

Study Of Green Purchase Behavior In The Context Of EV Adoption

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Abstract:

This review paper aims to identify and analyze the studies on green purchasing with specific focus on the major drivers and barriers of EV technology adoption. The study followed the PRISMA method, systematically reviewing peer-reviewed articles, reports, and studies on green purchase behavior and EV adoption. Data sources were screened, selected, and analyzed for relevance. The study confirms that environmental consciousness, perceived benefits, and inherent green behavior positively impact green purchasing decisions. Key factors affecting EV adoption include personal motives, incentives, infrastructure readiness, and environmental consciousness. The research proposes to increase EV penetration by increasing the consciousness of the external environment, financial incentives, adequate charging network, and choice preferences focusing on technological developments. This research's novelty stems from its simultaneous analysis of environmental, psychological, technological and demographic factors that affects green purchasing behavior in the context of adoption of EVs based on different behavioral theories.

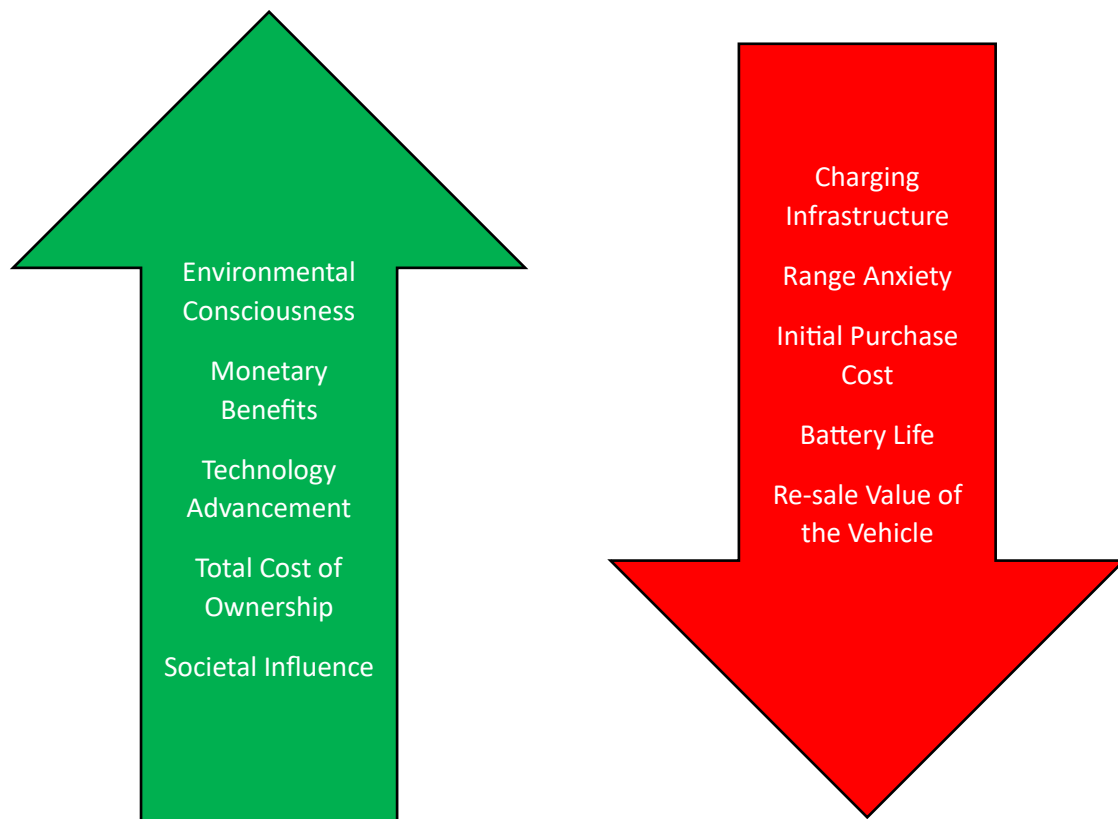
Keywords: *Green Purchase Behavior, EV Adoption, Consumer Behavior Theories and PRISMA.*

Introduction

Background and context of the research problem

Climate change and vehicular pollution are the problems which have engulfed the globe today, because of which green consumerism, sustainable consumption and green technology adoption are the terms that have become quite prevalent and have gained importance in recent years. It is interesting to notice how consumer behavior is shaping up in this direction. As a part of sustainable consumption, green mobility has emerged as a vital concept where electric vehicles (EVs) can contribute positively to the environment through the elimination of greenhouse gas emissions. Therefore, the increased use of EVs plays an important role in minimizing climate change and enhancing air quality index (AQI). Globally, various governments have enhanced their emissions standards and offered various incentives for a cleaner and greener environment. Hence, understanding the factors affecting the consumers' adoption of EVs or green mobility becomes increasingly important nowadays. The automobile industry is going through a paradigm shift due to innovations which are focused on green technology rather than conventional fossil fuels. The driving forces behind this are increased environmental consciousness, and favorable policies and schemes being introduced by the different governing bodies, but the success of this green technology heavily depends on customers' acceptance and willingness to adopt. Hence, it becomes important to study green purchasing behavior of today's consumers which will help to formulate strategies for promotion of green mobility.

Drivers & Barriers of Green Purchasing Behavior:



Concern for the environment is one of the most critical factors in influencing the purchase of EVs mainly by buyers who are sensitive to environmental issues Joshi et al., (2022) ; Salaria et al., (2023). Various Govt. subsidies, tax credits and exemptions and lower registration fees help in bridging the gap of initial cost of acquisition between an ICE vehicle and an EV Alanazi (2023) ; Krishnan & Koshy (2021) ; Sobiech-Grabka et al.,(2022). Consumers tend to purchase green products when they see real benefits in terms of better access to technology, thereby addressing concerns that many consumers could have at the back of their minds for embracing new green technology Liu et al., (2019 b) ; Aziz, (2017). In the context of EVs, consumers tend to focus on the total cost of ownership (TCO) vis-a-vis an ICE vehicle. Li and Wang (2023). Societal influence is one of the key factors that affect the perception of consumers towards a green product purchase, where people tend to emulate others and copy trends that prevail in society with respect to green consumerism. As the rate of users increases, EVs become more socially accepted, and people consider them to be more appealing Liu et al., (2019).

