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FACTORS INFLUENCING POST PURCHASE BEHAVIOUR OF ELECTRIC VEHICLES IN CHENNAI

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Abstract

This study explored the consumer perception of the post-purchase experience among electric vehicle owners. With the increasing popularity of electric vehicles in India, it is crucial to understand how consumers perceive various aspects of their purchase and ownership journey. The research focused on Post purchase behavior of electric vehicles. This study focuses on identifying the factors that influence the post purchase behaviour of consumers using electric vehicles in Chennai. A sample of 106 respondents using electric vehicles in Chennai were selected for the study and this study falls under descriptive type. Questionnaire, the study instrument is used to collect the data. Convenience sampling method is used to select the respondents for the study. Exploratory Factor Analysis and One way ANOVA are he statistical tools used. Chronbach's alpha is used to find the reliability of the study. SPSS v25 is used to perform the data analysis. Reliability of this study is found as 0.839 (83.9%). Comfort, Driving, Energy, Design, Safety, Charging convenience and Information exchange are the factors that influence the Post purchase behavior towards e-vehicle. It is observed that comfortable driving, vehicle running performance in straight roads is good, calculation of driven distance, good exterior/interior look of the vehicle, vision and lighting functions, time consumption for re-charging is normal and proper working of navigation system provided in the system are the key aspects of Post purchase behavior towards e-vehicles. Significant influence of age, occupation, income per month and experience in e-vehicle driving on post purchase behaviour are observed.

INTRODUCTION

Electric vehicles (EVs) have gained popularity as eco-friendly alternatives to gas-powered cars. They run on electricity, can be charged externally, and offer benefits like reduced reliance on fossil fuels and lower maintenance costs. This makes them a solution to environmental issues like pollution and climate change. The surge in EVs is driven by concerns about urban air pollution, with many major Indian cities among the world's most polluted areas. Transportation

emissions are a significant contributor, prompting manufacturers and governments to explore eco-friendly options. Governments worldwide are endorsing electric mobility as a way to combat pollution. For example, China promotes hybrid vehicles, while the UK incentivizes EV purchases in cities like London. In India, electric three-wheelers are popular, but the power distribution network needs improvement. However, there's potential for EV growth, especially in electric bikes and four-wheelers, if the government invests in charging infrastructure and incentives. India aims for an all-electric vehicle fleet by 2030, with the Minister of Road Transport and Highways working with the Society of Indian Automobile Manufacturers to promote this transition. This reflects the government's commitment to sustainable transportation

Post purchase behaviour

The customer is king, and the consumer dictates what a firm is. Our economy is robust because of the abundance of goods and services created in our nation. Almost all items have a variety of alternative suppliers, and the buyer should make a selection to purchase products from a certain brand. There are two sorts of purchases made by consumers. Purchases made as a trial and on a regular basis. A product trial occurs when a customer is convinced to buy for the first time, in a lower amount than normal, and with some trepidation. In any case, the trial serves as the foundation of buying behavior when the objective is to assess a product via trial. Repeat purchase, on the other hand, displays the consumer's dedication to the product, business, and others. The buy process identifies the real purchasing environment and its impact on the process. At this moment, mental appraisal is transferred into buying behavior at the point of purchase. Many elements may influence the act of purchasing. Time, attitude, shopping experience, salesperson efficacy, and so on are all factors to consider. Consumer satisfaction, on the other hand, is assessed by the person's overall sentiment toward the goods after purchase. Satisfaction is often evaluated by how well a product's performance matches the consumer's past expectations of how well it would operate. During a lateral cycle process, consumers may introduce products into secondary marketplaces. The purchase and post-purchase phases are the last two stages of a consumer's decision-making process. While the purchase stage is more important from the standpoint of manufacturers or marketers, post-buy behavior reveals the final satisfaction reported by customers and has significance for marketers as a factor of future purchase choices.

