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Economic benefits, environmental awareness, and charging infrastructure as determinants of electric vehicle adoption in Bangkok

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Abstract

This study examined how perceived economic benefits, environmental awareness, and charging infrastructure influence consumer adoption of electric vehicles (EVs) in Bangkok, Thailand. It also described respondents' demographic profiles, assessed the levels of these factors and EV adoption, tested differences in adoption across demographic groups, explored relationships among variables, and generated recommendations for EV entrepreneurs, policymakers, and prospective business operators. Data were collected through a survey of 400 EV consumers in Bangkok and analyzed using the Statistical Package for the Social Sciences (SPSS), including t-tests, ANOVA, and Pearson correlation analysis. Most respondents were male (62%), aged 30–35 years (44%), held a bachelor's degree (58%), and were employees. Findings showed that consumer adoption of EVs differed significantly by gender, educational attainment, occupation, and monthly income at the 0.05 significance level. Pearson correlation results revealed positive, moderate, and statistically significant relationships between EV adoption and perceived economic benefits ($r = .345$, $p < .01$), environmental awareness ($r = .264$, $p < .01$), and charging infrastructure ($r = .384$, $p < .01$). Overall, better economic advantages, stronger environmental awareness, and more accessible charging infrastructure were associated with higher consumer adoption of electric vehicles in Bangkok. These results suggest that improving charging networks, emphasizing long-term cost savings, and increasing public awareness of environmental benefits may encourage broader EV adoption, while businesses can use the findings to refine marketing strategies and policymakers can design programs that support sustainable transportation and future investment decisions across diverse demographic groups and strengthen consumer confidence in emerging electric mobility initiatives.

Keywords: consumer adoption, electric vehicles, environment awareness, charging infrastructure

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1. Introduction

Rising fuel prices and growing environmental concerns have encouraged the Thai government to promote the adoption of Electric Vehicles (EVs) as a cleaner and more sustainable mode of transportation. EVs produce fewer greenhouse gas emissions than conventional gasoline or diesel vehicles and are expected to improve urban air quality (Pornthip, 2022). Thailand's EV market has expanded rapidly due to government incentives, advances in battery technology, increasing consumer demand, and the entry of new manufacturers such as Tesla and Chinese automotive brands (Federation of Thai Industries, 2022, cited in Supreecha, 2022). EV registrations increased substantially from 9,729 units in 2022 to 76,314 in 2023 before slightly declining to 70,173 units in 2024 (Autolifethailand, 2025). These trends indicate continued growth despite market fluctuations.

Previous studies suggest that perceived economic benefits, environmental awareness, and charging infrastructure are among the key factors influencing EV adoption. Consumers recognize the long-term cost savings of EVs despite their higher purchase price (Manisorn, 2022). Environmental awareness also motivates consumers, as EVs help reduce emissions and support sustainable transportation. Meanwhile, government incentives and the expansion of charging infrastructure further encourage EV adoption, although infrastructure availability remains a challenge in some areas (Supreecha, 2022). Guided by the Technology Acceptance Model (Davis), this study examines how perceived economic benefits, environmental awareness, and charging infrastructure influence consumer adoption of EVs in Bangkok, Thailand. The findings are expected to provide valuable insights for policymakers and EV entrepreneurs in developing effective strategies to promote EV adoption and support the sustainable growth of Thailand's electric vehicle industry.

Objectives of the Study - This study examined the influence of perceived economic benefits, environmental awareness, and charging infrastructure on consumer adoption of electric vehicles (EVs) in Bangkok, Thailand. Specifically, it aims to assess the level of perceived economic benefits of electronic vehicles in terms of: Cost Efficiency, Performance & Functionality, and Social & Psychological Value; determine the level of environmental awareness among consumers in terms of :Pollution Reduction & Environmental Friendliness; Clean Energy Advocacy; Social & Community Environmental Support; determine the consumer perception on charging infrastructure in terms of: availability and accessibility, convenience and ease of use, economic feasibility, and government and private sector support; assess the perceived economic benefits, environmental awareness and charging infrastructure on consumer adoption of Electric Vehicles in terms of adoption intention, perceived value and reasonableness, and innovativeness and curiosity; test the significant relationships among perceived economic benefits, environmental awareness, and charging infrastructure, and consumer adoption of electric vehicles; identify which determinant significantly predicts electric vehicle adoption; and propose Strategic Action Plan for Improving Consumer Adoption of Electric Vehicles in Bangkok, Thailand.