Charging infrastructure, range anxiety, high initial purchase cost, battery life and re-sale value of the vehicle are considered to be the biggest barriers of EV adoption as is evident from the studies of Hidrue et al., (2011). ; Liu et al (2019).; Brückmann et al (2021).; Electric Vehicles and the Charging Infrastructure: A New Mindset, (2021).

Objectives of the Review

The key objectives of conducting this review are as follows:

1. To identify Key Determinants of Purchase Intention:

Review and integrate the antecedents to the consumer behavioral intention of purchasing electric vehicles comprising of awareness of the environment, economic incentives, ease of use, and influence by other people.

2. To analyze the role of Moderating Variables:

Research on the moderation effect of variables like age, education, household income and household size in the relationship between purchase intention and buying behavior.

3. To synthesize insights from Diverse Contexts:

The study will also include a comparison of the results in other geographic, economic, and cultural environments to obtain an understanding of the global trends in the purchase of EVs.

4. To identify Research Gaps and Opportunities:

Point out gaps in the current literature such as specific areas that have been explored with inconsistency or inadequacy, or lack of adequate scrutiny, etc. and to provide directions for future research studies to help improve the knowledge of electric vehicles adoption thereby adding to the existing literature.

5. To provide recommendations to Stakeholders:

Provide recommendations regarding strategies to promote EV adoption for marketers, governments, and automobile manufacturers bearing in mind consumer attitudes and behaviors.

Research Questions

The research question plays a significant role in an SLR since it defines the steps for conducting the review. This procedural technique ensures qualitative questions which are clear and relevant, as these ensure easy definition of the objectives of the review, as well as the choice of studies. It educates the method for performing the search, comprehending and choosing data sources, and synthesizing the conclusions to answer relevant and logical questions. The current SLR will answer the following research questions:

RQ1: What are the Key Determinants of Purchase Intention?

RQ2: How do demographic and socioeconomic descriptors of consumers affect the uptake and consumers' decision processes regarding BEVs?

RQ3: Which are the product attributes that have the most impact on the consumers' buying behavior and choices of EVs?

Methodology

Literature Search Strategy

For the current study, a total of 1,08,610 studies were extracted. PRISMA framework was used to screen the required data for the current SLR. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow chart is a process of mapping out the information in the systematic review process in a flow chart. The chart usually has the record number, records included and not included and the reasons for the excluded records. The journals were listed in Google Scholar, Scopus, UGC, PubMed, and Norwegian Register.

The keywords used to search the journals are "PURCHASE INTENTION OF ELECTRIC VEHICLES" AND "BUYING BEHAVIOR" OR "SUSTAINABILITY" OR "CONSUMER STUDIES" AND "THE ENVIRONMENT OR GREEN CONSUMER BEHAVIOUR".

The years of publication considered were 2022, 2023, and 2024. The field of research was Marketing and publication type was Article. Books, Monographs, and Chapters were not included. Articles in English language only was considered and rest all other languages were discarded.

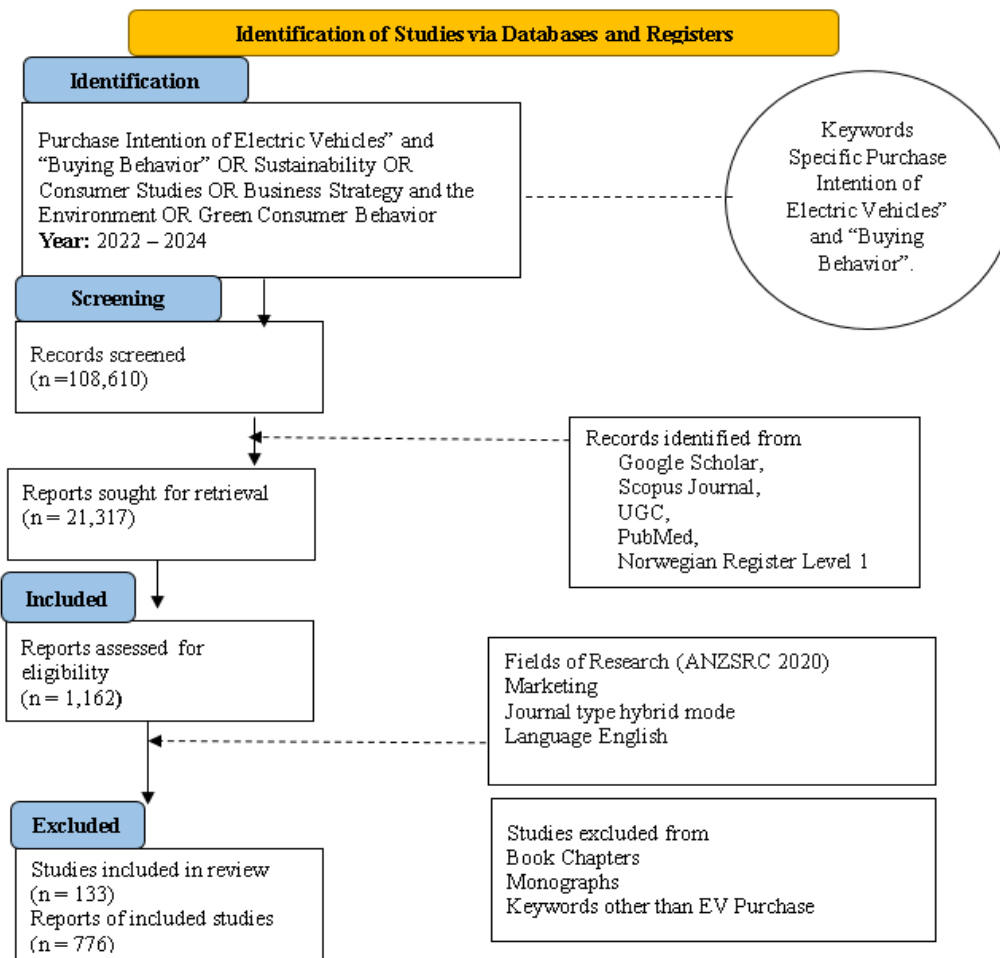


Fig 1. PRISMA Flow Diagram of Literature Search

The research papers provided above encompass a broad variety of stimulus that can affect consumer behavior and usage of electric or green vehicles. Some of them focus on the psychological and behavioral factors and the external environment that mediates the relationship between perceived benefits, environmental consciousness and purchasing behavior. Several works employ TPB, UTAUT2, or TAM to conceptualize consumer attitude towards EVs' adoption intent.

