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FACTORS INFLUENCING INTENTION TO PURCHASE ENERGY-EFFICIENT VEHICLES: A SYSTEMATIC LITERATURE REVIEW

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Abstract:

The drive to more sustainable transport depends not only on the developments in vehicle technology but also on the willingness of the consumers to consider and purchase energy efficient vehicles (EEVs). Despite the rapid development of electric and hybrid cars, buyers still consider them from a combination of pragmatic, financial, psychological and social perspectives. This systematic literature analysis seeks to synthesise the empirical studies published within the designated seven-year review period to discover the factors related with consumers' propensity to purchase EEVs. The review was performed following the PRISMA approach and the evidence was structured using the Stimulus-Organism-Response (S-O-R) framework. The synthesis combines the reported factors into three major steps. Factors influencing uptake include financial incentives, charging infrastructure and vehicle

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qualities including as driving range, charging time and safety. Factors of the organism include perceived usefulness, perceived ease of use, range anxiety, environmental concern, and moral ideals. The response phase concerns buying intention and the symbolic significance of EEV ownership. In the studies evaluated, practical situations and psychological assessments appear to be closely linked. Financial backing and infrastructure may be enough to overcome barriers. Perceived utility, environmental values and social meaning can influence the way consumers understand the identical market and product conditions. The review thus recommends that the adoption of EEV should be treated as a consumer decision that incorporates functional considerations and psychological processing. The final interpretation is preserved within the evidence given by the examined research instead of presuming that one factor explains purchasing intention.

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Keyword:

Consumer Purchase Intention, S-O-R Model, Energy Efficient Vehicle

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Introduction

Governments, manufacturers and consumers are pushing the automotive sector toward lower emission forms of transportation in response to concerns about energy use and environmental effect. This shift involves the deployment of energy-efficient cars (EEVs) and includes battery electric vehicles (BEVS), plug-in hybrid electric vehicles (PHEVS), and conventional hybrid vehicles. But the availability of such vehicles does not necessarily mean that consumers will accept them. People still have to determine if an EEV meets their daily travel needs, financial situation and expectations about technology and personal values (Waris & Hameed, 2021). This consumer decision is essential because purchasing intention is a good indicator of whether a person is willing to explore an EEV. The EEV and electric vehicle adoption have been studied from numerous well-known perspectives, such as the Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB) and the Unified Theory of Acceptance and Use of Technology (UTAUT) in previous studies. The literature emerging from this approach is informative but also contains a large number of variables and findings. Economic concerns may be essential in one area, whereas infrastructure, perceived utility, environmental concern or social effect may receive greater emphasis in another situation (Shabbir, 2025). The current review addresses this fragmented picture by integrating the identified elements in the Stimulus-Organism-Response (S-O-R) paradigm. The framework allows for the consumers' interpretation of external conditions and vehicle attributes and their relation to purchase intention rather than each variable being an individual predictor. The review thus focuses on the interaction between the situations consumers face, the psychological processes

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by which they are evaluated, and the behavioural reaction documented in the empirical research.

The review is guided by three issues. First, the review summarises the important factors that are regularly investigated in the purchasing intention of EEVs. Second, it explains how these factors can be categorised under the Stimulus, Organism, and Response stages of the S-O-R paradigm. Third, it identifies areas where the research base is still inadequate, including the transition from intention to purchase, second-hand EEV marketplaces and variation among consumer situations.

Methodology

The study design is a systematic literature review. Following the rationale of the PRISMA approach, the review was designed around a transparent search, screening, eligibility and inclusion process. The aim was to uncover peer-reviewed empirical research that explored customer purchase intent or behavioural adoption within the framework of EEVs or EVs.

Search Strategy

The literature search was conducted in Scopus, Web of Science and Google Scholar. The search approach employed combinations of phrases relating to energy efficient automobiles, electric vehicles, customer behaviour, purchase intention and adoption.

