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## ► To cite this version:

M. Prabaharan, M. Selvalakshmi. Customers Interest in Buying an Electric Car: An Analysis of the Indian Market. International Working Conference on Transfer and Diffusion of IT (TDIT), Dec 2020, Tiruchirappalli, India. pp.493-509, 10.1007/978-3-030-64849-7\_44 . hal-03701816

**HAL Id: hal-03701816**

**<https://inria.hal.science/hal-03701816>**

Submitted on 22 Jun 2022

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# Customers Interest in Buying an Electric Car: An Analysis of The Indian Market.

Mr.M.Prabakaran <sup>1</sup>[0000-0001-7465-7900] and Dr.M.Selvalakshmi<sup>2</sup>[0000-0003-3303-287X]

<sup>1</sup> Research Scholar, Madurai Kamaraj University, Madurai.

<sup>2</sup> Professor, Thiagarajar School of Management, Madurai.

prabaharmp@gmail.com

selvalakshmi@tsm.ac.in

**Abstract.** In the automobile industry, an electric car is a vehicle impelled by the electric motors utilizing energy stored in refillable batteries, as a replacement of diesel or petrol engine. The electric car has predicted to rule the Indian market in the next few years. The study aims to know the factors which make interest in buying the electric car. Integrating the Technological acceptance and diffusion of innovation model the present research proposed extended technology acceptance model. The data were collected from 600 non-commercial car owners to test the proposed model. The findings demonstrate the perceived usefulness, perceived ease of use, and attitude are positively influence the customers' interest to buy the electric car. The relative is one of the innovation factors which have a positive effect on interest to buy the electric car. The result also shows that majority of customers are interested to buy Indian brand cars which will have a low-price range.

**Keywords:** Automobile Industry, Electric car, Technology acceptance model, Diffusion of innovation, customers interest.

## 1 Introduction

An electric car is a vehicle impelled by electric motors utilizing energy stored in refillable batteries, as a replacement of diesel or petrol engine which is of three kinds such as Electric powered solar vehicle, Hybrid cars (both internal ignition and batteries) and BEV (Battery electric vehicle). Special measures have been taken in India like cutting GST on EV (Electric Vehicles) to 5% against 28% for diesel and petrol engines, also has exempted 1.5 lakh INR on loan to buy EV but only 1500 cars were sold during April - December, 2019. [1]. According to economic times survey, about 90% of Indian car customers were willing to purchase an electric car if it has good infrastructure (high cost of purchase, maintenance, charging stations) proper maintenance and support system. At present, EV market dispersion is only 1% of total sales in India [2]. But it aims to reach 30% EV dispersion by 2030. In the forthcoming five years, EV is likely to replace conservative internal ignition engines [3]. The passenger car customers are expecting safety, reliability, performance and personalization of the electric cars over combustion cars. The performance of electric vehicles is higher compared to the conventional vehicles between 100 km and 150 km. Customers welcoming the electric cars due to lower cost with quick charging points [4]. Generally, Electric car is a major innovation to diminish energy consumption and zero-emission in the automobile segment. Initially, the electric cars will be offered at a lower price to encourage the purchase of the customer. Electric cars are environmentally friendly and the operating cost is also less compared to the combustion engine. In the subsequent few years, the leading international car brands will launch the electric cars in both cost-effective and premium price range for their customers in India. Thus, it's vital to know the customers' interest on purchasing electric cars after propelling in India.

In India 1309 (Mahindra e-Verito – 523, Tata Tigor EV – 491, Hyundai Kona EV – 280, Mahindra e20) electric cars were acquired from April to November 2019. Currently, three electric car models are available in India, they are Tata Tigor, Mahindra e-Verito and Hyundai Kona EV (Mainak Das, ETAuto,2019). The Indian government aimed to make India the fourth largest for EVs by 2040, but it is very hard for customers to switch over from combustion engines to zero-emission cars. Now it's very significant to know the factors which make customers interest to buy electric cars in future.

