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Trust, Risk and Resistance: Explaining Consumer Preference for Conventional Vehicles over Electric Vehicles

Ms. Indranil Sagar Das¹, Ms. Pratiksha Bachyas², Dr. Mahuya Deb³

¹Research Scholar, Department of Business Administration, Gauhati University

²Research Scholar, Department of Commerce, Gauhati University

³Assistant Professor, Department of Commerce, Gauhati University

Abstract

The world is moving towards a sustainable future, and transportation is one of the most significant sectors driving this change. Electric vehicles (EVs) have emerged as a promising alternative to traditional fossil fuel-based vehicles. Due to the advantages of EVs, such as lower carbon emissions, better energy efficiency, and decreased dependence on fossil fuels, governments and marketers are actively promoting EVs. However, despite increasing awareness and policy support, many consumers still prefer conventional vehicles. Now the question arises as to why consumers still gravitate towards conventional petrol and diesel vehicles even after being aware of the benefits of EVs.

This study seeks to address this question by examining the psychological factors that influence consumers' continued preference for conventional vehicles. In particular, the study explores how perceived risk, consumer trust, and consumer resistance shape consumers' attitudes toward electric vehicles. The study uses the S-O-R framework, where perceived risks associated with EVs, such as high initial costs, concerns about performance, limited charging infrastructure, etc., are treated as external stimuli. These stimuli influence internal psychological responses in the form of trust in EV technology as well as resistance to adopting new technology. Finally, these together shape the final behaviour of the consumer, i.e. consumers' preference for conventional vehicles. The threefold objectives of the study are-- to examine the impact of perceived risk on consumer trust and resistance toward EVs, to see whether consumer trust influences consumer resistance and to analyse how consumer resistance influences preference for traditional vehicles. The findings of this study are expected to give insights into resistance towards EVs rather than only adoption of EVs from a practical perspective, the study aims to help policymakers and marketers develop strategies that reduce perceived risk, build consumer trust and encourage a smoother transition toward sustainable mobility.

Keywords: Electric Vehicles (EVs), perceived risk, consumer resistance, sustainable mobility, habitual consumption, consumer trust, purchase preference

Introduction

The world is currently facing a global crisis due to environmental degradation. Efforts have been taken both globally and nationally to curb excessive carbon emissions, which are a key pollutant. Among all the sectors, the transportation sector alone accounts for 25% of carbon emissions, which is estimated to double by 2035 (Chen et al., 2023). Following the Paris Agreement on climate change, India is determined to reduce carbon emissions by 60-65% by 2030. (WHO, 2018) Consequently, the growing emphasis on sustainable transportation

alternatives has brought electric vehicles (EVs) to the spotlight. Electric vehicles are being anticipated as future transportation options to reduce CO₂ emissions and achieve net-zero emissions targets of respective countries (IEA, 2023). Due to environmental commitments, governments and automobile manufacturers are promoting EVs as a cleaner and more sustainable option compared to traditional petrol and diesel cars. Government initiatives and policies, media coverage, extensive research, promotional activities, word of mouth and social influence are a few of the factors which have been instrumental in increasing public understanding of the benefits of electric vehicles. However, even after such awareness and increased prominence, a large number of people still hesitate to opt for EVs and prefer sticking with conventional vehicles for their everyday travel. (Ghosh & Sarkar, 2025)

This preference for traditional vehicles raises some important questions: even though consumers often recognise the environmental advantages of electric vehicles, why are their buying choices not consistent with this?

Most consumers often express environmental concerns, but when it comes to transitioning from conventional vehicles to electric ones, they are reluctant to do so. This gap between expressed concern and actual behaviour indicates that there exist psychological dimensions related to the adoption of EVs along with technological and economic considerations. Hence, there is a need to examine the underlying factors that hinder changes in existing consumption patterns, rather than focusing only on adoption intentions.

Most of the research done already on electric vehicles dealt with the factors that facilitate adoption, like environmental awareness, perceived utility, financial advantage and government incentives. However, earlier studies have seldom discussed the aspect where consumers may actively resist electric vehicles, even when they are aware and well-versed with their advantages.

In this research paper, three constructs, namely trust, risk and resistance, have been chosen to explain consumer preference. Consumer trust refers to consumers' belief that a product or technology is reliable, safe and capable of performing as expected without causing negative consequences. (Chen & Chang, 2012). Moreover, three kinds of risks, namely financial risk, performance and infrastructure risk, have been taken into account for the study. On the basis of the Stimulus-Organism-Response (SOR) framework given by Mehrabian and Russell in 1974, the consumer preference for electric vehicles will be studied; where perceived risk will be taken as an external Stimulus, consumer trust and resistance as Organism, and consumer preference for conventional vehicles will be considered the Response.

