

Consumer Perception Towards the Actual Buying Behavior of Electric Vehicles

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Abstract: The swift development of electric vehicles (EVs) has garnered attention worldwide because of clean technology breakthroughs, fuel price instability, and environmental concerns. However, consumer adoption rates varied greatly across different locations and demographic groups, even with increased availability and knowledge. In the context of electric automobiles, this study investigates the connection between consumer perception and actual purchasing behavior. It looks into the main elements that affect purchasing decisions, such as perceived performance, financial considerations, government incentives, infrastructural accessibility, and environmental conscience. The study employs a mixed-method approach, analyzing quantitative data gathered from surveys and interviews as well as qualitative insights. The results show that although EVs are largely seen favorably by consumers, a number of practical, financial, and psychological obstacles continue to prevent their adoption. In order to hasten the shift to sustainable transportation, the study highlights the significance of closing the perception-behavior gap through focused marketing, legislative assistance, and public education.

Keywords: Electric Vehicles (EVs), Consumer Perception, Buying Behavior, Purchase Decision, Sustainable Transportation, Environmental Awareness, Consumer Attitudes.

1. INTRODUCTION

The diffusion of electric vehicles can mitigate most environmental problems, including air pollution, oil dependency, greenhouse gas emissions and global warming. Therefore, most countries have taken action to provide policy incentives with the target of encouraging consumers to purchase electric vehicles (EVs) (Dinesh Samarasinghe et al., 2024). Electric motors propel the EVs and the rechargeable battery or other portable energy storage device maintains power supply. These vehicles are energy efficient, generating less greenhouse gas (GHG) emissions and reduced noise. (Khurana et al., 2019). Contemporary environmental concerns are thrusting the manufacturing and sales of Electric vehicles. Year 2018 have revolutionized the Indian manufacturer 's conception towards Electric Vehicle as best alternatives to the fuel cars (conventional diesel/petrol combustion engine)(Bhalla et al.,2018). Governments around the world are implementing policies to promote electric vehicles to reduce dependence on oil, decrease greenhouse gas emissions, and improve air quality (Jin & Slowik,(2017). Governments started using fiscal policies, such as road tax, to discourage the purchase and use of more polluting cars. Green tax is imposed while re-registering the vehicle after 15 years of use to make people discontinue the use of polluting vehicles and encourage them for fuel-efficient and less polluting vehicles (Tupe et al., 2020). EVs are categorized into three types: battery EVs (BEVs), plug-in hybrid EVs (PHEVs), and hybrid EVs (HEVs), depending on the powering system. BEVs are pure EVs or all-EVs in which an onboard electric battery pack solely stores energy and powers the electric drivetrain. HEVs combine an internal combustion engine (ICE) and an electric motor for better fuel efficiency, compared to similar-sized vehicles solely powered by ICE; however, all their energy is originally generated by liquid fuel. In comparison, PHEVs have a more robust onboard electric battery pack than HEVs, which can be recharged by the electrical supply through the ICE and regenerative braking(Hanssen & Jørgensen, 2023).

2. OBJECTIVES OF THE STUDY

- To Investigate how perceived monetary benefit impact the consumer's actual buying behaviour of EV Cars.
- To evaluate the influence of perceived environment on consumer's actual buying behaviour of EV Cars.
- To analyze the effect of perceived symbol on consumer's actual buying behaviour of EV Cars.
- To assess the influence of perceived risk and perceived range on consumer's actual buying behaviour of EV Cars.