Many works focus on the variations of factors at regional and contextual level from several countries like India, China, Indonesia and many other emerging economies. Some of the other influencing factors are government incentives, perceived values, perceived risks, consumer's lifestyle, technological changes, etc. There are also studies beginning with analysis of demographic factors; how gender as well as generation differences can impact the use of green products.

Some research focuses on the aspects of green consumption and green buying behavior that led to the adoption of eco-friendly products, others on the issue of attitude-behavior gap and the challenges therein. Cross country analysis and other segmentation studies enhance understanding of global trends with regards to consumption of electric vehicles.

Number of studies included

Out of screened 776 studies, those related to green purchase intension of products like food, groceries, apparels, cosmetics, etc., buying behavior of 2-Wheelers and Sports Cars were removed from the list of studies: thereby resulting in a final number of 133 studies.

Geographical and Temporal distribution of studies

The studies referred to in this article demonstrate a good geographical spread, encompassing developed and developing countries with a deep focus on emerging economies. Given below is a breakdown of the geographical and temporal distribution:

Geographical Distribution:

China: Many of these papers examine the purchasing attitudes and behaviors of Chinese consumers, Chinese government supports, promotions, and advertising, as well as advancements in the Chinese EV industry.

India: In India, some of the featured topics are sustainable mobility, effects of pro-environmental attitude, and behavior, and factors that determine electric vehicle uptake.

Indonesia, Malaysia, Thailand and Korea: In these Southeast Asian countries examining consumers' buying decisions, and intentions as well as adoption barriers are included. Focus on EV adoption resistance, with reference to cross-country surveys has been included too.

Hong Kong: Purchase intentions of EVs are analyzed in a high population density Asian setting, benchmarked against Nordic countries.

Nordic Countries: These countries have the highest adoption rate and therefore the biggest drivers related to purchase intentions of EVs have been examined.

Russia: The picture of EVs in the context of the modern sustainable economic environment has been investigated.

Brazil: Research topics focus on behavioral intention of owning an electric car and impact of awareness and knowledge.

USA: Literature reviews focus on the EV resistance, with reference to cross-country surveys, including the millennials' perception.

Temporal Distribution:

Recent Studies (2020–2024):

Most of the research work have been conducted after 2020 due to global convergence towards sustainable development, desire for low-carbon footprints, and green transportation. Some works are devoted to the investigation of consumer behavior in the post COVID period when transport changes because of the pandemic were observed. As in any other research, the increasing interest in government incentives for electric vehicle adoption and policy analysis is quite evident in more recent publications.

Earlier Studies (Pre-2020):

Starting from the prior research on the initial phases of the adoption of electric cars and theoretical models such as TPB, UTAUT2, and TAM present the base research for this study on consumer attitudes toward green and new energy vehicles. Earlier geographical distribution was oriented towards Europe and the Americas but in the recent years it has shifted towards China, India and the Middle East.

Publication Year Distribution

This provides an outline of the number of studies published each year, as shown in the bar graph below.

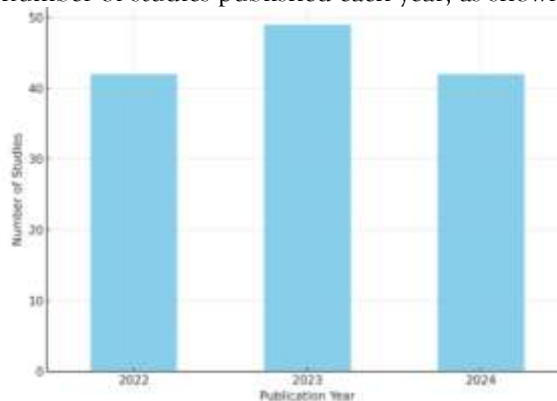


Fig 2. Year Wise Publication

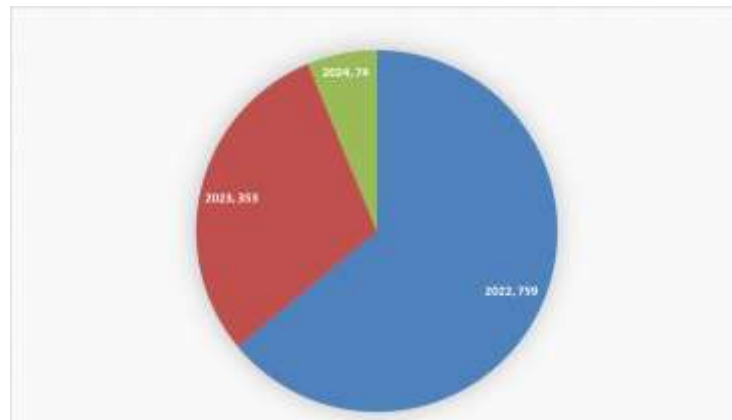


Fig 3. Year Wise Citation Score

Key Theories Used

Major theories used in these studies are:

1. Behavioral and Acceptance Theories all propose that an individual will only accept an innovation if the perceived benefits it offers score higher than the perceived risks thereby resulting in an overall gain for him or her.

Theory of Planned Behavior (TPB): This theory states that people's behavior is determined by the attitudes that they hold, the perceived requirements of other people and their perceived ability to perform a behavior. It assists in the prediction of intentions and resultant behaviors across different milieux – consumer behaviors inclusive.

Technology Acceptance Model (TAM): This model identifies two primary factors that lead to the adoption of a new technology; perceived ease of use and perceived usefulness.