Review of literature

Basha and Nagaraju (2025) conducted a literature-backed empirical study analyzing EV adoption patterns in Southern India, with survey and interview data. They highlighted High upfront cost, limited charging infrastructure, range anxiety, and time constraints remain significant adoption hurdles. They identified that environmental concern, economic benefits (total cost of ownership), and social norms emerged as strong motivators. The authors also identified that pre positive attitudes towards EVs, adoption significantly increases, underscoring the need to cultivate favourable perceptions. They concluded that the post-purchase satisfaction is heavily influenced by infrastructure reliability, cost savings, and environmental values. Narendiran (2024) the research focused on critical factors such as purchase price, charging features, maintenance costs, battery life and durability, performance and safety features, warranty, and after-sales service. An extensive review of literature from various authors in recent years found that consumers consider these factors when purchasing an electric vehicle. Studies have shown that purchase price plays a significant role in influencing consumer behavior toward electric vehicles. charging features like the availability and accessibility of charging features are crucial for enhancing convenience and reducing range anxiety. Maintenance costs have also been identified as an essential consideration for potential buyers as they evaluate long-term affordability. Battery life and durability are critical factors affecting overall satisfaction

with electric vehicles since batteries contribute significantly to their cost effectiveness. Performance and safety features were significant determinants of consumer perception regarding reliability and driving experience. Warranty coverage reassures customers concerned about unforeseen technical issues or defects over time. After-sales service emerged as another essential aspect impacting post purchase behaviour levels. Timely assistance from manufacturers during servicing or repairs can significantly influence the overall ownership experience. Based on our findings, we recommended several suggestions for stakeholders in the electric vehicle sector. Susheela, Devi and Devaru, Susheela. (2023). This paper focuses on consumer buying behaviour towards electric vehicle and the focus of the study is to know the various factors influencing consumer while purchasing elective vehicles. The study reveals a gender disparity in EV interest, emphasizing need for targeted marketing strategies, to engage more female consumers. Age groups, particularly 25-30 and 30-40, exhibit a strong inclination towards EVs, driven by young professionals seeking a luxury lifestyle. Income level does not significantly' influence EV preference, with the 25k-40k income range showing notable interest. Graduation and post-graduation holders are well-informed about branded EV outlets and exhibit brand differentiation. Silvana (2022), this study moves in this direction by conducting a bibliometric and thematic analysis of 254 studies related to consumer behaviour in the electric car market. The research reveals the primary co-citation network between international journals and authors, a map of the leading research centres on the topic, and the dimensions covered by scholars. Additionally, the analysis extends the theory of planned behaviour, offering a valuable consumer identikit for practitioners. Based on the results, the study provides multiple research questions helpful to feed the academic debate. Ukesh, et al. (2022). The research was carried out to analyze the consumer post satisfaction of buying electric two-wheeler in Coimbatore city. Post satisfaction is measured using simple percentage analysis. In order to conduct the simple percentage analysis, five statements are developed by referring various articles. The results revealed that five statements such as Better Customer Service, Promotional Offers, Credit and loan Facility, after sales service and Post Satisfactory response to Customer complaints are the statements. Hence, the Electric two-wheeler dealer could take efforts to provide better services expected by the respondents for improving their performance and sustainability. Globisch et al. (2019) focused on consumers' economic and psychological approaches to considering public charging infrastructure, showing that a significant obstacle to EV deployment is the lack of diffusion of public charging stations. The authors discovered that many potential users are not disposed to pay a fee for the infrastructure deployment, whose high costs do not allow them to obtain the benefits of such deployment. Rajarajan and Priyanga (2013) studied about "Consumer Pre and Post- Purchase Behaviour – An Overview." The study concludes that customers satisfaction and value-ratio, it can be claimed that customers were satisfied if their knowledge of the value received corresponds to the value expected and delight was reached when the gain significantly exceeds the expectations.

