

CONSUMER FACTORS INFLUENCING ELECTRIC VEHICLE PURCHASE INTENTION IN CHENNAI

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Abstract

Electric vehicles (EVs) are widely seen as central to sustainable transport, yet consumer adoption depends on psychological and perceptual factors as well as price and technology. This proposed study examines whether environmental awareness, social influence, perceived cost savings, perceived government incentives and EV brand image are associated with EV purchase intention among consumers in Chennai, India. Grounded in an extended Theory of Planned Behaviour, the study adopts a quantitative, cross-sectional, descriptive-correlational design. Data will be collected from a planned convenience sample of 100 Chennai residents aged 18 years and above who are aware of EVs, using a structured online questionnaire with 24 five-point Likert items (four per construct) and categorical questions on adoption barriers. The analysis will use descriptive statistics, Cronbach's alpha, Pearson or Spearman correlation, multiple regression and chi-square tests, as appropriate to the data. Because primary data have not yet been collected, no empirical findings are reported; the paper sets out the rationale, conceptual framework, hypotheses, instrument and analysis plan. The study is expected to provide an exploratory, locally grounded account of the factors consumers weigh when considering an EV.

Keywords:

EV Purchase Intention, Consumer Psychology, Theory of Planned Behaviour, Environmental Awareness, Social Influence, Chennai

1. Introduction

The automobile industry is undergoing a major transition from conventional internal-combustion vehicles towards electric mobility. Electric vehicles (EVs) are increasingly considered an important part of sustainable transportation because they can reduce dependence on fossil fuels and change the way consumers think about mobility. Consumer adoption of EVs, however, is not determined only by price or technical performance. Psychological and behavioural factors such as attitude towards EVs, environmental concern, social influence, perceived benefits, perceived risk, technological interest and confidence in using the technology can shape purchase intention. A 2026 systematic review of 103

peer-reviewed studies (Shalu & Pandey, 2026) grouped EV adoption factors into psychological, contextual and external categories and reported that attitude and subjective norms are among the most frequently studied psychological constructs.

The Indian context is particularly relevant because EV adoption involves a combination of personal attitudes, economic considerations, infrastructure, government support and social perceptions. Research among consumers in Chennai has examined environmental orientation, new-technology orientation, social orientation and perceived monetary benefits in relation to attitudes and EV purchase intention (Hemalatha et al., 2024). The present study therefore focuses on the psychology of consumers in buying EVs, with particular

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attention to environmental awareness, social influence, perceived cost savings, government incentives and brand image.

Although EVs are receiving increasing attention, consumers may hesitate because of the initial purchase price, access to charging facilities, driving range, battery life, battery-replacement cost, resale value, reliability and unfamiliar technology. These practical barriers may interact with consumers' environmental awareness, social influence, perceived cost savings, views of government incentives and perceptions of EV brand image. The proposed model therefore examines five explanatory constructs and treats key adoption barriers and respondent characteristics as contextual or control variables, rather than claiming to measure every determinant of EV adoption.

The research problem is to determine whether environmental awareness, social influence, perceived cost savings, perceived government incentives and EV brand image are associated with consumers' intention to purchase an EV in Chennai. The dependent variable throughout is EV purchase intention, defined as a respondent's stated willingness or likelihood to consider or buy an EV; it is not the same as an actual purchase decision or completed purchase. Understanding these factors may help consumers, automobile manufacturers, marketers and policy makers interpret why consumers accept or hesitate to adopt EVs, and may provide a basis for further research on consumer behaviour, sustainable transportation and technology adoption.

2. Review of Literature

A systematic review of 103 peer-reviewed studies (Shalu & Pandey, 2026) found that EV adoption intention research commonly examines psychological, contextual and external factors. The review identified attitude and subjective norms among the frequently studied psychological factors and highlighted the importance of environmental concern, government support and infrastructure.

Using an integrated UTAUT model with data from 284 customers in India, Jain et al. (2022) found that performance expectancy and facilitating

conditions positively affected EV adoption intention, while perceived risk had a negative effect; environmental concerns and government support were incorporated into the model. Upadhyay and Kamble (2023) examined Indian consumers' pro-environment purchase intention for EVs using the Stimulus-Organism-Response framework, considering pro-environment responsibility, value and attitude among 1,143 Indian consumers.

In Chennai, Hemalatha et al. (2024) studied 388 individuals who did not own an EV and examined environmental orientation, new-technology orientation, social orientation and perceived monetary benefits as consumer-related factors influencing attitude and EV purchase intention. Acar and Taşkın (2025) examined perceived value, environmental concern and government incentives in electric-automobile adoption, and reported that electric automobiles can also be associated with social image, while lack of awareness or dissatisfaction with incentives can negatively affect adoption intentions.

Yadav and Yadav (2024) examined motivators and barriers to EV adoption among Indian consumers using Behavioral Reasoning Theory, and reported that personal and social values influenced consumers' reasoning, which in turn influenced attitudes and intention to adopt EVs. Qiu et al. (2025), taking a human-focused perspective, examined social influence, environmental concern, face consciousness, range anxiety and consumer innovativeness in relation to battery-electric-vehicle purchase intention using 481 survey responses, with attitude as a mediator.