Extended Technology Acceptance Model (TAM): An extension of TAM including other factors like perceived behavioral control, perceived user experience and perceived subjective norms.

Unified Theory of Acceptance and Use of Technology (UTAUT): UTAUT combines various models to understand technology acceptance which includes performance expectancy, effort expectancy, social influence and facilitating condition.

Unified Theory of Acceptance and Use of Technology-2 (UTAUT2): An extension of UTAUT adding hedonic motivation, price value, and habit as determinants of user acceptance.

Behavioral Reasoning Theory (BRT): It looks at the explanation of behavior through the analysis of beliefs, attitudes and intentions with specific reference to environmental behaviors.

2. Innovation Adoption and Innovation Consumption Theories

Innovation Diffusion Theory (IDT): This theory concentrates on the process of green technology adoption in a population particularly by focusing on factors such as perceived characteristics of green product, media used for communicating the message, and community behavior.

Innovation Resistance Theory (IRT): This theory discusses some of the issues that may lead to resistance in the implementation of innovation with reference to traditional concepts of functions and psychological motives of buyers.

Consumption Values Theory (CVT): It implies that consumers decide based on numerous values such as functional, social, and emotional.

Value-Belief-Norm (VBN) Theory: It links values and attitude to behavioral intentions, as well as extends the theory of planned behavior by adding the concept of personal norms.

3. Psychological and Social Theories

Cognitive Dissonance Theory: This presents the literature on cognitive and affective conflicts that arise when people simultaneously possess two opposing beliefs or perceive a product as being incompatible with their personal values.

Self-Image Congruence Theory: It looks at how consumers think about their own selves as it relates to their behavior in consumption decisions especially on those products which are recognized to be a part of the self.

Social Influence and Interpersonal Influence: This examines the forces of social influence and conformity in consumer-generated communication and the role of interaction with peers on the acceptance of innovations.

4. Value and Perception Theories

Perceived Value Theory: This theory concerns itself with how consumers assess the value they shall derive from a adoption of a new product or service.

Hedonic and Utilitarian Value Theory: This talks about the pursuit of happiness while consuming a given product and the functionality of the product when being consumed respectively.

5. Economic and Choice Models

Economic Incentive Models: How do self-interest and banking priorities shape consumer action and technology preferences?

Discrete Choice Models: This is applied to model the consumers' choice when it comes to purchasing certain products with some specific characteristics.

6. Other Relevant Theories

Push-Pull-Mooring Framework: It's a framework that looks at the pull factors (positive factors), push factors (negative factors), and mooring forces that govern people's decisions to migrate or bring about a change in behavior.

Stimulus-Organism-Response (SOR) Theory: One of the psychological theories that describe the process of interaction between the external and internal environment and the resulting response, it is widely used in marketing and consumer behavior studies.

Social Judgment Theory: This talks about the ways people think and what they think and how they are related to the ideas and beliefs of other people.

All the above theories combined can offer a rich theoretical foundation for understanding consumer behavior especially in the case of technology acceptance, innovation diffusion, environmental attitude and practices related to the adoption of electric vehicles. Every theory provides information on influences that may encourage or may hinder the consumer decision making and in turn affect the entire buying behavior.

Major Tools used in these Studies

Structural Equation Modeling (SEM):

A statistical method of considerable generality for studying structural connections, facilitating quantitative evaluations of complicated variable linkages, as well as hypothesis validation.

Confirmatory Factor Analysis (CFA):

A set of procedures for analyzing the data aimed at confirming or rejecting the hypothesis on the factor structure of the set of observed variables in accordance with a priori selected model.

Path Analysis:

A method of regression analysis that assesses direct and indirect connections between variables of interest and is illustrated by a pathway model.

Artificial Neural Networks (ANN):

A mathematical model based on the biological brain neurons used in the prediction of outcomes and identification of patterns.

Multigroup Analysis:

A statistical method that looks at the difference between the observed correlations of the different groups when using SEM.

Descriptive and Inferential Statistics:

While descriptive statistics just present and explain the features of a dataset, inferential statistics forecast or estimate the characteristics of a population from the sample.

Regression Analysis:

A method of measuring the impact of one or many predictors or independent variables on an outcome or a dependent variable.

Randomized Control Trials (RCTs):

A research design in which participants are divided into two groups; those who will be exposed to the intervention and the rest whose results will serve as comparison.

Findings organized by Themes or Research Questions**RQ1: What are the Key Determinants of Purchase Intention?**

Title	Abstract	Year	Authors
Investigating the role of green behavior and perceived benefits in shaping green car buying behavior with environmental awareness as a moderator	The findings indicate that green behavior and perceived advantages are significantly and positively related to green purchasing behavior. Environmental awareness exerts a moderating effect on the relationship between green behavior and buying decisions but does not influence the relationship between perceived benefits and buying decisions.	2024	wu, Jie; Ahmad, Sayed Fayaz; Jaweria; Ali, Yasser A.; Al-Razgan, Muna; Awwad, Emad Mahrous; Ayassrah, Ahmad Y.A. Bani Ahmad
Electric vehicles' choice behavior: An emerging market scenario	The results provide evidence that consumer sustainability consciousness (CSC) influences both enablers (such as personal and social motives, incentive policy) and barriers (including usage, value, risk barriers) to EV adoption. In addition, the two factors of product involvement and perceived marketplace influence serve as partial mediating variables between these factors and choice behavior.	2024	Kautish, Pradeep; Lavuri, Rambabu; Roubaud, David; Grebinevych, Oksana
Driving change: Understanding consumers' reasons influencing electric vehicle adoption from the lens of behavioral reasoning theory	Using behavioral reasoning theory (BRT) the findings discovered that motives for embracing EV are environmental concern, perceived technology, and maintenance of knowledge and reasons for not adopting are doubt, pricing, and instrumental utility. Environmental beliefs and values influence the adoption and customer's intentions for adoption of electric vehicle.	2024	Uddin, S.M. Fatah; Bin Sabir, Lamay; Kirmani, Mohd Danish; Kautish, Pradeep; Roubaud, David; Grebinevych, Oksana
Examining purchase behavior of electric vehicles as an effort to reduce air pollution: TPB	Theory of Planned Behavior (TPB) was used to study the perception of ease of avoiding pollution influences the lack of desire to protect oneself, and the protect intention (PI) influences purchasing behavior (PB). Subjective norms (SN) and attitudes towards electric vehicle purchasing behavior (ATB) are important for purchasing an electric vehicle. Perceived behavioral control is proven to be a solution to preventing air pollution.	2023	Vania, Amelindha; Muhammad, Ardiansyah
Sustainable mobility perspectives: exploring the impact of UTAUT2 model on fostering	It's noted that performance expectancy, price value and hedonic motivation are the key determinant factors that shape purchase intention as much as it shapes the actual buying behavior. The other five factors such as Effort Expectancy,	2024	Shetty, Amrutha; Rizwana, M.