Inclusion Criteria

Studies were included if they were peer-reviewed empirical publications that evaluated consumer behaviour related to EEVs or EVs and reported purchase intention or behavioural adoption as a primary outcome. The review should also describe the exclusion criteria for duplicate records, non-empirical papers, conference material when relevant, studies not connected to consumer adoption and articles not within the designated publication timeframe. These details will be submitted in accordance with the final screening record.

Evidence Extraction and Synthesis

Relevant information was systematically arranged in an evidence matrix. The information retrieved comprised the vehicle context, study setting, sample characteristics, variables studied, theoretical lens, and connections reported with purchase intention or adoption. The synthesis is interpretive rather than a statistical meta-analysis as the research evaluated may differ according to countries, samples, measuring tools, and theoretical methods. Recurring trends are examined throughout studies, and the contextual and research design distinctions are deemed essential for interpreting the findings.

PRISMA Screening Process

The final manuscript should include a PRISMA flow diagram showing the number of records identified, screened, excluded, appraised for full-text, and included.

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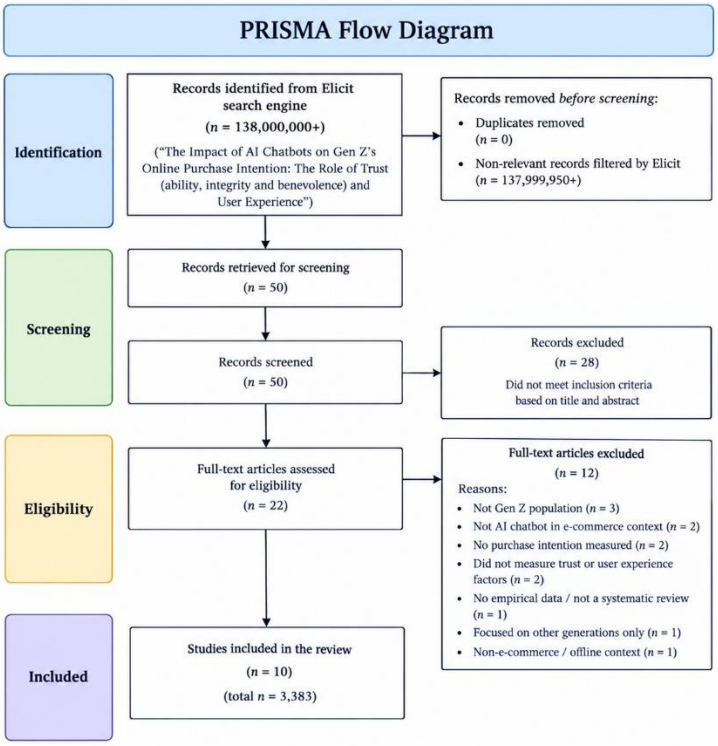


Figure 1: PRISMA Screening Process

Analytical Framework: Stimulus-Organism-Response (S-O-R)

The review is structured on the basis of the S-O-R framework. In this paper, Stimulus is defined as external situation or product relevant information facing the consumers. They include policy incentives, charging infrastructure, financial issues and car features. Organism refers to the internal cognitive and emotive processes by which consumers evaluate those conditions. Examples given in the examined literature were perceived usefulness, perceived ease of use, range anxiety, environmental concern and moral concerns. Response is related to the behavioural outcome studied in the studies, in particular purchase intention and similar forms of behavioural commitment.

The S-O-R perspective is useful for this study not only because it offers three categories. It helps to clarify why an external state may not signify the same thing to all consumers. For example, a network of charging stations is a Stimulus but how much that matters may depend on how consumers perceive the accessibility, convenience, reliability and risk of not being able to charge when they need to. Similarly, environmental concern and personal beliefs can lead to diverse interpretations of environmental information. The framework therefore offers a foundation for linking external conditions to internal appraisal and behavioural reaction.

Findings and Synthesis

The synthesis suggests that EEV purchase intention is driven by a combination of market conditions, vehicle attributes, psychological evaluations and social connotations. The factors discovered in the evidence matrix can be categorised into the three stages of the S-O-R framework.