Recent research therefore indicates that EV purchase intention is multidimensional. Economic perceptions may matter, but psychological variables such as attitude, values, social influence, perceived risk, environmental concern and technology orientation are also relevant. The 2026 systematic review similarly concluded that EV adoption intention is affected by psychological, contextual and external factors rather than by a single determinant.

3. Research Gap

The reviewed literature establishes that EV

purchase intention is influenced by a combination of psychological, economic, social and environmental factors. However, many studies examine individual factors or theoretical models separately, and different studies use different populations, locations and combinations of variables. There remains scope for a focused consumer study that brings together environmental awareness, social influence, perceived cost savings, government incentives and brand image within one questionnaire-based framework, so that consumers' perceptions of cost savings, incentives and brand image can be examined alongside psychological factors in a local Chennai sample. The present study addresses this gap by proposing an integrated, consumer-focused framework.

4. Methodology

4.1 Research Design

The study adopts a quantitative, cross-sectional, descriptive-correlational research design with a deductive approach. The questionnaire and hypotheses are developed before data collection, based on the research objectives and existing literature on EV consumer behaviour. A quantitative approach is appropriate because a structured questionnaire with closed-ended questions yields numerical data. Descriptive analysis will summarise respondent characteristics and perceptions, while correlation and suitable hypothesis tests will examine relationships among the variables. The study is cross-sectional because data will be collected at one point in time, descriptive because it describes consumer perceptions, and correlational because it examines associations between psychological factors and EV purchase intention.

4.2 Objectives

The general objective is to examine the psychological factors influencing consumers' intention to purchase electric vehicles. The specific objectives are:

1. To examine the association between the five selected explanatory constructs and EV

purchase intention.

2. To examine the association between environmental awareness and EV purchase intention.
3. To examine the separate associations of perceived cost savings, government incentives and brand image with EV purchase intention.
4. To assess the association between social influence from family, friends and social media and EV purchase intention.
5. To describe respondents' EV purchase intention and the perceived barriers that may affect their consideration of EVs.

4.3 Research Questions and Hypotheses

The research questions are: RQ1, is environmental awareness associated with EV purchase intention? RQ2, is social influence associated with EV purchase intention? RQ3, are perceived cost savings, government incentives and brand image each associated with EV purchase intention? RQ4, which adoption barriers are most frequently reported by potential EV buyers? Each hypothesis below is tested at $\alpha = 0.05$; the corresponding null hypothesis (H_0) in every case states that no significant association exists.

H1: Environmental awareness is significantly associated with EV purchase intention.

H2: Social influence is significantly associated with EV purchase intention.

H3a: Perceived cost savings are significantly associated with EV purchase intention.

H3b: Perceived government incentives are significantly associated with EV purchase intention.

H3c: EV brand image is significantly associated with EV purchase intention.

4.4 Theoretical and Conceptual Framework

The Theory of Planned Behaviour (Ajzen, 1991) provides the main theoretical lens, extended with EV-specific beliefs: attitudes and subjective norms are relevant to intention, while perceived behavioural control captures perceived ability to act. In this study, environmental awareness, perceived cost savings, incentives and brand image are treated as belief-based antecedents, while social influence

represents the subjective-norm dimension. Charging access, range, battery life, purchase price and resale value are measured separately as barriers. Because the questionnaire does not include a separate multi-item attitude or perceived-control scale, the model tests direct associations with purchase intention and does not claim to test the complete TPB mediation structure.

The proposed model therefore specifies environmental awareness, social influence, perceived cost savings, government incentives and brand image as explanatory constructs and EV purchase intention as the dependent construct. Age, income, current vehicle ownership, prior EV experience and perceived barriers are recorded as contextual or control variables (Table 1).

Table 1. Variables of the Study and Their Indicators

Variable	Role	Indicators
Environmental awareness	Independent	Environmental concern, awareness of emissions, sustainability
Social influence	Independent	Family, friends, peers, social media
Perceived cost savings	Independent	Fuel savings, maintenance savings, running cost
Government incentives	Independent	Subsidy awareness, tax or financial support, perceived affordability
Brand image	Independent	Brand reputation, reliability, innovation, social image
EV purchase intention	Dependent	Willingness to buy, likelihood of purchase, future consideration
Context / control variables	Descriptive / sub-group	Age, income, current vehicle ownership, prior EV experience, perceived barriers

Source: Proposed study design

4.5 Population, Sampling and Sample Size

The target population is consumers and potential automobile buyers in Chennai, Tamil Nadu, who are aware of EVs; the unit of analysis is the individual consumer. Convenience sampling will be used, with a proposed sample of 100 respondents. This target is a feasible, exploratory figure for a student project with five predictor constructs and 24 construct items (four items for each of six constructs, including the dependent construct). It provides approximately 20 respondents per predictor as a basic planning heuristic, but it is not a guarantee of adequate statistical power or representativeness. The study will report the achieved sample and treat estimates cautiously; if resources allow, an a-priori power analysis based on the expected effect size and the chosen regression model should confirm the target

before data collection.