Objectives of the study

1. To identify the factors that influences the post purchase behaviour of consumers using electric vehicles.
2. To study the influence of demographic and e-vehicle related variables on Post purchase behaviour

Hypotheses of the study

H01: There is no significant influence of demographic variables on Post purchase behaviour

H02: There is no significant influence of e-vehicle related variables on Post purchase behaviour

Research Methodology

This study focuses on identifying the factors that influence the post purchase behaviour of consumers using electric vehicles in Chennai. A sample of 106 respondents using electric

vehicles in Chennai were selected for the study and this study falls under descriptive type. Questionnaire, the study instrument is used to collect the data. Convenience sampling method is used to select the respondents for the study. Questionnaire comprises of two segments, first segment covers demographic characteristics of the respondents, whereas the second contains the post purchase behaviour scales. Exploratory Factor Analysis is used to identify the factors that influence the post purchase behaviour of electric vehicles. One way ANOVA is used to identify the influence of demographic variables and e-vehicle related variables on Post purchase behavior. Chronbach's alpha is used to find the reliability of the study. SPSS v25 is used to perform the data analysis.

Results and Discussion

Reliability of this study is found as 0.839 (83.9%). A sample of 106 respondents participated in this survey. 78.9% of them are males, 39.2% of the respondents are in the age group of 30-40 years, 54.9% of the respondents were married, 48.1% of the respondents possess UG/PG degree as their qualification. 40.9% of the respondents are employed in Private services, 69.2% of the respondents are having income of more than 50,000 per month. The following section helps in identifying the factors of Post purchase behavior of e-vehicle.

Factors that determine the Post purchase behavior of e-vehicle users

In this section the factors that determine the Post purchase behavior of e-vehicle users in Chennai is identified. Factors that determine the Post purchase behavior of e-vehicle users are measured by twenty three variables. Based on the responses given by the selected customers, Factor analysis with principal component method using vari-max rotation was applied to group the variables in to factors. The KMO measure (0.872) for this analysis confirms the sample size is adequate and the Bartlett's test of sphericity's Chi-square value 482.657 (p=.000) is also found to be significant. Table 1 portrays the Eigen values and variance explored by them.

Table 1

Eigen values for Post purchase behavior of e-vehicle users

Factors	Initial Eigen values		
	Eigen Value	Percentage of Variance	Cumulative Percentage
1	10.149	26.142	26.142
2	5.324	14.241	40.383
3	3.117	8.214	48.597
4	2.014	7.213	55.81
5	1.353	6.058	61.868
6	1.112	5.512	67.38
7	1.048	5.214	**72.594**

Twenty-three variables are reduced into seven factors by analyzing correlation between variables. Since the Eigen values 10.149, 5.324, 3.117, 2.014, 1.353, 1.112 and 1.048 are greater than one (1), twenty three variables are reduced in to seven factors which explain much of the respondents' perception. It is noted that the cumulative percentage extracted altogether by the five factors is 72.594%. The seven factors extracted along with components and factor loadings are shown in the Table 2.

Table 2

Factor loadings for Post purchase behavior

Factor	Components	Factor Scores
Factor 1: Comfort	Driving is comfortable	**.802**
	Seating space/design is good	**.765**
	Storage space provided is enough	**.652**
	Driver Assistance System is present in the vehicle	**.588**
	Steering/Handle bar is flexible	**.541**
Factor 2: Driving	Vehicle running performance in Straight roads is good	**.777**
	Curve running performance	**.714**
	Braking system is good and suitable for all type of road conditions	**.685**
	Accelerated performance is good	**.624**
	Start/stop functions are working perfectly	**.551**
Factor 3: Energy consumption	Driven distance is calculated accurately	**.714**
	Power consumption is less	**.582**
Factor 4: Design	Exterior/Interior look is good	**.627**
	Physical appearance of the vehicle is good	**.511**
Factor 5: Safety	Vision and lighting functions are good	**.724**
	Felt safety while driving the vehicle	**.689**
	Battery performance is good	**.544**
	Anti-theft indicator installed is good	**.532**
Factor 6: Charging convenience	Time consumption for re-charging is normal	**.647**
	Charging Interface/plug provided is comfortable while charging	**.584**
Factor 7: Information exchange	Navigation System provided in the system is working properly	**.772**
	Communication System indications are fine	**.617**
	Vehicle information display system is working properly	**.533**

1. From the table 4.41 it is inferred that factor 1 is a combination of five variables such as “Driving is comfortable”, “Seating space/design is good”, “Storage space provided is enough”, “Driver Assistance System is present in the vehicle” and “Steering/Handle bar is flexible” which is named as Comfort factor.
2. Factor 2 is a combination of five variables such as “Vehicle running performance in Straight roads is good”, “Curve running performance”, “Braking system is good and suitable for all type of road conditions”, “Accelerated performance is good” and “Start/stop functions are working perfectly” which is named as Driving factor.
3. Factor 3 is a combination of two variables such as “Driven distance is calculated accurately” and “Power consumption is less” which is named as Energy factor.