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Stimulus Factors: Market, Policy, Infrastructure, and Vehicle Attributes

The financial issues continue to arise as a key element in the decision-making environment. The upfront cost of an EEV might be a significant hurdle, especially when considering it alongside conventional automobiles (Asadi et al., 2021). This first comparison can be modified by government incentives such as purchasing subsidies, tax relief and other financial measures. Economic information also incorporates longer-term operating factors that consumers may have such as fuel savings and total cost of ownership.

Another crucial external condition is the charging infrastructure. Consumers do not judge an EEV merely as a vehicle, but also on the convenience of the system around it for its use (Elangovan et al, 2024). This means that the position, availability and visibility of charging facilities might affect perceptions of practicality and security. In cases when access to charging is considered to be limited, the car may seem less appropriate for daily use.

Vehicle features provide another set of Stimulus variables. The evaluated evidence highlights the product aspects of driving range, charging time and safety features. These features are important because consumers can use them to determine if the vehicle will be able to meet their usual travel requirements and whether the apparent benefits are worth the expenses or changes that would result from a switch from a traditional car (Fahlevi et al, 2025).

Organism Factors: Cognitive and Affective Evaluation

The external conditions are understood via the consumers personal assessments. Perceived usefulness applies when buyers examine whether an EEV can accomplish the functions they expect a car to do (Fatoki, 2020). The perceived ease of use is related to the effort of charging, operating and managing vehicle-related devices. Such assessments help to convert product information into a judgement on everyday applicability.

Another response type is Range anxiety at the Organism stage. It is an anxiety over running out of battery and not knowing if there is a charging station available (Hamzah & Tanwir, 2021). This is tied to the significance of infrastructure and travel patterns. It should not be taken as a universal reaction that functions regardless of circumstances.

Another pathway through which customers interpret EEVs is environmental concern and moral values. For some consumers, the environmental benefits of an EEV are part of the personal value they get from the purchase (Harun et al., 2022). The literature examined demonstrates that such values may be complementary to practical considerations. Environmental motive doesn't necessarily dispel worries about price, charging, range or convenience.

Response Factors: Purchase Intention and Symbolic Meaning

The studies evaluated are mostly focused on the behavioural response of purchase intention. It reflects the consumer's willingness or declared intention to consider an EEV in a future purchasing decision. Since intention does not equal actual purchasing behaviour, the results should be viewed as indication of desire or readiness, not of actual adoption.

The review also reveals a social and symbolic dimension. Owning an EEV can convey meanings of environmental responsibility, technological understanding or a certain lifestyle

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(Hu et al., 2025). Such symbolic meanings may be crucial when customers utilise things to communicate aspects of their identity in their social surroundings. However, the strength and direction of these meanings might differ throughout cultures, markets and consumer groups.

Integrated S-O-R Model

Factors found in the review and their proposed location in the S-O-R framework are summarised in Table 1. The table should be read as an analytical synthesis, rather than evidence that every association has been investigated in every paper reviewed.

Table 1: Integrated S-O-R Model

S-O-R Phase	Factor Category	Specific Variables	Theoretical Alignment
Stimulus (S)	Market and policy inputs	Purchase subsidy and tax relief; public charging network density; fuel savings	Institutional Theory / Welfare Economics
Stimulus (S)	Product attributes	Battery driving range; charging time; safety features	Product Attribute Theory
Organism (O)	Utilitarian evaluation	Perceived usefulness (PU); perceived ease of use (PEU)	Technology Acceptance Model (TAM)
Organism (O)	Psychological evaluation	Range anxiety and uncertainty; environmental concern and moral norms	Value-Belief-Norm (VBN) Theory
Response (R)	Behavioural outcome	Purchase intention; continued brand loyalty	Theory of Planned Behavior (TPB)
Response (R)	Socio-symbolic outcome	Identity signalling; eco-prestige	Status Signalling Theory

The paradigm proposes that purchasing intention cannot be only conceptualised as the outcome of product attributes. Even a technically sound car could encounter adoption difficulties if the surrounding infrastructure is insufficient or users are unsure how to use it in daily life. Conversely, supportive external factors might be more relevant when the vehicle is also seen by consumers as being useful, manageable and in line with their environmental or social ideals. So, the S-O-R framework links the market environment to the interpretation of the environment by customers.