2. Methods

Research Design - The researcher used a research design using quantitative research to assess, analyze, and evaluate the answers of the questionnaire in a way that would provide evidence and reasonable conclusions to the researcher about the conditions and some phenomena of consumer adoption Personal characteristics, Exploring the impact of perceived economic benefit, Environmental awareness, and charging infrastructure factors, and factors effecting on consumer adoption of Electric Vehicles in Bangkok, Thailand.

Participants of the Study - The target population for this study comprises of 384 consumers of Electric Vehicles in Bangkok, Thailand. A purposive sampling technique will be employed to select the sample, which

means that participants will be chosen based on their relevance to the research objectives and their ability to provide valuable insights (Hair Jr. et al., 2017).

Data Gathering Instruments - The survey questionnaire was pre-tested with a small group of consumers' adoption of Electric Vehicles to ensure clarity and validity of the questions. Necessary adjustments will be made based on the feedback received. The final questionnaire will then be distributed to the target sample of consumer adoption of Electric Vehicles in Bangkok. Various methods, such as approaching selling center firms directly, leveraging professional networks and associations, and utilizing online platforms, can be used to reach the sample. To enhance the response rate, an incentive scheme or reward system may be implemented, and confidentiality and anonymity will be ensured to promote honest and unbiased responses. Once the data collection is complete, statistical analysis techniques will be utilized to analyze the relationships between personal characteristics, consumer adoption of Electric Vehicles-related factors. The analysis will provide insights into the factors influencing entrepreneurial success in the Electric Vehicles industry in Bangkok, Thailand.

Data Gathering Procedure - The data collection method used in this study is a survey questionnaire The survey questionnaire will consist of closed-ended questions, which will be used to collect data on the personal characteristics of consumers of Electric Vehicles, and related factors, the impact of perceived economic benefits factors, environment awareness, and consumer of Electric Vehicles in Bangkok, Thailand (Siriwan et al.,2020; Supreecha, 2022). The questionnaire will be designed based on relevant literature and theoretical frameworks, incorporating constructs and dimensions identified in previous studies (Nguyen et al.,2021). It will draw inspiration from studies that have examined personal characteristics, related factors, and consumers of Electric Vehicles in Bangkok, Thailand, in various contexts (Nguyen et al.,2021).

The questionnaire will comprise 4 sections addressing various aspects of the study, Economic Benefits, Environmental Awareness, and Charging Infrastructure and Vehicle Adoption. Furthermore, the findings from the data analysis can be used to generate practical recommendations and implications for entrepreneurs, consumer adoption of Electric Vehicles, policymakers, and other stakeholders in the Electric Vehicles industry. The insights gained from the study can contribute to the development of strategies and interventions aimed at promoting entrepreneurship and enhancing the success of the Electric Vehicles industry.in Bangkok. It is important to acknowledge the potential limitations of the study. The use of a survey questionnaire limits the depth of information that can be collected compared to other methods such as interviews or case studies. The self-report nature of the questionnaire may also introduce response bias. However, steps will be taken to ensure the validity and reliability of the questionnaire through pre-testing and adjustments based on feedback.

In conclusion, the chosen data collection method of a survey questionnaire, combined with appropriate sampling techniques and statistical analysis, offers a systematic approach to investigate the relationship between personal characteristics, consumer adoption-related factors, and the consumer adoption of Electric Vehicles in Bangkok, Thailand. The study aims to provide valuable insights and contribute to the existing knowledge in the field of entrepreneurship and the Electric Vehicles industries.

Data Analysis - The data analysis for this study will employ a combination of descriptive and inferential statistical techniques (Smith et al., 2022). Inferential statistical techniques will be applied to examine the relationships and effects of personal characteristics, consumer adoption-related factors, and consumer adoption of Electric Vehicles in Bangkok, Thailand (Siriwan et al., 2020; Supreecha, 2022; Smith et al., 2022). These techniques will help determine the significance and strength of these relationships**.** Pearson Correlation Coefficients Analysis allows for the simultaneous examination of multiple independent variables (consumer adoption-related factors, and these factors affect a dependent variable (Consumer Adoption of Electric Vehicles in Bangkok, Thailand), facilitating the identification of the consumer adoption among the participants.