electric vehicle adoption in India	Social Influence, habit value and facilitating conditions were not significant. Moreover, Pro-Environmental Approach and Government Support both influenced adoption intention and behavior thus contributing to new knowledge in the study. According to our study, the stakeholders should place priority on performance innovation, cost leadership, infrastructure development, and sustainability consciousness.		
Extending TAM to study electric vehicle purchase intentions in Egypt	This analysis has found that perceived ease of use, price sensitivity, and perceived barriers are influential factors affecting the purchase of EVs and consumer attitude towards EVs act as a moderator between perceived ease of use, price sensitivity, and perceived barriers. It does not moderate the effect of perceived usefulness on knowledge of EVs, environmental concern, green trust and purchase intention. Perceived norms have a highly significant effect on the intentions of consumers to purchase.	2023	El-Desouki, S.H., Abdelkader, M., Barakat, M., & Ali, A.
Electric vehicles purchase intention: The role of mediators using an extended TPB Model	The results show that environmental knowledge has a positive relationship with the intention to purchase EVs; this relationship was fully mediated by a green purchase attitude. Also, reinforcing the reasoning of the model, price perception and charging facility availability have no direct impact on purchase intention, as perceived behavioral control completely mediates the relationship. It was however established that the subjective norm has little mediating influence on the relationship between government support and EV purchase intention.	2024	Boo, Sze Yee; Tan, Consilz
Consumer purchase intention of new energy vehicles with an extended technology acceptance model: The role of attitudinal ambivalence	This emphasizes the role of the traditional culture to purchase intentions in terms of attitudinal ambivalence. Thereby, an extended TAM is suggested together with attitudinal ambivalence, and this paper aims at presenting it. Two sub-studies were carried out with a view of validating the model about subjective and data derived objective ambivalence. The study also shows that perceived usefulness, perceived ease of use, and perceived risk be exert influence on purchase intentions and complete mediate by attitudinal ambivalence. Interestingly, perceived risk bear a close correlation with ambivalence while perceived ease of use was the most predicated variable affecting purchase intention.	2023	Zhang, Lei; Tong, Hangyan; Liang, Yuqing; Qin, Quande
Design and application of experience management tools from	The research suggests that the Experience Management tools can enhance customer satisfaction and loyalty by modifying perceived	20	Xu, Yuanyuan; Shan, Xinyang; Guo,

the perspective of customer perceived value: A study on the Electric Vehicle Market	value factors including the price, quality and brand image. Favorable customer experience may also enhance sustainable behaviors.	2 4	Mingcheng; Gao, Weiting; Lin, Yin-Shan
Economics of Electric Vehicle Adoption: An integrated framework for investigating the antecedents of perceived value and purchase intent	The research findings indicate that environment responsibility and policy incentives have a positive influence on perceived value of EVs and in addition entire environment responsibility; policy incentive as well as perceived value were found to have a positive influence on the intentions of purchasing EVs.	2 0 2 2	Loudiyi, Hatim; Chetioui, Youssef; Lebdaoui, Hind
Consumer intention to buy Electric Cars: Integrating uncertainty in the Theory of Planned Behavior	In this study, TPB variables namely attitude subjective norm, and perceived behavioral control play a role in determining the intention to purchase BEVs. Uncertainty was found to exert a negative direct impact on this intention while having a strong significant mediating indirect effect through perceived behavioral control.	2 0 2 3	Riverso, Roberta; Altamura, Carmela; La Barbera, Francesco
Extending the TPB with government support and perceived risk to test the adoption of light electric vehicles in Tainan	This study mainly refers to the attitude of the youths of Tainan towards the adoption of light electric vehicles (LEVs). It builds on the theory of the planned behavior by adding government support (GS) and the perceived risks (PR); Study tests behavioral control (BC) as a mediator and demographics as moderators. The analysis supports the mediating role of BC, while the impact of subjective norm was not empirically proven. From the survey results, young adults perceive GS as a deciding factor towards the adoption of LEVs.	2 0 2 4	Mohamed, Tamer Z. Fouad
Examining Indian consumer pro-environment purchase intention of electric vehicles: Perspective of SOR	This study is based on the SOR theory, key findings indicate that pro-environment responsibility has a direct positive impact on pro-environment value and attitude and that pro-environment value has a positive impact on pro-environment attitude. While pro-environment value and attitude share a significant relationship with the level of the intention to buy electric vehicles, the value has a greater influence compared to attitude. Furthermore, this research contributes to an understanding of how the measure of pro-environment attitude moderates the impact of pro-environment value on purchase intention. The paper contributes to the adoption literature by discussing the value-attitude-behavior relationships and provides practical implications for advancing the research on pro-environment behaviors among practitioners.	2 0 2 3	Upadhyay, Nitin; Kamble, Aakash
Modeling hybrid cars adoption using an	The results of this study suggest that sensitivity to price is unfavorable in relationship between	2 0	Karuppiah, Vinayagan; Ramayah, T.