The study objectives are 1) to deliver a theoretically acceptable research model that integrates TAM and DOI to know the factors which make interest in buying the electric car in the Indian market. 2) To identify the brand and type of electric cars which buyer interest to acquire.

## 2 Theoretical Model and Hypothesis Development

The electric car is an in-mint condition with zero-emission technology which is considered to be ingenious. This study is executed by integrating two well-known adaption theories.

## 2.1 Technology acceptance model (TAM)

TAM has set to foresee the acceptance of new technology. This model is grounded in the theory of reasoned action (TRA-psychological theory) by [6]. Technology Acceptance Model (TAM) is the theory which explains acquiring ability of user towards newly introduced technology. It could provide information about the relative likelihood of success of proposed systems early in their development, where such information has the greatest value [7]. Acceptance of new technology is entirely based on usage. The technology acceptance model (TAM) is a widely used and most impactful theory for describing the acceptance of information technology by an individual [8]. Technology acceptance model established user attitude [9] and perceived usefulness (PU) identified the role of perceived ease of use (PEOU) in realizing user acceptance in information systems [10] [11].

**Perceived Usefulness:** The two exogenous constructs of the attitude of TAM were perceived usefulness (PU) and perceived ease of use [12]. Perceived usefulness (PU) reinforces the customer's belief that using the new technology will enhance and boost the performance [13] [14]. In our research, PU denotes to the expectations of the customer, which make them interested in buying electric cars. Perceived usefulness of the electric car is based on price range, performance, tax benefits, battery cost & warranty period. The Perceived usefulness has a positive effect on purchase intention [15]. The past studies have supported the perceived usefulness have a significant positive effect on the intention to use [9] [16] [17] [18] [19] [20] [21] [22] [23]. Hence, we propose the following hypothesis.

H<sub>2</sub>: Perceived usefulness of electric car will have a positive effect on interest to buy (ITB) electric cars.

**Perceived Ease of Use:** Perceived ease of use (PEOU) is defined as “the degree which a person believes that using a particular system would be free of effort” [24]. PEOU shows the frame of mind of customers towards buying and their perception about battery charging stations, recharging time, distance from home to charging station and durability assurance. Thus, the research has supported the hypothesis that the perceived ease of use will have a positive effect on attitude use [15]. Several researches had studied the PEOU have a positive effect on attitude [18],[19], [20], [9]. Therefore, we formulate the following hypothesis.

H<sub>3</sub>: Perceived ease of use will have a significant positive effect on attitude to use.

**Attitude to use:** Attitude refers to a person forming favourable or unfavourable feelings toward adopting a specific technology [20]. The attitude of an individual is not the only factor that determines the use but also influenced by system performance [16]. The attitude refers that it leads to the intention to use and adoption of a particular technology. [26]. Attitude to use and intention to accept are the endogenous factors [6]. Prior studies had shown the presence effect of attitude on the intention to use of new technology. Several studies supported the hypothesis that the attitude will have a positive effect on the intention to use [18], [19], [27], [28]. Hence, we formed the following hypothesis

H<sub>4</sub>: Attitude has a direct and positive influence on customer interest to buy electric cars.

## 2.2 Diffusion of innovation theory (DOI).

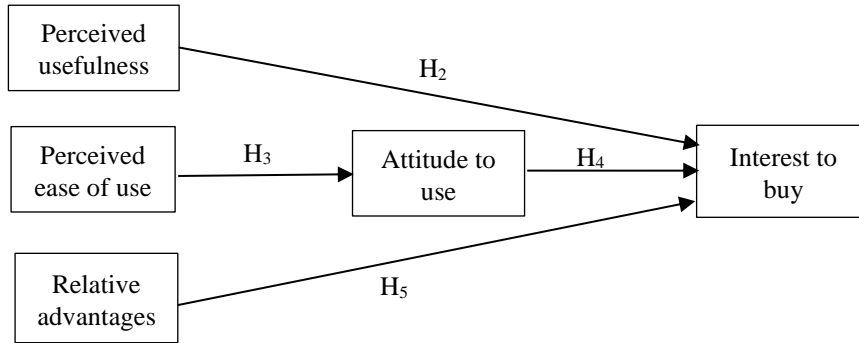
The innovation diffusion theory expressed to predict and interpret how users adopt an innovation [29]. DOI Theory, proposed by E.M. Rogers in 1962 to explain to how, over time, an idea or product gains momentum and spreads through certain population or social system. The final result of the theory is that users accept a new idea, behaviour, or product [30].