4. Factor 4 is a combination of two variables such as "Exterior/Interior look is good" and "Physical appearance of the vehicle is good" which is named as Design factor.
5. Factor 5 is a combination of four variables such as "Vision and lighting functions are good", "Felt safety while driving the vehicle", "Battery performance is good" and "Anti-theft indicator installed is good" which is named as Safety factor.
6. Factor 6 is a combination of two variables such as "Time consumption for re-charging is normal" and "Charging Interface/plug provided is comfortable while charging" which is named as Charging convenience factor.
7. Factor 7 is a combination of three variables such as "Navigation System provided in the system is working properly", "Communication System indications are fine" and "Vehicle information display system is working properly" which is named as Information exchange factor.

Comfort, Driving, Energy, Design, Safety, Charging convenience and Information exchange are the factors that influence the Post purchase behavior towards e-vehicle. It is observed that comfortable driving, vehicle running performance in straight roads is good, calculation of driven distance, good exterior/interior look of the vehicle, vision and lighting functions, time consumption for re-charging is normal and proper working of navigation system provided in the system are the key aspects of Post purchase behavior towards e-vehicles.

Influence of demographic variables on Post purchase behavior

This section presents the influence of demographic variables on Post purchase behavior on electric vehicles. To identify the significant influence of demographic variables on Post purchase behaviour on electric vehicles, one way ANOVA along with Duncan's post hoc test is applied to study the influence of demographic variables on Post purchase behaviour towards electric vehicles.

H01: There is no significant influence of demographic variables on Post purchase behavior towards electric vehicles

Table 3

Influence of demographic variables on Post purchase behaviour

	Classification	Mean	SD	F-value
Gender	Male	3.21	0.885	**1.596 (p=.098)**
	Female	3.34	0.916	
Age	Up to 30 years	3.39	0.869	**7.928** (p=.000)**
	31-40 years	3.27	0.948	
	41-50 years	2.95	0.844	
	50 and above	2.72	0.835	
Marital status	Married	3.19	0.886	**1.394 (p=.238)**
	Unmarried	3.08	0.969	
Occupation	Private Service	3.26	0.911	**3.148* (p=.045)**
	Government service	3.23	0.982	
	Self-employed / Business	2.99	0.901	
	Others	3.00	0.816	
Education	Up to School	3.14	0.907	**1.297**

qualification	Graduate/Diploma	3.22	0.937	**(p=.275)**
	Post-graduation	3.04	0.893	
	Others	2.88	0.786	
Income per month	Below 25,000	3.26	0.855	**4.993** (p=.002)**
	Rs.25,000 to 50, 000	2.98	0.908	
	Rs.50,000 to 1,00,000	3.11	0.919	
	1,00,000 and above	3.46	0.906	

* Significant at 5% level ** Significant at 1% level

Significant influence of age (F=7.928, p=.000) occupation (F=3.148, p=.045), and income per month (F=4.993, p=.002) on post purchase behaviour are observed, H05 is rejected at 1% level, whereas the significant influence of gender (F=1.596, p=.098), marital status (F=1.394, p=.238), and educational qualification (F=1.297, p=.275) on post purchase behaviour about electric vehicle are not observed, H05 is accepted at 5% level. Respondents in the age group of below 30 years have scored highest mean value of 3.39 while the lowest mean is scored by the respondents above 50 years (2.72). It is inferred that the respondents with age below 30 years are more satisfied, whereas the customers with age above 50 years are relatively less satisfied with electric vehicle. Respondents working in private sector have scored highest mean of 3.26 and lowest mean is scored by the respondents with self-employment/business (2.99). It is noted that the respondents working in private sector are more satisfied on electric vehicle, whereas the self-employment/business are less satisfied on electric vehicle. Respondents earning more than Rs.1,00,000 per month have scored highest mean of 3.46 and lowest mean value scored by the respondents getting Rs.25,000 to 50, 000 as their monthly salary (2.98). It is observed that the respondents earning more than Rs.1,00,000 per month are more satisfied on electric vehicle and the respondents earning Rs.25,000 to 50,000 are less satisfied on electric vehicle.