Review of Literature

A wide range of studies have been done on electric vehicles, mainly on the consumer's adoption intent of EVs and the factors leading to the transition from conventional Internal Combustion Engine (ICE) vehicles to electric vehicles. However, even after the efforts of the Government of India to promote EVs, the result is underwhelming. (Goel et al., 2021)

Unawareness about EV technology, existing incentives or the benefits provided by EVs are some of the major barriers to their adoption. Furthermore, despite the repeated modifications of the FAME policies of the Government of India, lack of clarity about infrastructural support, dependency on battery imports from other countries, and lack of skilled labour act as

hindrances towards the adoption of EV technology. (Singh, Singh & Vaibhav, 2021). In another study by Soltani-Sobh et al. (2017), a few other factors were also identified, which included high cost, battery concerns and lack of recharging stations.

Primarily, the reason for the unsatisfactory level of adoption lies with the functional utility and economic feasibility of EVs, such as limited battery life, long charging hours, high upfront cost, resale anxiety, lack of charging infrastructure, etc. In terms of psychological factors, negative attitude towards innovation, reluctance to change, attachment to already owned vehicle and priority to cost factor over environmental concerns are notable. (Patel et al., 2024) VBEven though a lot of studies have been done on consumer preference towards EVs, they have been done mainly using the Technological Acceptance Model and the Theory of Planned Behaviour. (Shanmugavel & Balakrishnan, 2023; Sahoo et al., 2022; Shanmugavel & Micheal 2022) Asadi et al. (2022 also found that in Malaysia, trust in EV technology also determines the consumers' purchase intention. Despite the advantages of EVs, government efforts, adoption rate is very low. That is why, in order to gain more insights into the obstacles in the path of EV adoption, more determinants need to be identified. Hence, in this study, consumer trust, perceived risk and resistance are taken to understand why consumers still prefer conventional vehicles over EVs.

Objectives

After reviewing the literature and identifying the research gap, the following objectives have been set for the current study:

1. To examine the impact of perceived risk on consumer trust and resistance toward EVs;
2. To see whether consumer trust influences consumer resistance;
3. To analyse how consumer resistance influences preference for traditional vehicles.

In order to fulfil these objectives, four hypotheses have been formed:

- a. **H1:** Perceived risk has a significant effect on consumer trust toward electric vehicles.
- b. **H2:** Perceived risk has a significant effect on consumer resistance toward electric vehicles
- c. **H3:** Consumer trust has a significant effect on consumer resistance toward electric vehicles.
- d. **H4:** Consumer resistance has a significant effect on consumers' preference for conventional vehicles.

Research Methodology

The study would be both descriptive and analytical in nature and is based on primary data. A well-structured schedule with close-ended questions was administered among the respondents. The study was conducted in Guwahati city (Assam). The target population comprised of respondents who were aware of electric vehicles (EVs). Data were collected from a total of 260 respondents using a structured questionnaire. The sample consisted of 70 per cent male and 30 per cent female respondents. The selection of respondents was done using the purposive sampling technique. The hypothesized associations between variables in the study would be analysed using regression equation.

Table 1: List of Variables used for the study:

Constructs	Variables	References
Perceived Risk of Electric Vehicles	Financial Risk The high purchase price of electric vehicles makes them a risky option for me. I am concerned that electric vehicles may not have good resale value in the future. The overall cost of owning an electric vehicle is uncertain compared to conventional vehicles. Performance Risk I worry that electric vehicles may not provide sufficient driving range for my needs. I am concerned about the durability and lifespan of electric vehicle batteries. I am unsure whether electric vehicles can deliver reliable performance over time. Infrastructure Risk Limited availability of charging stations increases the risk of using electric vehicles. Charging an electric vehicle is less convenient than refuelling a petrol or diesel vehicle. Inadequate charging infrastructure discourages me from considering electric vehicles.	Rezvani, Z., Jansson, J., & Bodin, J. (2015); Egbue, O., & Long, S. (2012); Chen, C. F., de Rubens, G. Z., Noel, L., Kester, J., & Sovacool, B. K. (2020);
Consumer Trust in Electric Vehicles	A. Trust in EV Technology I trust the technology used in electric vehicles. I believe electric vehicle technology is reliable for daily use. I feel confident about the safety and functioning of electric vehicles. B. Trust in EV Brands I trust electric vehicle manufacturers to deliver quality products. I believe well-known automobile brands produce reliable electric vehicles.	Chen, Y. S. (2010); Chen, Y. S., & Chang, C. H. (2012); Morgan, R. M., & Hunt, S. D. (1994)