3. LITERATURE REVIEW

Perceived Monetary Benefit

According to the study, consumers spend more money on perceived needs—which are impacted by social standing—than on real requirements. This behaviour is consistent across income levels, suggesting a substantial discrepancy between customers' actual objectives for purchases and their perceptions of the financial rewards (Kumar & Ramesha, 2024). The perceived financial gain and actual buyers are not particularly discussed in the report. It emphasizes present money management stress and anticipated future financial security while concentrating on perceived financial well-being, its causes, and its connection to general well-being (Netemeyer et al., 2017). The study emphasizes that perceived value from online reviews, trust, and risk perception positively increases buy intention, which in turn drives actual purchases among Shopee customers in Bekasi. However, it does not particularly address perceived monetary advantage (Sembiring & Nisa, 2024). The study discovered that the intention to buy functional foods was not significantly impacted by perceived benefits, particularly financial ones. Rather, the key elements impacting consumers' intentions in this situation were attitudes, subjective norms, and health consciousness (Bajat et al., 2023). The impact of perceived benefits—including financial ones—on purchase intentions among bank personal financial clients is examined in this paper. Based on differing degrees of perceived advantage and perceived risk, it categorizes client groups that influence real purchasing behaviour (Zhang, 2011).

H1: *Perceived monetary benefit has a significant positive effect on actual buyer behavior*

Perceived environment

Environmental concern and subjective standards are important factors that shape consumers' green buying behaviour in Bangladesh, and the study indicated that attitudes mediate the relationship between perceived environmental obligations and actual buying behaviour (Zheng et al., 2020). There is a negative correlation between perceived behavioural control and actual consumer behaviour with regard to eco-friendly products. On the other hand, behavioural intention has a beneficial impact on actual behaviour, suggesting that intention is a powerful predictor of green consumerism purchase decisions (Huda & Bushairi, 2018). The association between green purchasing intention and actual buyer behaviour is mediated by perceived environmental concern, according to the report. The way that green product qualities impact purchasing decisions and shape actual consumer behaviour depends on how concerned people are about the environment (Sharma & Joshi, 2017). Customers who hold strong normative views are more inclined to spend extra for environmentally friendly wines, demonstrating how perceived consumer effectiveness (PCE) affects real purchasing behaviour. On the other hand, over-reporting of ecologically friendly purchase intentions may result from social desirability bias (Barber et al., 2016).

H2: *Perceived environment has a significant positive effect on actual buyer behavior.*

Perceived symbol

The study emphasizes how perceived service quality mediates the association between brand symbols and Customer Citizenship Behaviour (CCB). Customers' policing behaviour increases with more brand symbolism, indicating a connection between perceived brand qualities and real consumer behaviour. (Dalal & Aljarah, 2021). According to the study, adolescents' intentions and behaviour regarding clothing purchases are influenced by clothing symbolism, namely the alignment between their true self-concept and their clothing image. Participants' actual purchasing behaviour was influenced by their preference for clothing that matched their desired self-concept. (Elkins, 2010). By influencing how people see a brand, perceived symbols have a big impact on real consumer behaviour. As examined in the paper's relationship between semiotics and brand perception, successful semiotic tactics communicate a company's values and messages, which in turn influence consumer decisions and promote brand loyalty. (Gandla & Vemali, 2023). The article shows that brand as symbol has a strong impact on perceived transaction value, perceived acquisition value, and customer loyalty, implying that consumers' brand symbolism perceptions have a direct influence on their purchasing behavior and loyalty, regardless of message-response involvement. (Lee et al., 2019). The research concluded that the meanings consumers attached to packaging design features guided their purchase decisions. Packaging symbolism, for

example, color and material, had a direct impact on buying behavior, testifying to the significance of perceived symbols in consumer decision-making. (Miller, 2019).

H3: *Perceived symbol has a significant positive effect on actual buyer behavior.*