Influence of e-vehicle related variables on Post purchase behaviour

This section presents the influence of e-vehicle related variables on Post purchase behaviour. To identify the significant influence of e-vehicle related variables on Post purchase behaviour, one way ANOVA along with Duncan's posthoc test is applied to study the influence of e-vehicle related variables on Post purchase behaviour.

H02: There is no significant influence of e-vehicle related variables on Post purchase behaviour

Table 4 Influence of e-vehicle related variables on Post purchase behaviour

	Classification	**Mean**	**SD**	**F-value**
Type of e-vehicle usage	2-wheeler	3.18	0.930	**0.568 (p=.567)**
	4-wheeler (car)	3.14	0.823	
	Both	3.02	0.995	
Experience in e-vehicle driving	Up to 1 year	2.91	0.862	**12.747** (p=.000)**
	1 to 3 years	3.64	0.756	
	3 to 5 years	3.06	0.912	
	Above 5 years	3.50	0.945	
Annual driving	Below 2,000 Km	3.23	0.979	**0.748**

distance	2,000 to 5,000 Km	3.13	0.906	**(p=.524)**
	5,000 to 10,000 Km	3.17	0.863	
	Above 10,000 Km	2.94	0.900	
Frequency of using electric vehicles per day	Only once	3.06	0.846	**1.746 (p=.157)**
	2 to 3 times	3.29	0.986	
	3 to 5 times	3.12	0.938	
	More than 5 times	3.27	1.010	

** Significant at 1% level

Significant influence of experience in e-vehicle driving (F=12.747, p=.000) on post purchase behaviour towards electric vehicle are observed, H06 is rejected at 1% level. Significant influence of type of e-vehicle usage (F=0.568, p=.567), annual driving distance (F=0.748, p=.524) and frequency of using e-vehicle per day (F=1.746, p=.157) on post purchase behaviour is not observed, H06 is accepted at 5% level. Respondents driving e-vehicle for a period of 1 to 3 years have scored highest mean of 3.64 and the lowest mean scored by the respondents driving for less than 1 year (2.91). It is inferred that the respondents driving e-vehicle for 1 to 3 years are more satisfied with electric vehicle, whereas the respondents driving e-vehicle for less than 1 year are less satisfied with electric vehicle.

Conclusion

The results revealed that Comfort, Driving, Energy, Design, Safety, Charging convenience and Information exchange are the factors that influence the Post purchase behavior towards e-vehicle. It is observed that comfortable driving, vehicle running performance in straight roads is good, calculation of driven distance, good exterior/interior look of the vehicle, vision and lighting functions, time consumption for re-charging is normal and proper working of navigation system provided in the system are the key aspects of Post purchase behavior towards e-vehicles. It is inferred that the respondents with age below 30 years are more satisfied, whereas the customers with age above 50 years are relatively less satisfied with electric vehicle. It is noted that the respondents working in private sector are more satisfied on electric vehicle, whereas the self-employment/business are less satisfied on electric vehicle. It is observed that the respondents earning more than Rs.1,00,000 per month are more satisfied on electric vehicle and the respondents earning Rs.25,000 to 50,000 are less satisfied on electric vehicle. Significant influence of age, occupation, income per month and experience in e-vehicle driving on post purchase behaviour are observed. It is inferred that the respondents driving e-vehicle for 1 to 3 years are more satisfied with electric vehicle, whereas the respondents driving e-vehicle for less than 1 year are less satisfied with electric vehicle.

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