**Relative advantage:** The Diffusion of innovation theory enables to understand the impact of innovation characteristics. The five factors that influence the adoption of innovation are Relative advantages, Complexity, Compatibility, Observability & Trialability [31]. The relative advantage is one of the main factors of diffusion innovation theory which extend the innovation better than the idea it replaces. The greater the relative advantage of innovation the greater acceptance of new technology [32]. RA is similar to perceived usefulness in TAM. [33]. The Relative advantages (RA) has a significant positive impact on consumer attitude towards technology [34]. Customers focus on new technologies that are easy to use, low cost and deliver benefits in the future over existing technology [37]. The past researches have suggested that the relative advantages are one of the best predictors of intention to accept new technology and it is positively related to the intention to buy [25], [36] [28]. The significant relationship between relative

advantage and intention to accept have been studied by some of past research in different fields such as solar energy, renewable energy sources, online travel purchase. Hence, we hypothesize that,

H<sub>5</sub>: Relative advantages have a direct and positive influence on customer interest to buy electric cars. Finally, to know the association between gender and the factors such as charging station, price range, environmentally smart and technology which customer's interest in buying the electric car [38]. Hence, we formulate the following hypothesis.

H<sub>1</sub>: There is an association between gender and factors which make the customer interest to buy an electric car.



**Fig. 1.** Proposed conceptual model

### 3 Data Methodology

In this study, the research design is descriptive in nature. The purposive sampling technique had used to collect primary data from the samples. The close-ended and well-structured questions (Likert-5-point scale) had been framed to collect the data from the respondents. The questionnaire had been developed based on the Diffusion of Innovation and Technology Acceptance Model with two parts. The first part includes the degree of demographics such as gender, age, education and income slab of the respondents and the second part includes questions based on the models. The pilot was conducted among 50 non-commercial passenger car owners to check the reliability of the instrument. The data collected for this study were 660. However, 600 samples had the completed data, hence 90.9% of samples have been considered. The tools used in this research paper include percentage analysis, chi-square, correlation analysis and multiple regression with the help of IBM SPSS 20 software.

## 4 Literature Review

**Table 1.** Literature review

Studies	Year	Application	Theory / Method	Samples	Constructs used	Results
[18]	2019	Uber Mobile application	Diffusion of Innovation theory & Technology acceptance model	300	Perceived Usefulness, Perceived Ease of Use, Relative advantage, Compatibility, Complexity, Observability, Social influence, Attitude & Future usage intention.	Diffusion of innovation factors had effect perceived ease of use and on perceived usefulness of smartphone application.
[19]	2019	Electric Vehicles	Theory of planned behavior (TPB), Technology acceptance model (TAM) & Innovation diffusion theory (IDT)	336	PU, PEOU, Compatibility, Personal innovativeness, External influence, Perceived behaviour control, Attitude, Subjective norms, Self-control, Purchase intention	The investigation revealed that the attractive battery and charging schemes are the factors which attract consumers.
[39]	2019	Crowdsourcing Platform - Students	Technology acceptance model (TAM),	48	Perceived Usefulness, Perceived Ease of Use & Behavioural intention	The research exposed that perceived usefulness and perceived have significant positive association on behavioral intention.
[25]	2018	Renewable energy usage	Unified theory of acceptance and use of technology (utaut)	280	Relative advantage, Awareness, Behavioral control, Moral norms, Social norms, Attitude & Intention to use.	Perceived behavioral control, relative advantage, awareness, and moral norms which had statistically significant positive associations with intention
[36]	2018	Solar Energy Technology	Technology acceptance model (TAM), Diffusion of innovation (DOI) and Theory of planned behavior (TPB)	384	Relative advantage, Perceived behavioural control and Perceived ease of use.	Relative advantage, perceived ease of use and perceived behavioural control had a positive effect with solar energy technology adoption.
[40]	2018	Electric Vehicle	–	384	–	The research exposed 91.27% of respondents in Malaysia were interested to buy electric vehicle. The charging station offices must be available like petrol stations
[27]	2018	Multimedia among School Teachers	Technology acceptance model (TAM)	460	Perceived Usefulness, Perceived Ease of Use, Attitude & Intention to use.	Perceived ease of use would enhance the intention to use of multimedia software. The attitude toward use had a positive effect on the intention to use.