Ethical Considerations - In conducting this study, ethical principles were observed to protect the rights and well-being of all participants. Informed consent was obtained after participants were provided with information about the study's purpose, procedures, and any potential risks or benefits. Participation was voluntary, and

respondents were free to withdraw at any time without penalty. All information collected was treated with strict confidentiality and accessed only by the researcher and authorized personnel. Personal data were anonymized to protect participants' identities and securely stored in accordance with applicable data protection regulations. Furthermore, the study complied with the ethical standards and guidelines of relevant institutional review boards and research ethics committees to ensure respect for participants' rights, privacy, and welfare throughout the research process.

3. Results and discussions

Table 1
Summary Table on Perceived Economic Benefits Of Electric Vehicles

Indicators	Weighted Mean	Verbal Interpretation	Rank
Cost Efficiency	3.22	Agree	2
Performance and Functionality	3.20	Agree	3
Social and Psychological Value	3.31	Agree	1
Composite Mean	3.24	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 1 presents a summary of the respondents' perceived economic benefits of electric vehicles (EVs) across three major dimensions: cost efficiency, performance and functionality, and social and psychological value. The results reveal a composite mean of 3.24, verbally interpreted as Agree, indicating that respondents generally perceive EVs as beneficial across all evaluated aspects. This implies that EVs are widely recognized not only for their financial advantages but also for their functional capabilities and contribution to users' social and psychological well-being. This overall positive perception is consistent with existing literature, which highlights that EV adoption is driven by a combination of economic savings, technological improvements, and social influence (Environmental Defense Fund, 2023; MIT News, 2026). Among the indicators, social and psychological value ranked first (WM=3.31), suggesting that respondents place the highest importance on the intangible benefits of EVs, such as personal satisfaction, environmental responsibility, and enhanced social image. This indicates that emotional and social motivations play a crucial role in shaping favorable attitudes toward EV adoption. Supporting this, recent studies emphasize that individuals are more likely to adopt EVs when they perceive them as symbols of environmental responsibility and modern lifestyle (Sovacool et al., 2023). In addition, cost efficiency ranked second (WM = 3.22), reflecting respondents' recognition of economic benefits such as reduced fuel and maintenance costs. Research confirms that EVs can generate significant long-term savings due to lower operating and maintenance expenses (Consumer Reports, 2023; Environmental Defense Fund, 2023).

On the other hand, performance and functionality ranked third (WM = 3.20), although it remains within the *Agree* range. This suggests that while respondents acknowledge the functional capabilities of EVs, such as driving performance, range, and technological features, these aspects are slightly less influential compared to economic and psychological benefits. Nevertheless, literature indicates that improvements in EV performance, including driving range and reliability, continue to enhance user confidence and satisfaction over time (International Energy Agency, 2024). These advancements reinforce the practicality of EVs for everyday use and support their growing acceptance in the transportation sector. Overall, the findings imply that while all three dimensions contribute positively to the perceived economic benefits of EVs, social and psychological factors emerge as the strongest influence, followed by financial considerations and functional performance. This highlights the multidimensional appeal of EVs and suggests that successful promotion strategies should emphasize not only cost savings but also environmental responsibility and personal value to encourage wider adoption.

Table 2
Summary Table on Stress Environmental Awareness

Indicators	Weighted Mean	Verbal Interpretation	Rank
Pollution Reduction and Environmental Friendliness	3.34	Agree	1
Clean Energy Advocacy	3.18	Agree	3
Social and Community Environmental Support	3.32	Agree	2
Composite Mean	3.28	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 2 presents the summary of respondents' environmental awareness in terms of pollution reduction and environmental friendliness, clean energy advocacy, and social and community environmental support. The results show a composite mean of 3.28, verbally interpreted as Agree, indicating that respondents generally demonstrate a positive level of environmental awareness across all dimensions. This implies that respondents are knowledgeable about environmental issues and supportive of sustainability efforts, particularly in the context of transportation and energy use. This finding is consistent with the International Energy Agency (2024), which emphasized that increasing public awareness is a key factor in promoting sustainable transport systems and reducing environmental impact. Similarly, Sovacool et al. (2023) noted that environmental awareness strongly influences individuals' attitudes and behaviors toward eco-friendly technologies and practices.