Perceived Risk

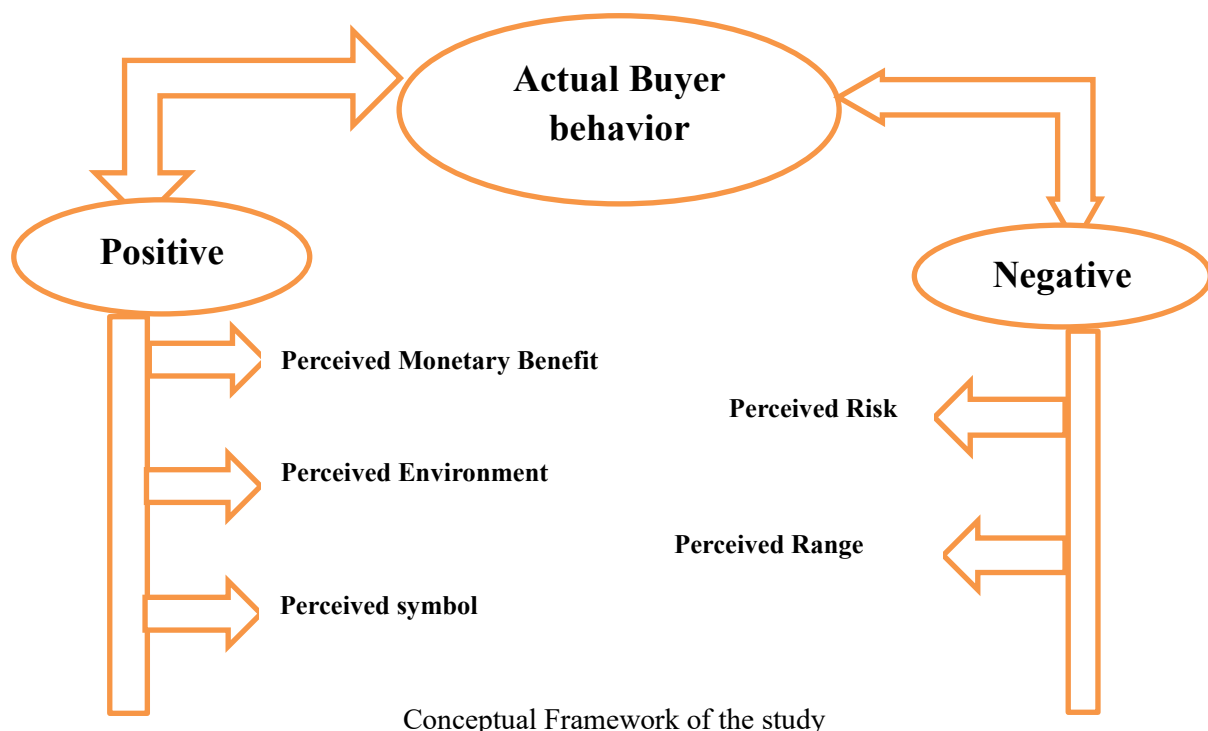
Perceived risk affects actual buying behavior to a large extent because it has the most significant influence on actual purchase. As perceived risk reduces, online purchase intention and trust improve, leading to online transactions being carried out by consumers, especially in the hospitality industry (Indiani et al., 2015). Perceived risk strongly influences real buyer behavior since those consumers who have personal, performance, and social risks are unlikely to buy online. Future reluctance to buy online is predicted by past reluctance to buy online, which underscores the need to manage perceived risks in e-commerce. (Gerber et al., 2014). The essay describes how organizational buyer behaviour is impacted by perceived risk, noting that as experience increases, so does the perception of risk, which in turn influences the types of risks that are perceived and the strategies employed to lower them when making judgements about purchases (Festervand, 2015). Higher perceived risk results in lower actual buyer behaviour, according to the meta-analysis, which also found a negative correlation between perceived risk and customer purchase behaviour. This effect differs depending on the country's level of development, purchase channel, and geographic location (Li et al., 2020). When it comes to online shopping, perceived risks—like monetary loss, poor product performance, and delivery problems—have a big impact on real customer behaviour. According to the Nepalgunj city survey, consumers' worries about security and trust also influence their purchase choices (Pokhrel, 2023).