Studies	Year	Application	Theory / Method	Samples	Constructs used	Results
[15]	2017	Apparel products	Technology acceptance model	900	Perceived Usefulness, Perceived Ease of Use, Attitude & Behavioural intentions	Perceived usefulness, perceived ease of use, attitudes, intention to purchase were related with consumers' use of sustainability standards of apparel products
[28]	2016	Purchase travel online	Innovation diffusion theory (IDT) and the technology acceptance model (TAM),	495	Relative advantages, Perceived ease of use, PU, compatibility, trust, attitude, Intention to participate, and intention to purchase	Consumers who observed the relative advantages in online travel had a positive attitude of online travel community.
[41]	2015	Electric vehicle	Stated choice methods	384	–	Chinese consumers are interested to adopt Battery Electric & mid-price range of plug in hybrid electric vehicle (PHEV) and American consumers favor low-range PHEVs.
[35]	2014	Mobile websites	Technology acceptance model and Trust theory	302	Perceived ease of use (PEOU), Perceived usefulness (PU) and Trust.	The outcomes revealed that there had a positive association between PEOU, PU and mobile users' satisfaction. PU and trust positively associated to trust and satisfaction of mobile users.
[42]	2014	New media	Unified Theory of Acceptance and Use of Technology (UTAUT)	380	Performance Expectancy, effort expectancy, social influence, Facilitating conditions.	Age and gender may not play as critical a part in new innovation utilize and appropriation.
[22]	2013	Smartphone usage	Technology acceptance model (TAM) and the uses and gratifications (U&G) approach.	491	Motivation for ritualized use, Motivation for instrumental use, Perceived usefulness and Perceived ease of use.	The research exhibited that spread information system with innovative and features, the developer ought to pay consideration to users' natural inspirations as well as to their outward recognitions
[43]	2011	Electric cars	Stated preference methods	1152	–	Micro/city cars had showed response positively like to secondary cars. The performance was top priority to leisure, off-roaders and sports cars.

## 5 Results and discussion

### 5.1 Demographic profile

The table shows the demographic characteristics like gender, age, education qualification and income of the respondents

**Table 2.** Demographic profile

Particulars	Levels & Percentage				
<b>Gender</b>	Male	Female			
	58.7 %	41.3 %			
<b>Age</b>	21-25 years	26-30 years	31-35 years	35-40 years	Above 40
	11.7 %	11.7 %	47.2%	17.7%	11.8%
<b>Education</b>	Higher secondary	Graduate	Post graduate		
	5.8 %	29.1 %	65.1%		
<b>Income slab</b>	Below 5 lakhs	5 to 10 lakhs	10 to 15 lakhs	15 to 20 lakhs	> 20 lakhs
	5.8 %	29.3 %	47.2%	17.7%	5.8%

The table shows that the total sample for this study was 600. As observed, the majority of respondents (58.7%) were male and female were (41.3%). A majority of the respondents (47.2%) belonged to the age limit between 30 to 35 years, the prevailing level of education is postgraduate (65.1%) followed by graduates (29.1%). A majority of respondents had the (47.2%) income slab from 10 to 15 lakhs followed by 5 to 10 (29.3%). Overall data represents that respondents are young adults, well-educated and affluent. This might be help to know the customers interest in buying an electric car.