Among the indicators, pollution reduction and environmental friendliness ranked first (WM = 3.34), suggesting that respondents place the highest importance on understanding and addressing environmental problems caused by pollution. This indicates that respondents are highly aware of the harmful effects of emissions and recognize the need for cleaner alternatives. International Energy Agency (2024) reported that transport-related emissions are a major contributor to global environmental issues, reinforcing the importance of pollution awareness. World Health Organization (2022) highlighted that reducing air pollution is essential in improving environmental and public health, which aligns with respondents' strong agreement in this area. Social and community environmental support (WM=3.32) ranked second, followed by clean energy advocacy (WM=3.18) as third. These findings indicate that respondents acknowledge the role of collective efforts and renewable energy promotion in achieving sustainability. This suggests that both community participation and advocacy for clean energy are recognized as important, though slightly less prioritized compared to pollution awareness.

The lowest-ranked indicator is clean energy advocacy. This suggests that while respondents support clean energy initiatives, their level of advocacy may not be as strong as their awareness of pollution or community involvement. Literature emphasizes that clean energy advocacy is essential for achieving long-term sustainability goals. According to International Renewable Energy Agency (2025), increasing support for renewable energy in transportation is crucial for reducing reliance on fossil fuels and mitigating climate change. REN21(2025) noted that expanding renewable energy use in transport significantly contributes to lowering greenhouse gas emissions and advancing sustainable development. Findings imply that although clean energy advocacy ranked lowest among the indicators, it remains a vital component of overall environmental awareness and plays key role in supporting the transition to greener transportation systems.

Table 3
Summary Table on Charging Infrastructure

Indicators	Weighted Mean	Verbal Interpretation	Rank
Availability and Accessibility	3.08	Agree	4
Convenience and Ease of Use	3.23	Agree	2
Economic Feasibility	3.36	Agree	1
Government and Private Sector Support	3.20	Agree	3
Composite Mean	3.22	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 3 presents the summary of respondents' perceptions of charging infrastructure in terms of availability and accessibility, convenience and ease of use, economic feasibility, and government and private sector support. Findings reveal a composite mean of 3.22, verbally interpreted as *Agree*, indicating that respondents generally perceive charging infrastructure as adequate and supportive of electric vehicle (EV) adoption. This suggests that while infrastructure is sufficiently developed to meet current expectations, further improvements may still enhance overall accessibility and efficiency. This is consistent with the International Energy Agency (2024), which emphasized that expanding and improving charging infrastructure is essential for sustaining EV growth. Likewise, Zaino et al. (2024) highlighted that infrastructure readiness—including accessibility, usability, and affordability—is a key determinant of EV adoption.

Among the indicators, economic feasibility ranked first (WM = 3.36), suggesting that respondents consider

the cost-related aspects of charging infrastructure as the most favorable. This indicates that EV charging is perceived as affordable, offering good economic value compared to traditional fuel expenses. Supporting this, Consumer Reports (2023) found that EV users benefit from lower energy and maintenance costs, contributing to long-term savings. Similarly, Environmental Defense Fund (2023) reported that reduced operating costs significantly enhance the financial attractiveness of EV ownership. These findings confirm that economic feasibility plays a central role in shaping positive perceptions of EV infrastructure.

Convenience and ease of use ranked second, followed by government and private sector support as third, and availability and accessibility as fourth. Results indicate that respondents generally perceive EV charging as user-friendly and supported by institutions, although accessibility across all areas still requires improvement. Meanwhile, the lowest-ranked indicator is availability and accessibility (WM = 3.08, Rank 4), although still interpreted as *Agree*. This suggests that respondents perceive some limitations in the widespread distribution of charging infrastructure, particularly in less accessible locations. However, literature emphasizes that addressing these gaps is already a major focus globally. The International Energy Agency (2024) reported that while charging networks are expanding rapidly, uneven distribution remains a challenge, especially outside urban centers. Furthermore, IRENA (2025) highlighted that increasing the number and strategic placement of charging stations is crucial for ensuring equitable access and supporting broader EV adoption. These findings imply that although availability and accessibility ranked lowest, it remains a critical factor that requires continued development to fully support the transition to electric mobility.