H4: *Perceived risk has a significant negative effect on actual buyer behavior.*

Perceived Range

According to the study, intention to buy is strongly influenced by perceived behavioural control, which in turn has a beneficial impact on actual buyer behaviour. This link emphasizes how crucial consumer perceptions are in influencing Y and Z generations' purchasing decisions (Amanda & Marsasi, 2024). According to the study, consumers' attitudes towards organic food are greatly influenced by perceived value, food safety concerns, and awareness of organic food; these factors, in turn, have a positive impact on their purchase intention and actual purchasing behaviour, whereas perceived barriers and environmental concerns have no such effect (Anand et al., 2024). According to the study, consumers spend more money on perceived needs—which are impacted by social standing—than on real requirements. The intricate interaction of social and psychological elements is reflected in this behaviour, which frequently results in spending habits that put recognition and identity above need (Kumar & Ramesha, 2024).

H5: *Perceived range has a significant negative effect on actual buyer behavior.*



Conceptual Framework of the study

4. RESEARCH METHODOLOGY

1. Type of Study

In order to learn what people think about electric vehicles (EVs) and how these opinions affect their decision to purchase one, this study employs a survey method. Surveys are useful to gather data from a large number of respondents in order to discover trends.

2. Goals of the Study

- To ascertain the variables that impact people's perceptions of electric vehicles.
- To see how these views impact their actual EV purchasing decisions;
- To comprehend how different demographics (such as age or income levels) view and purchase EV's

3. How the Study Was Done

To gather the information, we employed a questionnaire, which is a list of questions. Due to its simplicity and success, this method of collecting information is widely used.

4. Collecting Information

- Primary Data: distributed the questionnaire online, we obtained fresh data straight from people in general.
- Secondary Data: We analyzed previously published data on electric vehicles from studies, reports, and articles

5. Choosing Participants

- Who: Individuals who have a car now or intend to purchase one within the next two years.
- How: We intentionally picked people who are interested in or knowledgeable about electric vehicles.
- How Many: To make sure we had enough data to determine distinct trends, about 300 people took part..

6. The Questionnaire

There were four distinct parts to the questionnaire:

1. Personal Data: income, gender, age, etc.
2. EV Knowledge: Their degree of familiarity with electric cars.
3. Views on EVs: What people believe about EVs' price, functionality, effect on the environment, and upkeep.
4. Purchasing Patterns: Whether they have ever bought or intend to purchase an EV.

For certain questions, participants were asked to rate their level of agreement on a Likert scale, ranging from 1 (strongly disagree) to 5 (Strongly Agree).

7. Analyzing the Data

- Regression Analysis: We determined which viewpoints best predict whether or not an individual will choose to purchase an EV.
- Correlation Analysis: We looked for a connection between people's beliefs and what they bought.

8. Ethical Considerations

- Individuals were free to decline to answer queries; participation was entirely voluntary.

To preserve privacy, we kept all answers anonymous. The data gathered was utilized exclusively for this study's purposes

9. Limitations of the Study

The results may be impacted by some the participant dishonest responses.

- It's possible that not all demographics or geographical areas were represented by the participants.
- Those without internet access or EV knowledge were excluded from participating in the survey because it was conducted online.

5. RESULTS

Table -1 Reliability Analysis

Variables	Numbers of Items	Cronbach Alpha
Perceived Monetary Benefit	3	0.822
Perceived Environment	5	0.917
Perceived Symbol	3	0.818
Perceived Risk	6	0.918
Perceived Range	3	0.822
Actual Buying Behavior	5	0.895

Interpretation of Reliability Analysis (Cronbach's Alpha):

All variables in the study exhibit strong reliability, with Cronbach's Alpha values above the acceptable cutoff of 0.70. Strong dependability was shown by perceived environment (0.917) and perceived risk (0.918), while excellent internal

consistency was shown by perceived monetary benefit (0.822), perceived symbol (0.818), perceived range (0.822), and actual buying behavior (0.895). This demonstrates how well the items measure the associated constructs.