Respondents should be residents of Chennai, aged 18 years or older, aware of EVs, and either considering a future vehicle purchase or able to express an informed purchase intention. Both current EV owners and non-owners may participate; ownership and prior EV experience will be recorded and used to describe or stratify the sample. Responses from people unaware of EVs will be screened out or analysed separately.

4.6 Data Sources and Instrument

Primary data will be collected directly from respondents through a structured online questionnaire, primarily through Google Forms. Secondary data will come from published journal articles, academic databases, research reports and credible online sources on EV adoption and consumer behaviour.

The instrument contains demographic and screening items; 24 Likert-scale statements (four items for each of six constructs: environmental awareness, social influence, perceived cost savings, government incentives, brand image and EV purchase intention); and a short, separate set of categorical barrier questions covering purchase price, charging access, driving range, battery life or replacement cost, resale value, reliability and repair support, and lack of information. Construct items are rated from 1 (strongly disagree) to 5 (strongly agree). Items are researcher-adapted from the concepts and constructs discussed in Jain et al. (2022), Upadhyay and Kamble (2023), Hemalatha et al. (2024) and Qiu et al. (2025); they are not presented as verbatim validated scales. The barrier questions are categorical descriptive or control items and are not included in construct reliability calculations.

4.7 Statistical Tools

Percentage and frequency analysis will describe respondent characteristics, EV awareness and barriers, and means and standard deviations will summarise construct scores. Reliability will be assessed with Cronbach's alpha for each four-item construct (target $\geq .70$ as a common guideline, interpreted cautiously), together with corrected item-total correlations. Exploratory factor analysis may be used for construct validity if the data are suitable, after reporting the KMO measure and Bartlett's test; with $n = 100$, any factor solution is exploratory and confirmatory factor analysis may be underpowered.

Associations will be examined with Pearson correlation if assumptions are reasonable, otherwise Spearman correlation. Multiple regression may estimate the unique association of the five predictors with the purchase-intention score if checks of residuals, linearity, independence, homoscedasticity and multicollinearity are acceptable (inspecting residual plots, normality diagnostics and VIF, with $VIF < 5$ as a practical warning threshold). Effect sizes and

confidence intervals will be reported where possible, using $\alpha = .05$. Chi-square tests will be used only for categorical variables, such as EV ownership or prior EV experience by purchase-intention category and age group by intention category; categories will be defined before analysis, and Fisher's exact test will be used when expected cell counts are too small. Likert scores will not be categorised merely to obtain significance.

4.8 Scope and Limitations

The study focuses on consumers in Chennai and on selected psychological and perception-related factors, and does not cover every possible determinant of EV adoption. It will rely on self-reported questionnaire responses, which may be affected by respondents' perceptions and recall. Being cross-sectional, it primarily identifies relationships rather than establishing causal direction, and findings from a convenience sample may not be generalisable to all consumer groups or locations in India.

5. Results and Discussion

5.1 Status of the Study

This paper presents a research proposal, and the primary survey data have not yet been collected. Accordingly, no empirical results, hypothesis decisions or conclusions about which factors are significant are reported. Once data collection is complete, responses will be checked for eligibility, missingness and coding errors before analysis. The planned analysis will examine whether environmental awareness, social influence, perceived cost savings, government incentives and brand image are associated with EV purchase intention; test selection will follow the data type and assumptions described in Section 4.7, and all findings will be reported from the data actually collected.

5.2 Planned Analysis

Table 2 maps each study objective to the relationship to be examined and the suggested analysis.

Table 2. Planned Analysis by Objective

Objective	Variable / relationship	Suggested analysis
Objective 1	Psychological factors → purchase intention	Correlation / regression
Objective 2	Environmental awareness → purchase intention	Correlation / regression
Objective 3	Cost savings, incentives, brand image → purchase intention	Correlation / regression
Objective 4	Social influence → purchase intention	Correlation / regression
Objective 5	Overall attitude / intention and barriers	Mean, percentage and descriptive analysis

Source: Proposed study design

5.3 Expected Outcome

The study may provide a local, exploratory account of the factors consumers consider when evaluating EVs. This is an expected contribution, not a finding: the direction, size and statistical significance of the relationships cannot be stated until the survey has been completed and analysed.

6. Conclusion

Electric vehicle adoption is influenced by more than technological availability. Consumers evaluate EVs through a combination of attitudes, values, social influences, perceived economic benefits, government support and brand perceptions, and existing literature, including research conducted in India and Chennai, supports the relevance of these dimensions for understanding EV purchase intention.

This proposal sets out a structured study of these factors among consumers in Chennai. By combining environmental awareness, social influence, perceived cost savings, government incentives and brand image in one framework, the study aims to understand the psychological considerations associated with EV purchase intention. It does not assume that any single factor determines a consumer's decision; questionnaire data and statistical analysis will be used to determine which relationships are present in the selected sample.

Future studies may compare age and income groups, EV owners with non-owners, and consumers across cities; examine charging infrastructure

and range anxiety in greater depth; and compare stated purchase intention with actual purchase behaviour. These are future research directions, not conclusions from the present proposal.

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