Constructs	Variables	References
	I trust electric vehicle brands to provide adequate after-sales service and support. C. Trust in Environmental and Green Claims I believe that electric vehicles are genuinely environmentally friendly. I trust the environmental claims made by electric vehicle manufacturers. I believe that using electric vehicles can significantly reduce environmental pollution.	
Consumer Resistance to Electric Vehicles	A. Status Quo Bias I prefer to continue using conventional vehicles rather than switch to electric vehicles. I feel more comfortable sticking with conventional vehicles that I already know. Changing from conventional vehicles to electric vehicles seems unnecessary to me. B. Habit and Familiarity with Traditional Vehicles I am accustomed to using petrol or diesel vehicles. My past experience with conventional vehicles makes me reluctant to try electric vehicles. I find conventional vehicles easier to use compared to electric vehicles. C. Resistance to Technological Change I generally resist adopting new vehicle technologies like electric vehicles. I feel uncertain about adopting electric vehicles because the technology is new to me. I prefer to wait until electric vehicle technology becomes more established before adopting it.	Ram, S., & Sheth, J. N. (1989). Heidenreich, S., & Handrich, M. (2015). Claudy, M. (2011)
Preference for Traditional Vehicles	A. Intention to Purchase Fossil-Fuel Vehicles	Hardman, S., Chandan, A., Tal,

Constructs	Variables	References
	I am more likely to purchase a petrol or diesel vehicle than an electric vehicle. If I plan to buy a vehicle in the future, I would choose a conventional vehicle. Petrol or diesel vehicles remain my first choice when purchasing a vehicle.	G., & Turrentine, T. (2017). Rezvani, Z., Jansson, J., & Bodin, J. (2015).
	B. Continued Reliance on Conventional Vehicles Conventional vehicles continue to meet my transportation needs effectively. I feel more confident using conventional vehicles compared to electric vehicles. I depend on petrol or diesel vehicles for my daily travel requirements.	Bansal, H. S., & Taylor, S. F. (2002).
	C. Avoidance of Electric Vehicle Adoption I avoid considering electric vehicles when thinking about purchasing a vehicle. I am not interested in switching to an electric vehicle in the near future. I prefer to delay adopting electric vehicles for as long as possible.	

Data Analysis and Interpretations

H1: Perceived risk has a significant effect on consumer trust toward electric vehicles.

The regression analysis indicates that perceived risk does not have a statistically significant effect on consumer trust toward electric vehicles. The regression coefficient for perceived risk is $\beta = 0.00109$. This suggests an almost negligible negative relationship between perceived risk and consumer trust. However, this effect is not statistically significant ($p = 0.9866 > 0.05$).

The R^2 value (0.000001) shows that perceived risk has almost no effect on consumer trust. In simple terms, whether a consumer thinks electric vehicles are risky does not affect how much they trust them. In addition, the F-statistic ($F = 0.00028$, $p = 0.9866$) confirms that the overall regression model is not significant, i.e. the relationship between perceived risk and trust is too insignificant to be considered meaningful. Hence, consumer trust towards EVs appears to be shaped by other factors such as brand reputation, government support, technological familiarity or environmental beliefs rather than perceived risk alone. Therefore, the results do not support H1.

H2: Perceived risk has a significant effect on consumer resistance toward electric vehicles.

The regression analysis shows that perceived risk has a statistically significant effect on consumer resistance toward electric vehicles. The p-value of 0.00982 is below the standard significance level of 0.05. It indicates that the relationship is statistically significant.

The regression coefficient indicates that changes in perceived risk are related to changes in consumer resistance. This finding implies that when consumers perceive a higher level of risk associated with electric vehicles, their resistance towards EVs increases. Hence, H2 may be accepted.

H3: Consumer trust has a significant effect on consumer resistance toward electric vehicles.

The regression analysis demonstrates that consumer trust has a statistically significant effect on consumer resistance toward electric vehicles. The p-value associated with this relationship is 0.008764. The calculated value is much below the 0.05 significance level. It indicates that the effect is statistically significant.

