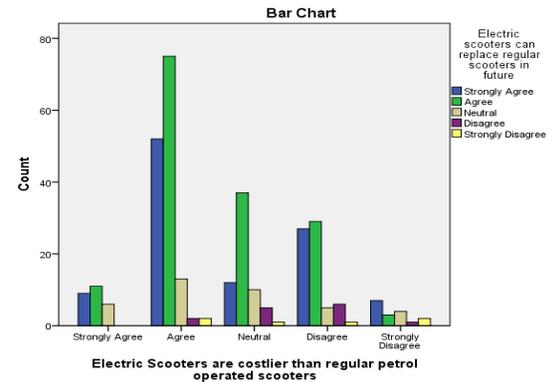
Degree of Freedom =  $(r-1) * (c-1) = 4*4 = 16$

Calculated value = 37.170

Tabulated value = 26.296

$$Z = Z_{cal} > Z_{tab}$$

$$Z = 37.170 > 21.026$$



Hence, the Alternate hypothesis [H1] is accepted

Since the calculated value is greater than the tabulated value, we accept the alternate hypothesis and hence there is a relationship between electric Scooters are costlier than regular petrol operated scooters and electric scooters can replace regular scooters in future

**Infrastructure and Maintenance Facilities**

Infrastructure and maintenance facilities of	Number of respondents	Percentage
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<b>electric scooters are well developed</b>		
Strongly disagree	11	3.44
Disagree	59	18.44
Neutral	92	28.75
Agree	133	41.56
Strongly agree	25	7.81
<b>Total</b>	<b>320</b>	<b>100</b>

**Table 3 Respondents opinion about infrastructure and maintenance facilities of electric scooters**

The above table shows that majority (41.56%) students agree that the infrastructure maintenance facilities of electric scooters are well developed

**Influence of Electric Scooter On Self Image: Positive Effects On Self Image reflection of Attitude**

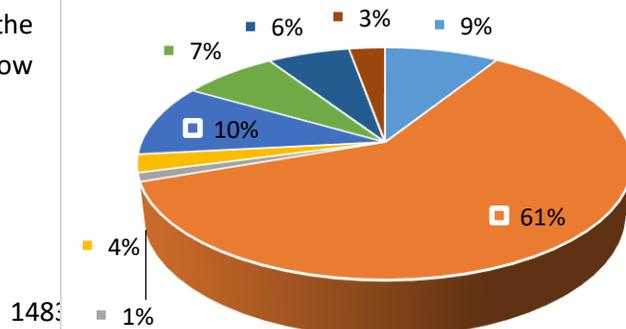
	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No of Respondents	Percentage								
<b>Buying electric scooters have positive effects on your image</b>	8	2.5	33	10.3	82	25.6	149	46.6	48	15
<b>Buying electric scooters will show your beliefs and what you stand for.</b>	8	2.5	40	12.5	99	30.94	148	46.25	25	7.81

**Table 4 Respondents opinion about having positive effects on their image and reflection of their beliefs**

The above table shows that majority of the students (46.6%) agree that buying electric scooters have positive effects on their image and majority of the students agree that buying electric scooters will show up their beliefs and what they stand for.

**Purchase Decisions**

**Fig : Factors encouraging purchase of electric scooter**



<b>Factors encouraging purchase of electric scooter</b>	<b>Number of respondents</b>	<b>Percentage</b>
Price	23	8.9
Positive environmental effect	198	60.7
Promotions	4	1.2%
References	8	2.5%
New trends	33	10.1%
Cheaper in operation and maintenance	24	7.4%
Silent motor	21	6.4%
None of the above	9	2.8%
<b>Total</b>	<b>320</b>	<b>100%</b>

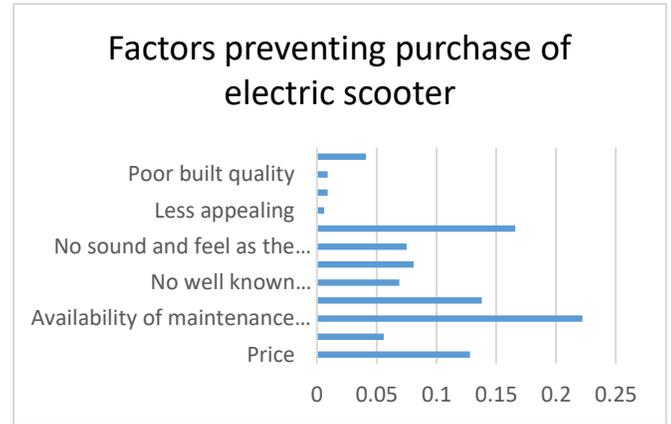
**Table 4.1 Factors encouraging the respondents in purchase of electric scooters**

The above table shows that the majority 60.7% of students consider positive environmental effect as an important factor to consider buying an electric scooter.