Table 4

Summary Table on Consumer Adoption Of Electric Vehicles

Indicators	Weighted Mean	Verbal Interpretation	Rank
Adoption Intention	3.19	Agree	2
Perceived Value and Reasonableness	3.17	Agree	3
Innovativeness and Curiosity	3.21	Agree	1
Composite Mean	3.19	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 4 presents the summary of respondents' perceptions of consumer adoption of electric vehicles (EVs) in terms of adoption intention, perceived value and reasonableness, and innovativeness and curiosity. The findings reveal a composite mean of 3.19, verbally interpreted as *Agree*, indicating that respondents generally demonstrate a positive disposition toward adopting EVs. This implies that consumers are open to considering EVs as a future transportation option, supported by their perceptions of value, technological interest, and behavioral intention. This result is consistent with Zaino et al. (2024), who found that consumer adoption of EVs is influenced by a combination of behavioral intention, perceived benefits, and openness to innovation. Similarly, the International Energy Agency (2024) emphasized that increasing consumer acceptance is driven by improvements in EV affordability, performance, and awareness. Among the indicators, innovativeness and curiosity ranked first, suggesting that respondents' interest in new technologies is the strongest factor influencing EV adoption. This indicates that consumers who are curious and open to innovation are more inclined to explore and adopt electric vehicles. Supporting this, research highlights that early adopters of EVs are often characterized by high levels of technological interest and willingness to try new innovations (Zaino et al., 2024). In addition, Abas et al. (2024) emphasized that exposure to technological advancements and increased knowledge significantly enhance consumers' readiness to adopt EVs, reinforcing the importance of curiosity and openness.

Adoption intention ranked second, followed by perceived value and reasonableness as third. These findings indicate that while respondents are willing to consider EVs and recognize their value, their interest in innovation slightly outweighs purely economic or decision-based considerations. This suggests that both rational evaluation and personal motivation contribute to EV adoption. Meanwhile, the lowest-ranked indicator is perceived value and reasonableness, although still interpreted as *Agree*. This suggests that while respondents generally recognize the benefits of EVs, some uncertainties about cost and overall value may still exist. However, literature strongly suggests that these concerns are diminishing over time. According to the International Energy Agency (2024), declining battery costs, government incentives, and improved efficiency are making EVs more economically

attractive. Furthermore, Consumer Reports (2023) found that EV ownership leads to significant long-term savings, which strengthens perceived value and justifies initial costs. These findings imply that although ranked lowest, perceived value continues to improve and remains an important factor that supports increasing consumer adoption of electric vehicles.

Table 5
Relationship Between Perceived Economic Benefits Of Electric Vehicles and Environmental Awareness

Cost Efficiency	r-value	p-value	Interpretation
Pollution Reduction and Environmental Friendliness	0.767 ***	<.001	Highly Significant
Clean Energy Advocacy	0.614 ***	<.001	Highly Significant
Social and Community Environmental Support	0.709 ***	<.001	Highly Significant
Performance and Functionality			
Pollution Reduction and Environmental Friendliness	0.409 ***	<.001	Highly Significant
Clean Energy Advocacy	0.790 ***	<.001	Highly Significant
Social and Community Environmental Support	0.628 ***	<.001	Highly Significant
Social and Psychological Value			
Pollution Reduction and Environmental Friendliness	0.546 ***	<.001	Highly Significant
Clean Energy Advocacy	0.533 ***	<.001	Highly Significant
Social and Community Environmental Support	0.549 ***	<.001	Highly Significant

Legend: Significant at p-value < 0.05

Table 5 presents the relationship between perceived economic benefits of electric vehicles (EVs) and environmental awareness using correlation analysis. The results show that all variables have positive correlation coefficients (r-values) with p-values less than .001, indicating highly significant relationships. This implies that as respondents perceive greater economic benefits from EVs, their level of environmental awareness also increases. The strong statistical significance suggests a meaningful association between economic perceptions and environmental consciousness. This finding is consistent with existing literature, which highlights that economic incentives and perceived cost benefits often reinforce pro-environmental attitudes and behaviors toward sustainable technologies (Zaino et al., 2024; International Energy Agency, 2024).

In terms of cost efficiency, results show strong positive relationships with all dimensions of environmental awareness. Highest correlation is observed with pollution reduction and environmental friendliness, followed by social and community environmental support and clean energy advocacy. Findings indicate that respondents who perceive EVs as cost-efficient are more likely to recognize and support efforts to reduce pollution and promote environmental sustainability. This suggests that financial benefits, such as lower operating costs, can enhance environmental awareness and motivate eco-friendly behavior. Supporting this, Consumer Reports (2023) found that cost savings associated with EVs contribute to increased consumer acceptance and environmentally responsible choices. Similarly, Environmental Defense Fund (2023) emphasized that economic advantages of EVs often reinforce sustainability awareness and encourage greener transportation decisions.