The regression coefficient ($\beta = 0.1636$) shows that consumer trust has a significant influence on consumer resistance. In other words, changes in consumer trust lead to changes in the levels of consumer resistance towards EVs. The model's R^2 value of 0.029 indicates that consumer trust accounts for approximately 2.9% of the variance in consumer resistance.

The significant F-statistic ($F = 6.99$, $p = 0.0088$) further confirms the overall model significance, which suggests that consumer trust plays a measurable role in shaping resistance toward electric vehicles. Hence, H3 is accepted.

H4: Consumer resistance has a significant effect on consumers' preference for conventional vehicles.

The regression results indicate that consumer resistance has a statistically significant effect on consumers' preference for conventional vehicles. The p-value associated with this relationship is 0.00608. It is below the 0.05 significance threshold, which confirms that the effect is statistically significant. The regression coefficient ($\beta = 0.0387$) shows the direction and strength of the relationship between consumer resistance and preference for conventional vehicles. A β value of 0.0387 means that as consumer resistance increases, preference for conventional vehicles also increases.

Although the magnitude of the coefficient is relatively small, the statistical significance indicates that changes in consumers' resistance toward electric vehicles influence their preference for conventional vehicles.

The significant result implies that resistance toward electric vehicles plays a meaningful role in shaping consumers' vehicle choice behaviour. As resistance increases, people reflect hesitation and discomfort with new technology or show attachment to existing habits; consumers are more likely to maintain their preference for traditional fossil-fuel vehicles. Hence, we may accept H4.

Findings

This study tries to understand why, despite growing awareness and availability of electric vehicles, many consumers continue to rely on conventional fuel-based vehicles. The findings offer several important insights into how consumers perceive and respond to electric vehicles. Firstly, the results show that perceived risk does not significantly influence consumer trust in electric vehicles. In other words, even when consumers are aware of risks related to cost, performance or charging infrastructure, these concerns do not directly reduce their trust in electric vehicle technology or manufacturers. This further suggests that consumer trust may be shaped more by broader influences such as brand reputation, government initiatives, exposure to new technology or environmental values rather than risk perceptions alone.

On the other hand, the study finds that perceived risk plays a significant role in increasing consumer resistance toward electric vehicles. As consumers perceive higher levels of uncertainty associated with electric vehicles, their reluctance to adopt this new technology grows. This highlights that risk perceptions are more likely to translate into reluctance toward EV use than distrust.

The findings further indicate that consumer trust is another factor that affects consumer resistance toward electric vehicles. When trust in electric vehicles is lower, consumers tend to exhibit greater resistance. It means that trust acts as an important psychological factor in reducing hesitation toward adoption. Although the effect is small, it is meaningful because consumer behaviour is often shaped by attitudes and perceptions.

Finally, the results demonstrate that consumer resistance has a significant impact on consumers' preference for conventional vehicles. As resistance toward electric vehicles increases due to a variety of reasons, consumers are more likely to continue choosing traditional fossil-fuel vehicles. This indicates that consumers' resistance encourages them to stick to traditional modes of transportation instead of going for EVs. Overall, the study highlights consumer resistance as the central factor shaping vehicle choice behaviour. While perceived risk and trust influence resistance, it is resistance itself that ultimately drives consumers to choose conventional vehicles over electric vehicles.

Conclusion

The findings of the study collectively indicate that consumers' continued preference for conventional vehicles is primarily driven by resistance toward electric vehicles, rather than by a lack of awareness of EV technology or a trust deficit toward it. Even though consumers are aware of the risks associated with electric vehicles, these concerns do not directly reduce their trust in EV technology.

The findings suggest that perceived risks and trust influence behaviour by shaping resistance rather than directly determining vehicle choice. Ultimately, this resistance keeps consumers attached to conventional petrol and diesel vehicles. In simple terms, the study highlights that the preference for conventional vehicles is less about ignorance or lack of trust and more about hesitation to move away from familiar choices.

Hence, it can be safely asserted that efforts to promote electric vehicles should focus less on creating awareness and more on reducing consumer resistance. This is because resistance emerges as the key factor influencing preference for conventional vehicles.

The study also opens several avenues for future research. Further studies may examine other psychological factors such as habit strength, social influence or perceived convenience to gain a deeper understanding of resistance toward electric vehicles. Currently, the study is based in Guwahati city only. Hence, the findings may not be generalisable to other places. Future research could extend the scope beyond Guwahati city by including rural or semi-urban areas to improve generalisability.

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