**Factors preventing purchase**

<b>Factors preventing purchase of electric scooter</b>	<b>Number of respondents</b>	<b>Percentage</b>
Price	41	12.8
Reliability	18	5.6
Availability of maintenance and spares	71	22.2
Not yet well established	44	13.8
No well-known manufacturers	22	6.9
Electricity expenses	26	8.1
No sound and feel as the regular	24	7.5

scooters		
Speed limitations	53	16.6
Less appealing	2	0.6
Poor designs	3	0.9
Poor built quality	3	0.9
Less or no knowledge about electric scooters	13	4.1
<b>Total</b>	<b>320</b>	<b>100%</b>



**Table 4.2 Factors preventing the respondents from purchasing of electric scooters**

The above table shows that Difficulty of availability of maintenance and spares of electric scooters is the factor preventing purchase of electric scooters for or Majority (22.2%) of the students.

**Future purchase of electric scooter**

Future purchase of electric scooter	Number of respondents	Percentage
As soon as possible	89	27.81
In the next 5 years	126	39.38
In the next 10 years	59	18.44
Don't want to buy electric scooter in future	46	14.36
<b>Total</b>	<b>320</b>	<b>100%</b>

**Table 4.3opinions on future purchase of electric scooters**

The above table that it majority of the students (39.38%) wants to buy an electric scooter in the next five years.

**Familiarity of the product and the brands available**

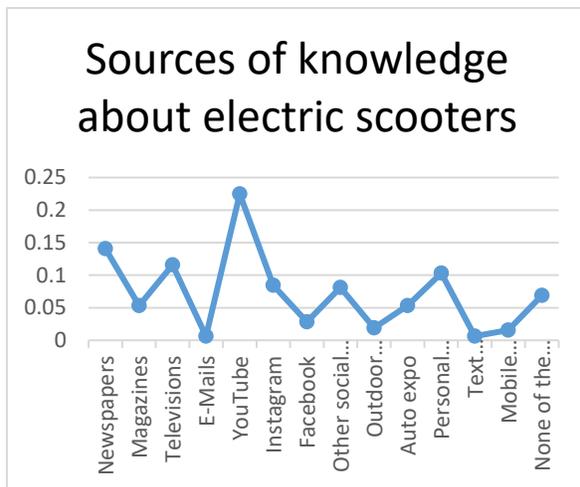
AVERAGE FAMILIARITY	PERCENTAGE
Extremely familiar with these brands and models	8
Very familiar with	14

Sources of knowledge about electric scooters	Number of respondents	Percentage (%)
Newspapers	45	14.06
Magazines	17	5.31
Televisions	37	11.56
E-Mails	2	0.63
YouTube	72	22.5
Instagram	27	8.44
Facebook	9	2.81

these brands and models	
Heard about these brands and models	41
Never heard about these brands and models	37
<b>TOTAL</b>	<b>100</b>

**Table 4.4 Familiarity With Electric Scooters Brands And Models In Coimbatore Among Students Including Bajaj Chetak, Tvs Iqube, Hero Electric, Ampere Electric, Evolet And Okinawa.**

The above table shows that majority of the students (41%) have only heard about the brands and models that are available and going to be available soon in Coimbatore.



**Source of information:**

Other social media platforms	26	8.13
Outdoor advertisements	6	1.88
Auto expo	17	5.31
Personal communication	33	10.31
Text message advertisements	2	0.63
Mobile application ads	5	1.56
None of the above	22	6.88
<b>Total</b>	<b>320</b>	<b>100</b>

**Table 4.5 Source of knowledge about Electric Scooters**

The above table shows that majority of the students (22.5%) got most of the knowledge about electric scooters through YouTube.

### **FINDINGS**

- There is a relationship between electric Scooters are costlier than regular petrol operated scooters and electric scooters can replace regular scooters in future
- There is no relationship between Gender and Buying Electric scooters gives you less status than what a regular petrol operated scooter gives
- There is positive relationship between buying electric scooters have positive effect on your image and buying electric scooters will show yours believes and what you stand for.
- Majority of the respondents (66.2%) are male and majority of the students (91.81%) are single.
- Majority of the students (45%) state that electric scooters are costlier than regular petrol operated scooters (48.4 %) agree that electric scooters can replace regular scooters in future.
- Majority (41.56%) students strongly state that infrastructure and maintenance facilities of the electric scooters are well developed.
- Majority of the students (46.6%) state that buying electric scooters have positive effects on their image.
- Majority of the students (46.25%) agree that buying electric scooters will be showing their beliefs and what they stand for.
- Majority of the students (38.75%) disagree that buying electric scooter give them less status than what a regular petrol operated scooter gives.
- Majority of the students (43.44%) agree that by electric scooters do not have any influence on their self-image.
- Majority (60.7%) of students consider positive environmental effect as an important factor to consider buying an electric scooter.
- Absence of good establishment of electric scooters is the main factor preventing purchase of electric scooters for majority of the students. Difficulty of availability of maintenance and spares of electric scooters is the factor preventing purchase of electric scooters for or majority of the students (22.2%).
- Majority of the students (39.38%) wants to buy an electric scooter in the next five years.
- Majority of 48.44% of students have heard about Bajaj Chetak, 35.63% about TVS iQUBE.