Regarding performance and functionality, the correlation results also demonstrate significant relationships with environmental awareness variables. The strongest correlation is with clean energy advocacy, followed by social and community environmental support and pollution reduction and environmental friendliness. This indicates that respondents who perceive EVs as reliable and efficient are more likely to support clean energy initiatives and community-based environmental efforts. This implies that confidence in EV performance enhances trust in sustainable technologies, thereby promoting environmental awareness. Supporting this, the International Energy Agency (2024) noted that improvements in EV performance and reliability increase public confidence and strengthen support for clean energy adoption. Furthermore, Zaino et al. (2024) emphasized that technological advancements in EVs play a critical role in shaping positive environmental attitudes.

For social and psychological value, the results show moderate but still highly significant correlations with all environmental awareness dimensions. The highest correlation is with social and community environmental support, followed closely by pollution reduction and environmental friendliness and clean energy advocacy. Findings suggest that respondents who associate EVs with positive social identity and personal satisfaction are more likely

to demonstrate higher environmental awareness. This implies that social influence and personal values are important factors in promoting environmentally responsible behavior. Supporting this, Sovacool et al. (2023) highlighted that social identity and environmental values significantly influence individuals' adoption of sustainable technologies. Additionally, Nguyen et al. (2023) found that consumers who derive personal satisfaction from environmentally friendly actions are more likely to support sustainability initiatives.

Overall, the results indicate that all dimensions of perceived economic benefits—cost efficiency, performance and functionality, and social and psychological value—are significantly associated with environmental awareness. Among these, cost efficiency and performance show stronger correlations, suggesting that practical and functional benefits may have a greater influence on environmental awareness compared to social and psychological factors. These findings underscore the importance of integrating economic, technological, and social perspectives in promoting EV adoption and environmental sustainability. They also suggest that enhancing awareness of both economic benefits and environmental impacts can further strengthen consumer support for electric vehicles.

Table 6

Relationship Between Perceived Economic Benefits Of Electric Vehicles and Charging Infrastructure

Cost Efficiency	r-value	p-value	Interpretation
Availability and Accessibility	0.340 ***	< .001	Highly Significant
Convenience and Ease of Use	0.837 ***	< .001	Highly Significant
Economic Feasibility	0.857 ***	< .001	Highly Significant
Government and Private Sector Support	0.743 ***	< .001	Highly Significant
Performance and Functionality			
Availability and Accessibility	0.694 ***	< .001	Highly Significant
Convenience and Ease of Use	0.660 ***	< .001	Highly Significant
Economic Feasibility	0.321 ***	< .001	Highly Significant
Government and Private Sector Support	0.818 ***	< .001	Highly Significant
Social and Psychological Value			
Availability and Accessibility	0.182 ***	< .001	Highly Significant
Convenience and Ease of Use	0.723 ***	< .001	Highly Significant
Economic Feasibility	0.840 ***	< .001	Highly Significant
Government and Private Sector Support	0.378 ***	< .001	Highly Significant

Legend: Significant at p-value < 0.05

Table 6 presents the relationship between perceived economic benefits of electric vehicles (EVs) and charging infrastructure using correlation analysis. The results indicate that all variables have positive correlation coefficients (r-values) with p-values less than .001, signifying highly significant relationships. This implies that stronger perceptions of economic benefits are associated with more favorable perceptions of charging infrastructure. In other words, as respondents recognize greater economic advantages of EVs, they also tend to perceive charging infrastructure as more available, accessible, convenient, and supportive. This finding is supported by Zaino et al. (2024), who emphasized that economic and infrastructural factors are interconnected in shaping EV adoption. Similarly, the International Energy Agency (2024) highlighted that infrastructure development and economic benefits jointly influence consumer acceptance of EV technology.

In terms of cost efficiency, the results show strong positive relationships with all aspects of charging infrastructure. The highest correlations are observed with economic feasibility and convenience and ease of use, followed by government and private sector support, while availability and accessibility shows a moderate but still significant relationship. These findings indicate that respondents who perceive EVs as cost-efficient are more likely to view charging infrastructure as economically beneficial and user-friendly. This suggests that financial advantages reinforce positive perceptions of infrastructure convenience and affordability. Supporting this, Consumer Reports (2023) found that lower operating costs of EVs strengthen positive attitudes toward charging systems. Additionally, Environmental Defense Fund (2023) reported that economic savings from EV use are closely linked with satisfaction regarding infrastructure efficiency and affordability.