### 5.2 Descriptive indicator of the car of respondents

**Table 3.** Descriptive indicator of the car of respondents

Table No.-2- Descriptive indicator about the respondents' interest in the electric car.							
Particulars		Levels & Percentage					
Numbers of Cars Owned	1 car	2 cars	3cars	More than three cars			
	53.3 %	29.2 %	11.7 %	5.8 %			
Type of cars	Hatchback	MPV	Sedan	MPV			
	47.0 %	11.8 %	29.4%	11.8 %			
How long have you been using the car	1 year	2 years	3 years	4 years	≥ 5		
	23.5 %	35.2 %	12.0 %	11.8 %	17.5 %		
Interested in buying an electric car	Yes	No					
	82.3 %	17.7 %					
Interested brand to buy electric car	Maruthi	Tata	Renault	Mahindra	Hyundai	Honda	Ford
	29.5 %	9.8 %	14.1 %	11.2 %	17.5 %	12.0 %	6.0 %

The table contains descriptive indicators of particulars like number, type & brand of cars. The majority (53.3 %) of respondents owned one car, 29.2 % owned two cars & 11.7 % owned three cars. About half of the respondents had owned a hatchback type of car. Most of the respondents (35.2%) have been using the car for two years, followed by one year (23.5 %). The majority of respondents (82.5%) are interested in buying an electric car and most of the respondents preferred to buy Maruthi brand cars followed by Hyundai.

### 5.3 Reliability

Reliability test is used to measure data quality and consistency in measured items. The reliability has been tested using Cronbach's Alpha. The usually accepted value of Cronbach alpha is between 0.6 and 0.7. The Cronbach alpha value between 0.8 and 0.9 is very good level [44]

**Table 4.** Reliability test

Factors	No. of Items	Cronbach Alpha
Perceived usefulness	6	0.751
Perceived use of ease	4	0.841
Relative advantage	4	0.661
Attitude to use	6	0.717
Interest to buy	4	0.708

The value obtained for in this study was 0.909 for 24 items which are greater than 0.7, so the value is acceptable. The Cronbach alpha value for each construct (perceived usefulness, perceived use of ease, relative advantage, attitude to use and interest to buy) is more than 0.6. This value shows that the data collected for this study are reliable.

#### 5.4 Chi-square test

**Test-1:** Gender and factors which will make the customer interest to buy an electric car.

**Table 5.** Frequency table - Gender vs factors which influence the customer interest to buy.

Factors	Gender		Frequency	Percentage
	Male	Female		
Innovativeness	35	37	72	12.1
Environmentally smart	106	36	142	23.7
Low taxes over and tax deduction on loan interest	0	70	70	11.6
Fuel cost elimination	105	70	175	29.1
Technology	70	35	105	17.5
Safety in speed	36	0	36	6.0
Total	352	248	600	100

As observed, the majority of respondents (29.7%) expect the fuel cost elimination followed by (23.7%) are liked the environmentally smart factor.

The chi-square test was performed at a 5% level of significance and hypothesis was tested.

H1 – There is an association between gender and factors which make the customer interest to buy an electric car.

**Table 5.** Chi square values

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	145.576 <sup>a</sup>	5	.000
Likelihood Ratio	183.886	5	.000
Linear-by-Linear Association	9.948	1	.002
N of Valid Cases	600		

The Table-6a shows that the significance value is 0.000 which is less than the probability value ( $p < 0.05$ ). It supports the hypothesis hence there is a significant relationship between gender and factors which make the customer interest to buy an electric car. This result clearly shows that innovativeness, environmentally smart, low taxes, safety in speed and technology are the factors which make customers interest to buy an electric car varies significantly with gender.

#### 5.5 Correlation analysis

This analysis is the statistical method used to identify the correlations between the variables. It is also used to describe the strength of the correlation between the variables. Correlation analysis was tested to know the relationship among variables in the construct of the model. To identify the correlation between perceived ease of use, perceived usefulness, relative advantages, attitude and interest to use all variables were correlated by using this analysis. The average score of multiple items in each construct was calculated and used for more analysis [26]. The coefficient of correlation (r) value is considered weak when it from 0.10 to 0.29 and 0.30 to 0.49 its medium then 0.5 to 1 is considered strong [45]. To evade multicollinearity the coefficient of correlation value should be less than 0.8 [46].