extended version of the TPB	perceived behavior control and the actual behavior to buy and own a hybrid car.	2 2	
Electric vehicle adoption intention in the Himalayan region using UTAUT2 – NAM model	Key findings indicate that factors such as performance expectancy, facilitating conditions, hedonic motivation, price value, and personal norms positively influence consumers' intentions to adopt EVs. Conversely, effort expectancy, social influence, and habit did not significantly impact adoption intentions. Additionally, a multi-group SEM analysis revealed significant age-related differences in social influence and hedonic motivations regarding adoption intentions of EVs	2 0 2 3	Singh, Harbansh; Singh, Vedant; Singh, Tej; Higuera-Castillo, Elena
Predicting electric vehicles adoption: A synthesis of perceived risk, benefit and the NAM	Research reveals that the perceived enjoyment, perceived usefulness, perceived trustworthiness and perceived knowledge create a significant positive impact on the intention to use EVs. Relative to control variables, perceived risk and perceived cost were not found to have significant relationship with adoption intentions. Further, the findings showed that both the perceived consequences and responsibility led to improve in personal norms that predict the intention to take up EVs.	2 0 2 4	Choo, Seen Yee; Vafaei-Zadeh, Ali; Hanifah, Haniruzila; Thurasamy, Ramayah
The impact of facilitating conditions on electric vehicle adoption intention in China: An integrated unified theory of acceptance and use of technology model	Moderating Effects: It reveals the moderating impact of price value, the research of which is scarce and presents for the first time the moderating impact of facilitating conditions between perceived risk and the intention of adopting EVs. Influencing Factors: The result shows that the factors, such as performance expectations, social influence, and price value, have a significant positive influence on EV adoption intention, unlike perceived risk. In the same respect, age and gender, had a significant moderating effect on adoption intention.	2 0 2 3	Wang, Dingni; Ozden, Mucahit; Tsang, Yung Po
Antecedents of behavioral intentions for purchasing Hybrid Cars using Sustainability Theory of Planned Behavior integrated with UTAUT2	The results reveal that perceived economic factors and perceived authority support can impact behavioral intention to purchase hybrid cars in addition to perceived environmental concerns. Out of the theory of planned behavior, all the parameters were significant however in technological domain only performance expectancy, hedonic motivation and price value were found to be significant. Of all the variables, habit, effort expectancy and facilitating conditions were not found to be substantial here.	2 0 2 3	Ong, Ardivin Kester S.; German, Josephine D.; Redi, Anak Agung Ngurah Perwira; Cordova, Lara Nicole Z.; Longanilla, Franscine Althea B.; Caprecho, Neallo L.; Javier, Rocksel Andry V.
Does environmental awareness play a mediating role in	This study uses the theory of consumption values and technology acceptance model, on the effects of, government interference, and environmental	2 0	Phoon, Li Jun; Hong, Kay Tze; Tan, Houng

electric vehicle purchase intention? A perspective from the theory of consumption values and technology acceptance model	green awareness, on attitude and purchase intention respectively. Survey data was collected using self-completion of questionnaires. Drawing from the analyses of inputs obtained from the study, it holds that environmental awareness fully mediates the relation between positive attitudes toward EVs and the purchase intention. Moreover, consumption values and perceived usefulness have positive effects on the attitudes about the technology, while the results of the government intervention are insignificant.	2 3	Chien; Kumarusamy, Risidaxshinni
Do unprecedented Gasoline Prices affect the Consumer Switching to New Energy Vehicles? An Integrated Social Cognitive Theory Model	Consumer Intentions: More than half of the surveyed consumers exhibited high levels of intention to switch to NEVs. Influencing Factors: There are number of factors that were found to have direct impact on switching intentions: Attitude: Findings also reveal that perceptive attitudes towards NEVs especially influenced intentions. Self-Efficacy: The consumers' confidence about their capabilities to own NEVs marked the most essential role. Environmental Consciousness: Concern for environmental problems made consumers to think in terms of NEVs. Infrastructure Barriers: Switching intentions were influenced negatively by issues to do with charging infrastructures.	2 0 2 3	Chen, Long; Liu, Xiaokun; Jing, Peng

Table 1: Summary of Findings for RQ1

RQ2: How do demographic and socioeconomic descriptors of consumers affect the uptake and consumers' decision processes regarding BEVs?

Title	Abstract	Year	Authors
Consumers' preferences for electric vehicles: The role of status and reputation	This study highlighted those demographic factors like age, gender: male, having kids, education, living in urban areas, and previous experience positively influence EV adoption. Better infrastructure and information availability help to promote EVs.	2023	Kathrin Monika Buhmann, Josep Rialp Criado
Socio-economic and demographic factors affecting adoption of EVs in India	The results depict notable positive correlations of EV adoption with income and age.	2024	Swaraj Patil
What do we really know about the acceptance of battery electric vehicles? – Turns out, not much	It states that income, education, gender, and age correlate with BEV acceptance. Women appear to be more skeptical regarding how reliable BEV technology can be.	2023	Michael Wicki, Gracia Brückmann, Franziska Quoss, Thomas Bernauer

The role of socio-demographic characteristics in shaping willingness to accept electric cars	The findings revealed a significant effect of gender, education and annual household income, and an insignificant effect of age, occupation, and the number of cars in the household on people's willingness to accept ECs.	2022	Saurabh Kumar & Syeedun Nisa
Ownership of battery electric vehicles is uneven in Norwegian households	Larger household size, having children, and working away from the residence are positively linked, while higher income are negatively linked to owning of BEVs.	2024	Davood Qorbani, Hubert P. L. M. Korzilius & Stein-Erik Fleten
Factors influencing consumer decision to purchase a car	Demographic variables of consumers (gender, education, occupation and age) have shown a significant impact in the purchase decision making process.	2023	Varad Nerurkar, Prashant Barge, Vimal Bhatt, Shailesh Rastogi, Bhakti Agarwal

Table 2: Summary of Findings for RQ2

RQ3: Which are the product attributes that have the most impact on the consumers' buying behavior and choices of EVs?