Table -2 Hypothesis Testing through Regression

Hypothesis	Variables	Beta Coefficient	R ²	P- Value
H1	Perceived Monetary Benefit & Actual Buying Behavior	0.607	0.369	0.000
H2	Perceived Environment & Actual Buying Behavior	0.620	0.385	0.000
H3	Perceived Symbol & Actual Buying Behavior	0.755	0.570	0.000
H4	Perceived Risk & Actual Buying Behavior	0.621	0.385	0.000

Interpretation

All of the variables had a considerable impact on real purchasing behavior, depending to the regression study. The strongest predictors, accounting for more than 56% of the variance, are Perceived Symbol ($\beta = 0.755$, $R^2 = 0.570$) and Perceived Range ($\beta = 0.753$, $R^2 = 0.567$). 38.5% can be explained by perceived risk ($\beta = 0.621$) and perceived environment ($\beta = 0.620$), while 36.9% can be explained by perceived monetary benefit ($\beta = 0.607$, $R^2 = 0.369$). Strong and substantial correlations with buying habits have been demonstrated by all results, which are significant at $p < 0.001$. All the hypotheses (H1–H5) are supported, as the relationships are statistically significant ($p = 0.000$) and the Beta coefficients are positive, indicating that higher perceptions of monetary benefit, environment, symbolic value, lower risk, and a broader product range are all connected with actual buying behavior.

Table- 3 Hypothesis testing through correlation

	Perceived Monetary Benefit	Perceived Benefit	Perceived Symbol	Perceived Risk	Perceived Range	Actual Buying Behaviour
Perceived Monetary Benefit	1					
Perceived Benefit	.759**	1				
Perceived Symbol	.658**	.673**	1			
Perceived Risk	.637**	.686**	.667**	1		
Perceived Range	.585**	.705**	.661**	.745**	1	
Actual Buying Behaviour	.607**	.620**	.755**	.621**	.753**	1

Interpretation

According to the investigation, perceived variety and symbols had the most effects on real purchasing behavior, followed by perceived benefit and monetary gain. Curiously, perceived risk also shows a positive correlation, indicating that a certain amount of danger could increase the allure of a product. In general, the primary factors influencing consumer purchasing decisions were the variety of products and symbolic value.

6. CONCLUSION

The research comes to a finding that actual electric vehicle (EV) purchasing behavior is greatly influenced by consumer perception. Purchase decisions are heavily influenced by important elements such perceived representational value, product variety, financial advantages, environmental benefits, and risk perception. The two that have the greatest impact among these are symbolic perception and product variety, indicating that consumers are greatly inspired by the variety and image of EVs. Furthermore, the characteristics measured consistently reflect consumer attitudes, as confirmed by excellent reliability across all variables. Overall, EV adoption can be successfully accelerated by improving these views, particularly those related to brand image, variety, and environmental value.

7. LIMITATIONS

This study on customer perception of real electric vehicle buying habits has a number of drawbacks, albeit offering insightful information. First off, the findings may not be as applicable to larger populations if the data is limited to a certain demographic or geographic area. Second, using self-reported data could lead to bias because participants might give answers that are accepted by society than their actual beliefs or actions. Furthermore, the study only looks at a small number of perceptual aspects and does not take into consideration other significant issues like governmental regulations, the accessibility of infrastructure (like charging stations), or advancements in technology. Last but not least, the cross-sectional design limits the capacity to track shifts in customer perception over time, which may be crucial in a market that is changing quickly like EV.

8. SCOPE OF THE FUTURE RESEARCH

Though this study provides valuable information about how attitudes toward electric cars (EVs) affect decisions to buy, there are a number of topics that future studies might look into. One such area is long-term consumer behavior, which looks at how satisfaction and attitudes shift after owning an EV. It may become clearer how location and infrastructure affect choices if studies are extended to other varied locales, such as rural regions, other states, or foreign nations. More research is also necessary to fully understand the impact of government initiatives such as environmental rules and subsidies. Improved battery life and quicker charging are two examples of technological developments that should be researched since they could have a big impact on public interest. When EV and traditional vehicle buyers are compared, important characteristics specific to each group can be identified. A further significant channel is the rise in environmental consciousness and its role in the adoption of EVs.

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