**Table 6.** Pearson correlation analysis results

Constructs	PU	PEOU	RA	ATU	ITB
Perceived usefulness (PU)	1				
Perceived ease of use (PEOU)	0.705**	1			
Relative advantages (RA)	0.710**	0.612**	1		
Attitude to use (ATU)	0.619**	0.666**	0.603**	1	
Interest to buy (ITB)	0.672**	0.661**	0.618**	0.625**	1

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed)

The result shows the correlation value 0.710, which is high among all variables. So, this value is smaller than 0.80. Hence, there is no multicollinearity in this study. The dimensions in the model were positively correlated with each other.



## 5.6 Multiple Regression Analysis

The statistical method which defines a set of predictor variables and criterion variables. It also used to understand which independent variables are related to the dependent variable. In this research, we explore the relationship among perceived usefulness, perceived use of ease, relative advantage, attitude to use and interest to buy. The proposed model was examined through the parameters such as R<sup>2</sup>, F-ratio of overall fit, residual and hypothesis testing, t-test of specific parameters. In this research, these parameters had applied to find the direct and positive effect among constructs.

**Regression analysis of perceived usefulness vs interest to buy:** The hypothesis (H1) of whether the perceived usefulness will have a positive effect on interest to buy has proposed and tested results are shown in the table. The result had enumerated that the p-value was less than 0.05 ( $p < 0.05$ ) and t-test value (8.874) which was positive. Hence so the results support the hypothesis, so the perceived usefulness will have a positive effect on interest to buy which had the ability of elucidation of 52.6 %. ( $R^2 = 0.526$ ). The result indicates that the perceived usefulness of the electric car such as price range, performance, tax benefits, battery cost & warranty period, will make customer interest to buy the car.

**Table 7.** Coefficient a of perceived usefulness and interest to buy

R <sup>2</sup> value – 0.526 (52.6%)					
Model	Coefficient of perceived ease of use			t-value	Sig.
	Unstandardized coefficients		Standardized coefficients		
	B	Standard Error	β		
Constant	0.585	0.066		8.874	0.000
Perceived use of ease	0.411	0.039	0.557	10.610	0.000
Dependent variable: Interest to buy					

**Regression analysis of perceived ease of use vs interest to buy:** In the testing of proposed hypotheses (H2 & H3) in the model has extended and test results are showed in the table. The result had indicated that the p-value of PEOU and attitude was less than 0.05 ( $p < 0.05$ ) and t-test value was positive. Hence so the results support hypotheses and the interest to buy was significantly affected by both perceived ease of use and attitude to use which had the capability of elucidation of 55.0 %. ( $R^2 = 0.550$ ).

**Table 8.** Coefficient a of perceived use of ease, attitude and interest to buy

R <sup>2</sup> value – 0.219 (21.9%)					
Model	Coefficient of PEOU & attitude			t-value	Sig.
	Unstandardized coefficients		Standardized coefficients		
	B	Standard Error			
Constant	0.482	0.081		5.988	0.000
Perceived use of ease	0.122	0.033	0.169	3.732	0.000
Attitude	0.402	0.039	0.437	10.359	0.000
Dependent variable: Interest to buy					