Title	Abstract	Year	Authors
A study on perception of Consumers on Electric Vehicles in Bengaluru	Key factors such as reliability, smooth driving, fast charging and environmental friendliness are some of the criteria that consumers consider when choosing an electric vehicle.	2023	Dr. Richa Tiwari, Vivek Gupta, Pranav Ganna, Kunal Jain, Jenish Bohra, Sumit Kumar, Ajay Prakash Gupta
Technology advancement is driving electric vehicle adoption	Improved operating cost, acceleration, and fast-charging capabilities of today's BEVs mostly or entirely compensate for their perceived disadvantages	2023	Connor R. Forsythe , Kenneth T. Gillingham, Jeremy J. Michalek , & Kate S. Whitefoot
Buying behavior of customers with reference to Electric Vehicles in India	Charging infrastructure and price are major factors influencing purchase intention among Indian Consumers.	2022	Aashiv Shah
Impacts of charging behavior on BEV charging infrastructure needs and energy use	The overall daytime charging demand for 100% BEV adoption is high regardless of charging strategies.	2023	Yuan Liao , Çağlar Tozluoğlu, Frances Sprei , Sonia Yeh , Swapnil Dhamal
Rural consumer buying behavior towards Electric Vehicles: A	Adoption of EV is hindered by inadequate charging infrastructure, high upfront costs, and limited product knowledge.	2023	Sanjay Kumar Gupta, Saurabh Kumar

Gorakhpur-Based Study			
Factors and incentives that affect Electric Vehicle adoption in Greece	Financial incentives, environmental awareness, charging time, and charging infrastructure are strategies to promote EV adoption.	2023	Georgia Mpoi, Christina Milioti, Lambros Mitropoulos
Social acceptance and preference of EV Users – A Review	The main obstacles who limit the social acceptance of EV adoption are driving obstacles, charging obstacles and willingness-to-pay.	2023	Vigna K Ramachandaramurthy, Aidha Muhammad Ajmal, Padmanathan Kasinathan, Kang Miao Tan, Jia Ying Yong, R. Vinoth

Table 3: Summary of Findings for RQ3**Trends in Literature****Growing Environmental Awareness and Demand for Sustainability:**

The literature points to the fact that awareness of environmental issues such as climate change and pollution is rising. Customers and administrations are acting in response to climate change, and EVs are viewed as an effective answer. This trend clearly follows the overall post-industrial society tendency towards green consumption especially in the fast-growing urbanizing and industrializing societies.

Influence of Consumer Behavior and Psychological Factors:

Some of the literature target psychological motives influencing consumers' decision in relation to EVs. Personal attitudes like egoistic and altruistic appeals along with social pressure and environmental consequences are analyzed to explain how they influence the adoption of green technologies' intention. They also aver that perceived utility, cost, and convenience play some part in this trend as well.

Technological Innovation and Infrastructure Development:

There are literature where emphasis is made on the technological solutions which can support the EVs introduction, such as battery development, charging and power supply networks, and services like battery swapping system. These advancements are necessities in dispelling concerns like range issues and high costs, which are the main thrust for reversing the untoward trend of EV use.

Government Policies promoting New Energy Vehicles (NEVs):

Much is written on the interventions that have been made by the governments particularly in countries such as China and India. Subsidies, tax credits and incentives along with investments in infrastructures for EVs are viewed as critical in driving the takeoff of green transportation. The level of correspondence between governmental policies and the measures serving the cause of sustainability enhanced over the recent years due to rising global concern towards minimizing carbon emissions.

Media Influence on Consumer Perceptions:

Another innovative trend is the question of media and information, as the element that influence consumer perception of EVs. Scholars discussed how media, advertisement and social rhetoric can build or erode consumer attention and action especially toward the use of EVs and how sustainable these vehicles are.

Gaps in Literature**Limited focus on long-term Adoption Behavior:**

Most prior empirical research have focused on attitudinal data of consumers at the first step in the process of purchasing EVs, but few have investigated adoption behavior in the long term. Despite the focus on consumer behavior post purchase decision, consumer attitude change and long-term usage determinants are largely uncharted.

Underrepresentation of Developing Countries:

Many of the works under consideration emphasize developed countries (e.g., North America, Western Europe, and the People's Republic of China). Literature review reveals that the focused EV markets have limited

comprehensive studies on the adoption of developing nations beyond the known growth markets. These regions can also experience inherent disadvantages like insufficient infrastructure, the issue of affordability, as well as smaller awareness of the impact on the environment, which are not covered well.

Limited Exploration of the Social Equity Impact:

Literature mostly do not consider the social and economic ramifications of widespread EV ownership, especially for disadvantaged populace. More work is needed to understand how greater equity and access to EVs and green technologies, especially to rural or Tier II & III locations can enhance adoption.

Lack of Cross-Cultural Comparisons:

Most work explore single-country scenarios or countries in a region, thereby narrowing down the understanding of the impact of cultural, economic and social factors on EVs. However, there is a gap in comparative research that would explore the differences of these factors across different markets, which may be helpful in establishing more general trends of the global EV uptake.

Summary of Key Findings

The study indicates and confirms that pro-environmental behavior and perceived advantages do have a positive impact on green purchasing behavior. Environmental awareness is positively related to green behavior and buying decisions but not related to perceived benefits and buying decisions. Consumer sustainability consciousness (CSC) has impact on enablers which comprise of personal motives, incentives and barriers, which include values and risks associated with adoption of EVs. Both product involvement and marketplace influence help as partial mediators of the relationship between these factors and consumer choice behavior. Behavioral reasoning theory (BRT) focus on the “reasons for” choosing EVs; these include environmental consciousness, and perceived ancillary advantages of the technology. Some of the hurdles to adoption put forward are doubts about this new technology, price factor and utility.

Environmental beliefs and our values play a significant role in encouraging the adoption of certain products. The variables at an individual level include perceived behavioral control (PBC), attitudes (ATT) and subjective norms (SN) which are key drivers of the decision to purchase an EV. Both performance expectancy and price value positively influence the purchase intentions, while hedonic motivation also has a positive effect, but effort expectancy and social influence are not that significant. As moderated by consumer attitude, perceived ease of use, price sensitivity, and barriers relate positively to affect the purchase of EVs. However, the study does not find an attitude to mediate the relationship between perceived usefulness and purchase intention. Environmental knowledge is positively related to purchase intention with green purchase attitude acting as moderator. Self-efficacy and attitude moderate the relationship between government support and EV purchase intention to a certain extent. Environmental value and attitude have a positive correlation with buying decision and between the two environmental values has relatively stronger correlation. Two-way communication is particularly important in moderating overall attitudes, perceived usefulness, perceived risks and the intended purchase behavior. The findings of this study show that both performance expectancy and hedonic motivation play a significant role in influencing purchase intentions. The study also reveals that government support and pro-environmental attitude significantly influence the use of EVs. Last but not the least, customer experience management (CEM) tools enhance satisfaction and loyalty by modifying price, quality, after sales experience and brand perception of a green product.