For performance and functionality, the findings also reveal significant correlations with charging

infrastructure variables. The strongest relationship is with government and private sector support, followed by availability and accessibility and convenience and ease of use, while economic feasibility shows a weaker but still significant association. These results suggest that respondents who perceive EVs as reliable and functional are more likely to recognize the importance of institutional support and infrastructure availability. This implies that confidence in EV performance enhances trust in the supporting infrastructure and policy environment. Supporting this, the International Energy Agency (2024) noted that improvements in EV performance and infrastructure development are mutually reinforcing factors that increase consumer confidence. Furthermore, Abas et al. (2024) emphasized that effective policies and infrastructure investment are crucial in enhancing both EV performance perception and adoption.

Considering the social and psychological value, all relationships remain positive and highly significant. The strongest correlations are with economic feasibility and convenience and ease of use, followed by government and private sector support, while availability and accessibility has the weakest association. These findings suggest that respondents who perceive EVs as socially and psychologically rewarding are more likely to appreciate the financial and practical aspects of charging infrastructure. This implies that positive emotional and social perceptions of EVs can reinforce satisfaction with infrastructure, particularly when it is convenient and economically viable. Meanwhile, the lowest relationship observed is between social and psychological value and availability and accessibility, although still statistically significant. This suggests that while social and emotional factors influence perceptions of infrastructure, they may not strongly affect views on physical availability. However, literature indicates that infrastructural improvements still play an essential role in shaping overall consumer perception. According to the International Energy Agency (2024), expanding charging networks and improving accessibility are critical for strengthening confidence in EV adoption. Additionally, Rotimi-Ojo (2025) emphasized that infrastructure expansion through coordinated investments is essential in supporting both economic and social dimensions of EV adoption.

Results indicate that all dimensions of perceived economic benefits—cost efficiency, performance and functionality, and social and psychological value—are significantly associated with perceptions of charging infrastructure. Among these, cost efficiency shows the strongest relationships, particularly with economic feasibility and convenience, suggesting that financial considerations are the most influential factor linking economic benefits and infrastructure perception. These findings highlight the importance of integrating cost advantages with infrastructure development to promote electric vehicle adoption effectively.

Table 7 presents the relationship between perceived economic benefits of electric vehicles (EVs) and consumer adoption using correlation analysis. The results indicate that all variables have positive correlation coefficients (r-values) with p-values less than .001, signifying highly significant relationships. This implies that as respondents perceive stronger economic benefits from EVs, their likelihood of adopting these vehicles also increases. The findings suggest that economic considerations play a crucial role in shaping consumer behavior toward EV adoption. This is supported by Zaino et al. (2024), who emphasized that economic perceptions significantly influence consumer adoption decisions. Similarly, the International Energy Agency (2024) reported that affordability and long-term savings are major drivers of EV adoption globally.

Table 7
Relationship between perceived economic benefits of electric vehicles and consumer adoption of electric vehicles

Cost Efficiency	r-value	p-value	Interpretation
Adoption Intention	0.533 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.539 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.668 ***	< .001	Highly Significant
Performance and Functionality			
Adoption Intention	0.574 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.758 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.681 ***	< .001	Highly Significant

Social and Psychological Value			
Adoption Intention	0.369 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.345 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.559 ***	< .001	Highly Significant

Legend: Significant at p-value < 0.05

In terms of cost efficiency, results show moderate to strong positive relationships with all aspects of consumer adoption. Highest correlation is observed with innovativeness and curiosity, followed by perceived value and reasonableness and adoption intention. Findings indicate that respondents who perceive EVs as cost-efficient are more likely to develop interest in EV technologies and view them as valuable investments suggesting that financial benefits not only influence rational decision-making but also stimulate curiosity and openness to innovation. Consumer Reports (2023) found that cost savings associated with EVs enhance consumer willingness to consider and adopt them. Environmental Defense Fund (2023) reported that long-term financial benefits significantly improve consumers' perceived value of EVs, thereby encouraging adoption. For performance and functionality, results demonstrate strong and highly significant relationships with consumer adoption variables. Highest correlation is with perceived value and reasonableness, followed by innovativeness and curiosity and adoption intention. Results suggest that respondents who perceive EVs as reliable, efficient, and technologically advanced are more likely to value them positively and consider adopting them implying that confidence in EV performance enhances perceived value and willingness to adopt. IEA (2024) highlighted that improvements in EV performance, such as driving range and reliability, significantly increase consumer acceptance. Abas et al. (2024) emphasized that technological performance and functional benefits are key determinants of consumers' perceived value and adoption intentions.