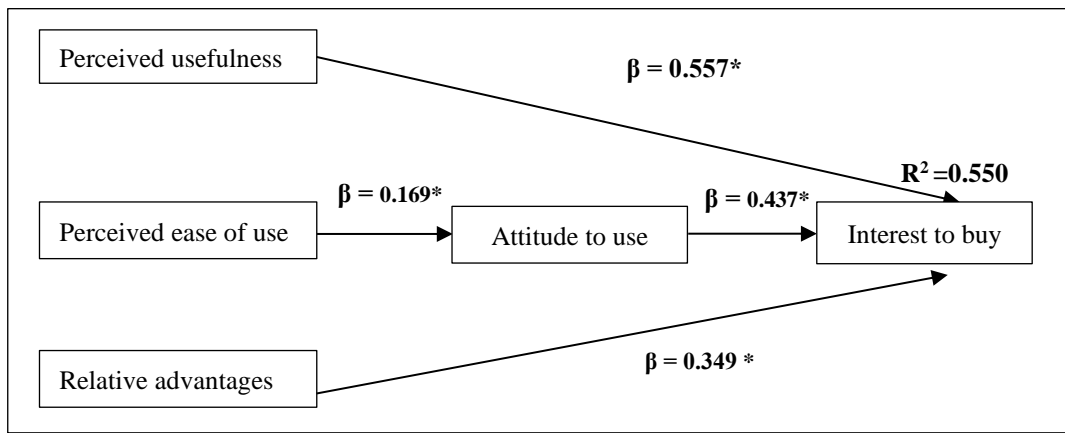
The result shows that the perceived ease of use such as battery charging stations, recharging time, travel distance to charge station from home and durability assurance of the electric car will influence the attitude of the customer and make interest to buy an electric car. Both PEOU and attitude have a significant and positive influence on interest to buy. Furthermore, the attitude has a strong effect (0.437) on interest to buy then perceived ease of use (0.169).

**Regression analysis of relative advantage vs interest to buy** the hypothesis (H3) of whether the relative advantages have a direct and positive influence on interest to buy has proffered and test results are exposed in the table. The result had enumerated that the p-value was less than 0.05 ( $p < 0.05$ ) and t-test value (5.417) which was positive. Hence so the results sustenance the hypothesis, so the relative advantage will have a direct and positive influence on interest to buy and capability of exposition of 21.9 %. ( $R^2 = 0.219$ ).

**Table 9.** Coefficient <sup>a</sup> of relative advantages and interest to buy

R <sup>2</sup> value – 0.219 (21.9%)					
Model	Coefficient of relative advantage			t-value	Sig.
	Unstandardized coefficients		Standardized coefficients		
	B	Standard Error	β		
Constant	0.866	0.160		5.417	0.000
Relative advantage	0.336	0.037	0.349	9.128	0.000
Dependent variable: Interest to buy					

This result shows that the relative advantages such as Maximum driving speed, environmentally-friendly, maintenance expenses and acceleration of the electric car will influence the customer interest to buy the car.

**Fig. 2.** Test results, \*: represents significant difference  $p < 0.05$ :

## 6 Discussion:

Our study employed two theories – TAM and DOI to analysis influence of customers interest in buying electric cars made several theoretical contributions. However, the resemblance of two theories have been recognized and the past studies linked to know the customer interest in buying the electric cars [9] and scales developed by combining two theories [33]. The high correlation between the perceived usefulness ( $r = 0.672$ ,  $p < 0.01$ ), perceived ease of use ( $r = 0.672$ ,  $p < 0.01$ ), relative advantages ( $r = 0.672$ ,  $p < 0.01$ ), attitude to use ( $r = 0.672$ ,  $p < 0.01$ ), and interest to buy the electric cars by customers. These results showed that the customer interest will be high based on the perceived usefulness of the electric car. The higher perceived ease of use of the electric car will have better attitude to use and willingness to buy the electric car and these findings assenting the previous studies [47]. The result exhibits that the perceived usefulness has a direct and positive effect on the customers' interest to buy electric cars. The higher usefulness such as price range, performance, tax benefits, battery cost is considered as the most useful factors which make interest to buy the electric cars resulted in higher interest to acquire electric cars. This finding is confirming the previous studies. [15], [9],[16] [17]. The test outcome indicates that the perceived ease of use had a positive effect on the attitude to use and interest to buy. The battery charging stations, recharging time, travel distance to charge station from home and durability assurance are determining factors of the ease of use which had positive effect on interest in buying the electric car. This result makes a positive agreement with past studies [18] [15] [19]. The finding reveals that relative advantage such as environmentally-friendly, maintenance expenses, maximum driving speed & acceleration of the electric car had a positive effect on the interest in buying the electric cars, confirming pervious results that relative advantage has a positive effect on intention to use [36], [28]. The chi-square results exposed that the factors influencing customers interest in buying the electric car varies significantly with gender. The price range, fuel elimination cost are important factors which makes gender sensitive. This result confirms the past research [38]. The customers are interested to buy the Indian brand manufactures like Maruthi, Mahindra. The study finds that few customers have interest in electric cars because of innovativeness in it.