Discussion

A common thread underlying most of the research reviewed is the manner in which practical self-interest interacts with environmental or societal incentives. Practical factors include cost, convenience, range and charging availability, whereas surroundings and symbolic meaning

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relate more to personal values and sense of self. The two sets of considerations are not mutually exclusive either. "Consumers can understand the environmental benefits, but they still want an EEV that is affordable and convenient.

The review also explains why context is important. The same subsidy may have a different effect in markets with varying car pricing, household incomes, tax regimes, or charging networks. Likewise, range anxiety may be greater if access to charging is limited or where trip distances are greater. Social and symbolic implications may also shift with local norms and visibility of EEV ownership. Future synthesis should therefore describe local and market variances rather than generalising all findings as universally applicable.

The theoretical contribution of the review is that S-O-R is used to bridge these otherwise independent streams of research. The system places legislation, infrastructure and vehicle qualities in the Stimulus stage, psychological evaluations in the Organism stage, and purchase intention and symbolic responses in the Response stage. This architecture helps highlight the role of each element in the customer decision process. It also notes that the information reviewed includes direct linkages and relationships that could operate through consumer evaluation.

Practical and Implication

The research suggests that policymakers should think about incentives and charging infrastructure jointly. Financial support can help to overcome the upfront cost barrier, but consumers also have to be confident that the vehicle can be utilised without too much hassle. Therefore, policy planning should take into account not only financial measures but also the accessibility, geographical coverage and visibility of charging facilities.

For vehicle marketers, communication should include environmental benefits and practical questions. Details like driving range, charging methods, running costs and safety might aid consumers to evaluate day-to-day use. Complementary information could be valuable in the form of environmental and lifestyle messaging, especially for consumers that value ecological responsibility or technical identity.

Limitation And Future Research

Several limitations exist to the review. First, the extant literature is mostly concerned with purchase intention rather than observable purchasing conduct. Future longitudinal study could track consumers over time to see if stated intention results in an actual transaction and what factors influence the changes between the two.

Second, the study on second-hand EEV market is not as developed as the new vehicle research. As the installed base of EEVs grows, further research should address battery degradation, resale value, warranty coverage, and the perceived risk of purchasing a used car.

Thirdly, regional and cultural distinctions deserve closer consideration. Qualitative and comparative research could provide further insight into the role of family, peer observation, social identity, infrastructure and government policy on EEV decisions in different emerging and developed markets.

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Finally, future review articles should present the search method and screening process with enough clarity to allow for replication. A comparative synthesis across countries and research types would also help to separate findings that seem to be consistent from those that have a strong local context.

Conclusion

This systematic literature review gives an overview of the key elements linked with consumers' propensity to purchase energy-efficient automobiles and structures them using the S-O-R framework. Evidence suggests that the decision process is a combination of external variables, internal reflection and behavioural intention. The consumer's choice environment comprises financial incentives, charging infrastructure, and car features. Perceived utility, perceived ease of use, range anxiety, environmental concern, and moral ideals are conditions that aid in explaining how these criteria are viewed. The key responses identified in the studied research are purchase intention and symbolic meaning.

The review does not indicate that one element is a determinant of EEV adoption in all contexts. Instead, the research suggests a combination of practical and psychological concerns, whose relative relevance may vary among markets and consumer groups. Building a stronger evidence foundation will involve clearer reporting of review methods, more attention to contextual variables and more research that follows customers beyond stated intention to actual purchasing activity.

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Declaration on the Use of Artificial Intelligence (AI) "The author(s) declare that generative AI or AI-assisted technologies were used during the preparation of this manuscript. The following tool(s) were used: Quilbot and Elicit. The tool(s) were used for proofreading and articles search. All AI-assisted content was reviewed and verified by the author(s), who take full responsibility for the accuracy, originality, integrity, and final content of the manuscript."

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