The consequence of post-purchase communication indicates that positive outcomes influence consumers’ pro-environmental disposition and willingness to use a green product. Demographic factors including age, gender, education, household size, and household income all influence the uptake of EVs; women for instance are less confident with the reliability of EVs. Consumers in urban areas and previously experienced consumers of plug-in vehicles are more likely to adopt EVs fast. Technological aspects such as performance as well as charging time and economic aspects such as, cost leadership has a direct influence on the intention to adopt EVs.

This paper offers a synthesis of recent research efforts aimed at identifying the push and pull drivers for the adoption of green technology with respect to the use of EVs; from environmental consciousness to perceived utility, consumer perception, demographic factors, and public policy initiatives. This work has revealed that infrastructure support and financial incentives are important antecedents to EV adoption, together with cultural and psychological factors.

Academic Implications:

Green Buying Behavior and Consumer Decision-Making:

The findings therefore provide further empirical support to theories such as the Theory of Planned Behavior (TPB) and the Behavioral Reasoning Theory (BRT) to green purchasing behavior. Future research can examine other moderating variables including cultural and regional differences on environmental consciousness in enhancing models of consumer behavior. The moderating role of environmental awareness between green behavior and buying intentions adds a new perspective to the impact of eco-sensitivity on consumer's decision making. Research could progress to the extent to which varying levels of environmental concern impact not only purchase intentions but also actual behavioral modification.

Consumer Sustainability Consciousness (CSC):

CSC has contributed to extending the understanding of both enablers and barriers regarding EV uptake and refined the theoretical discussion on sustainable consumption. These results imply personal norms, social motives together with product involvement as important mediators, thus paving the way for further comprehensive research on the function of individual consciousness for green consumption. The study also calls for the incorporation of these models, for instance the Technology Acceptance Model (TAM), with psychological variables including consumer trust, perceived risk and knowledge that may potentially give a clear insight into adoption of sustainable technology.

Extended Theoretical Models:

The inclusion of extended models including value-attitude-behavior increases the richness of the investigation of pro-environment behavior. That way, researchers can consider attitudinal ambivalence as one of the barriers to consumer decision making processes regarding green products such as EVs. This research also supports the integration of theoretical systems, including TPB, BRT, and SOR to explain phenomenon like EV adoption. Future work could examine the relationship between these frameworks, which would help enhance the theoretical development in the domain of environmental behavior and green technology acceptance.

Demographic and Societal Factors:

In this study, authors stress demographic variables (age, gender, education, and income) as the determinants of the intensity of EV implementation. Academicians can use this to further delve into demographic segmentation and, more particularly, describe how different demographic groups are likely to behave with the set of given policies and technologies. Current literature on cultural values and the acceptance of EVs is relatively scarce and this study presents new directions to future investigation about the role of cultural perceptions in the adoption of green innovations.

Managerial Implications:

Marketing Strategy and Consumer Segmentation:

Measures intended for robust market creation for green technologies should involve evaluation of consumer characteristics, including age, gender, income, and their prior experience in purchasing exhibits of green technologies. For instance, targeting awareness creation can focus on convincing women that EVs are reliable since they were identified to be more skeptical about the reliability of EVs. The research establishes that information factors such as environmental concern, perceived norms and perceived product involvement are critical determinants of consumers' intentions. To this end, managers can use the knowledge in this insight by crafting marketing messages which speak about the social gains of EV adoption by storytelling.

Policy and Government Intervention:

Evidence supports the importance of policy incentives in determining purchase behavior of EVs hence the need for more policy interventions. There is need for policy makers to intervene through subsidies and tax credits together with development of right infrastructure to support the uptake of EVs. This is why the government's involvement is particularly important in addressing perceived challenges that include high initial costs and limited charging network. Both government and industry partners should devise publicity campaigns such that

they educate the mass regarding the positive impacts of EVs in the long run. They could also enhance consumer confidence and negate perceived risks regarding adoption of new green technology.

Product Design and Innovation:

Some of the antecedents brought out in the study include performance expectancy, fast charging, and perceived ease of use that significantly determine purchase intentions. The existing gaps in consumer perceptions should be filled by an extended focus on product related aspects such as the overall battery life, charging time, and performance of EVs. Managers can also focus on developing customer-oriented innovations by using customer experience management (CEM) tools. By the improvement of the beneficial aspects of the product characteristics, reducing the operation cost and making a connection between brand image and environmental concern, consumer loyalty and adoption can be affected in a favorable manner.

Addressing Charging Infrastructure and Affordability:

One of the main challenges impeding the large-scale diffusion of EVs is related to charging capabilities. Government officials and business leaders must work together on public-private partnerships to support fast and widespread charging that will reduce the costs of EV ownership. Price sensitivity remains a major issue of serious consideration to any prospective EV buyer. This gives scope for manufacturing affordable EV models or developing flexible finance models that would enable the middle-income earners to afford EVs, thereby resulting in early mass adoption.

Consumer Education and Awareness:

This research suggests that consumer awareness is low, and it becomes crucial for OEMs to embark on a massive consumer sensitization agenda especially in relation to the environmental and financial impacts of EVs. When it comes to addressing perceived risks, important data regarding the financial advantages that go with the use of EVs, the effects that such cars have on the environment, as well as the available promotions and subsidies by the government, must be made readily available and comprehensible to reverse the situation. They should run awareness campaigns in the form of training sessions, extensive demonstrations of EVs and provide information which addresses consumers' anxieties such as range, charging infrastructure, issues related to battery safety and disposal and total cost of ownership.

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