## 7 Scope and limitations:

This study helps the marketer to know the customers' interest in electric cars and understand the highest responsibility on bringing commercial value to an environmentally smart passenger car. It aids to know the role of various factors such as charging infrastructure, convenience in city use, tax benefits and maximum driving speed in building interest to buy an electric car, so that marketer can enhance the product and facilities that will result in maximum reach of electric cars in the Indian market. This study gives the empirical support to the vital role that perceived usefulness, perceived use of ease and relative advantage of electric cars which make customer interest to buy.

This research is restricted to the car industry in India, so this may constraint the generalizability of other overseas countries outcome. This study mainly emphasizes on the electric car (environmentally smart), so the customers' interest in the fuel-based engine cars are not considered for this research. The survey data are collected only from non-commercial car owners. The study is based on the list of leading cars selling metropolitan cities report for the financial year 2019 [48] in India. The outcomes of the study should therefore be exercised with extreme cautiousness in non- metropolitan cities.

## 8 Conclusion:

The rapid change in technology leads to introduction of electric car in alternative to fuel engine which is considered to be linchpin in the automobile industry. It is necessary for the customers to have interest towards theory of z generation before buying electric car. Customers are aware of the factors such as charging station, price range, environmentally smart and technology and they are very much ready to accept new technology with low price range. The findings of this research given greater understandings when analyzing customers interest to buy the electric car. The perceived usefulness, perceived ease of use, relative advantage, attitude and interest to buy were the factors investigated to know the interest and willingness of customers to buy the electric cars. As a result, we proposed the integration of TAM and DOI models could offer better overall outcomes. This study helps to understand the preeminent responsibility for bringing commercial value to an environmentally smart passenger car.

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## 10 Appendix

Factors		Items
Perceived usefulness	PU-1	The Price range is the main factor that I will consider to buy an electric car.
	PU-2	The Performance of the electric car is a factor that I will consider for purchase.
	PU-3	accept that tax benefits (Low taxes) provided by the government will encourage the electric car's sale.
	PU-4	admit that additional income tax deduction provided on the interest paid on loan taken will promote to buy an electric car.
	PU-5	The battery cost is a significant factor that I will consider for purchase.
	PU-6	The warranty period will help me to buy electric cars.
Perceived ease of use	PEOU-1	am willing to own the electric car if battery charging stations assigned in a high number.
	PEOU -2	consider the recharging time of the battery will play a vital role in buying an electric car.
	PEOU -3	he distance from home to charging station is a factor that I will consider before purchasing an electric car.
	PEOU -4	will purchase if durability assurance is given by the car company.
Attitude to use	ATU-1	believe that charging facility of the electric car at home will convince the buyers.
	ATU-2	believe that comfort for city use is an important factor in electric car purchasing.
	ATU-3	believe that charging infrastructure in high number will encourage the customer to buy the electric car.
	ATU-4	he Attractive design and style will stimulate me to acquire the electric car.
	ATU-5	believe the short driving distance of an electric car will not affect the buying interest.
Relative advantages	RA-1	maximum driving speed of the car is a significant factor that I will consider for purchase.
	RA-2	am ready to pay more for the electric car since its environmentally-friendly charging car.
	RA3	am ready to spend more money to purchase an electric car to save maintenance expenses.
	RA-4	ly expectation on acceleration is high on the electric car compared to fuel engines.
Interest to buy	ITB -1	am eager to buy the Indian brand electric cars.
	ITB -2	am eager to purchase an electric car as a secondary (used) car.
	ITB -3	am eager to buy luxury and sports type of electric cars.
	ITB -4	am willing to buy an electric car if the car company offers a micro car segment.