- Majority of the students (48.4%) have heard about Hero electric bikes and their models with little difference compared to Bajaj Chetak.
- Majority of the students (36.56%) have heard about Ampere electric bikes and their models
- Majority of the students (50%) have never heard about Evolet electric scooters and their models.
- Majority of the students (55.62%) have never heard about Okinawa scooters and their models.
- Majority of the students (22.5%) got most of the knowledge about electric scooters through YouTube.

#### **SUGGESTIONS:**

- Effective advertisements have to be made by startups and smaller brands, which must be attractive and positioning the brand as a safe choice and value for money, projecting the advantages on durability and warranty I am clearly stating the advantages and benefits over the purchase.
- Digital and social media marketing must be given more importance as most of the brands in Coimbatore do not show importance to it and it is the most effective way of acquiring customers.
- As the largest platform being used nowadays in spreading and gathering information is YouTube, followed by Instagram, interesting YouTube channel, YouTube advertisements, paid YouTube channel reviews, read Instagram reviews, Instagram ads and title sponsors on YouTube could be the most effective way of reaching audiences.
- Advertising on automobile magazines such as Motor Vikadan (which is popular in local language and cause lesser competitively), Add posters in magazines such as My Bike, Overdrive, Auto car, Auto India, motoring etc. selling in Coimbatore if possible and ads can be made on those magazines considering the expenses to be faced.
- Iconic and unique TV ads must be made that is efficient enough to last in the minds of the viewers.
- Engaging activities within the local population such as photography contest on green nature and electric two wheelers, slogan contest, art and sketching contest etc. can be conducted and winners can be decided on the likes and shares their content gets. The winners can be provided their prizes in the showroom specific date and time and the content can be placed in the showroom which will create popularity among local public with the least expenses.
- Being engaged with the customers is very important in creating positive views on the brand and showroom. Engaging activities such as less paid or free weekend gathering and early morning rides with proper backup would gather attention of the public in live and through social media, creating popularity.
- Most of the smaller brands and showrooms do not have a proper website. As the website reflects the quality and service of the brands, popular website which is informative, interesting, easy to use, attractive website must be made.
- The websites must consist of customer experiences and testimonials of satisfied customers that create a positive opinion and trust on the brand.
- The websites must contain proper content keywords web pages back links and internal links and meet other requirements which will lead the website to reach the first place of Google search results as 70% of the audience would not prefer moving to the second page.
- Most of the brands in Coimbatore do not have good showrooms. Interesting and attractive showrooms with innovation representing technology and green nature, that is not necessarily to increase larger expenses can full attention of customers and social media audience.

- Proper test rides must be provided to the customers in order to make a proper decision as soon as possible with provided assistance in decision making by the sales executive.
- Accessories for electric two wheelers must be readily available such as footrest crash guard etc. as the regular scooters provide.
- Instead of having a single piece of fiber in rear section, panels can be added in order to be easily replaceable and avoid heavy expenses on the customer's side.
- As there is a mind set in students of Coimbatore that electric two wheelers are costly, positioning the smaller brands and startups as value for money is very important because of the introduction of electric two wheelers from major players such as Bajaj and TVS and there are more upcoming electric two wheelers which has made the audience notice and give importance to the brand which could make it difficult task to compete with the giants.
- Infrastructure and maintenance plays a major role in success of the brand. It is one of the major factors that is being a barrier in sales of electric two wheelers. Therefore, service maintenance facilities have to be net available in in various places.
- Fast charging must be available in most of the electric two wheelers and charging hubs must be made available in every fuel stations which could make the electric two wheelers with low charge top up their batteries and reach their destinations or homes and charge it there.
- More electric vehicle mechanics and garages must be available in various places.
- The advantages, benefits and positive effects on the environment and its efficacy must be projected amongst the students through campaigns, awareness programs and auto expos in in colleges.

#### **CONCLUSION:**

- Electric two wheelers have started gaining attention of people due to introduction of electric scooters from major brands like Bajaj, TVS etc., which is considered to be an opportunity and challenge at the same time.
- Range of travel and speed was being a major issue with electric scooters which has come to an end by introduction of various electric scooters recently which makes people looking forward for price efficiency, features and innovations wishes to be fulfilled by electric scooter manufacturers.
- Proper promotional activities and advertising must be done the right way to the right audience at the right time in order to acquire customers and improve sales of electric scooters as there is less awareness about most of the brands among students in Coimbatore.
- Despite electric scooter market emerging and going through an evolutionary stage, the current situation is uncertain and unstable. But a large market of electric two wheelers is expected to come into reality within the next few years.
- Infrastructure and maintenance facilities for electric scooters monthly made available as soon as possible in order to make people move towards electric scooters.

- Despite the government's efforts regarding electric vehicles that is making a noticeable change, changes must be made in government policies in order to improve cost efficiency and large quantum of production.

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