Considering the social and psychological value, the correlations remain positive and significant but relatively weaker compared to other dimensions. The strongest relationship is with innovativeness and curiosity, followed by adoption intention and perceived value and reasonableness. These findings suggest that respondents who associate EVs with positive social identity and personal satisfaction are more likely to show interest and curiosity toward EV technologies. This implies that social and emotional factors can influence consumer behavior, particularly in fostering interest and engagement with EV innovation. Meanwhile, the lowest relationship observed is between social and psychological value and perceived value and reasonableness, although it remains statistically significant. This suggests that while social and psychological factors contribute to adoption, they may have less influence on consumers' rational evaluation of EV value compared to economic and functional factors. However, literature confirms that these factors still play an important role. Sovacool et al. (2023) emphasized that social influence and environmental identity contribute to the adoption of sustainable technologies. Additionally, Nguyen et al. (2023) noted that personal satisfaction and values can enhance pro-environmental purchasing behavior. These findings imply that although weaker, social and psychological value remains a meaningful contributor to EV adoption.

Overall, the results indicate that all dimensions of perceived economic benefits—cost efficiency, performance and functionality, and social and psychological value—are significantly associated with consumer adoption of electric vehicles. Among these, performance and functionality shows the strongest relationships, particularly in influencing perceived value and adoption decisions. This highlights that while economic benefits are important, practical performance and technological capabilities play a more dominant role in encouraging consumers to adopt EVs. These findings underscore the importance of improving both economic and functional aspects to strengthen consumer adoption of electric vehicles.

Table 8

Relationship Between Environmental Awareness and Charging Infrastructure

Pollution Reduction and Environmental Friendliness	r-value	p-value	Interpretation
Availability and Accessibility	0.280 ***	< .001	Highly Significant
Convenience and Ease of Use	0.675 ***	< .001	Highly Significant
Economic Feasibility	0.782 ***	< .001	Highly Significant
Government and Private Sector Support	0.511 ***	< .001	Highly Significant

Clean Energy Advocacy			
Availability and Accessibility	0.782 ***	< .001	Highly Significant
Convenience and Ease of Use	0.815 ***	< .001	Highly Significant
Economic Feasibility	0.555 ***	< .001	Highly Significant
Government and Private Sector Support	0.753 ***	< .001	Highly Significant
Social and Community Environmental Support			
Availability and Accessibility	0.383 ***	< .001	Highly Significant
Convenience and Ease of Use	0.729 ***	< .001	Highly Significant
Economic Feasibility	0.559 ***	< .001	Highly Significant
Government and Private Sector Support	0.663 ***	< .001	Highly Significant

Legend: Significant at p-value < 0.05

Table 8 presents the relationship between environmental awareness and charging infrastructure using correlation analysis. The results indicate that all variables show positive correlation coefficients (r-values) with p-values less than .001, signifying highly significant relationships. This implies that higher levels of environmental awareness are associated with more favorable perceptions of charging infrastructure. In other words, individuals who are more aware of environmental issues tend to recognize the importance, availability, and usability of EV charging systems. This finding aligns with existing studies, which show that environmental awareness plays a crucial role in shaping attitudes toward infrastructure development and the adoption of sustainable technologies such as electric vehicles (Zaino et al., 2024; International Energy Agency, 2024).

In terms of pollution reduction and environmental friendliness, significant relationships are observed across all aspects of charging infrastructure. The highest correlation is with economic feasibility, followed by convenience and ease of use and government and private sector support, while availability and accessibility shows a weaker but still significant relationship. These findings indicate that respondents who are highly aware of pollution issues are more likely to perceive charging infrastructure as economically beneficial and convenient. This suggests that environmental concern enhances appreciation for cost-effective and user-friendly infrastructure solutions. Supporting this, the International Energy Agency (2024) emphasized that awareness of environmental impacts often increases acceptance of EV-related infrastructure. Similarly, studies show that individuals concerned about pollution are more inclined to support sustainable transportation systems, including charging networks (Sovacool et al., 2023).

For clean energy advocacy, the results show strong positive relationships with all charging infrastructure variables. The highest correlation is observed with convenience and ease of use, followed by availability and accessibility and government and private sector support, while economic feasibility shows a moderate relationship. These results suggest that respondents who advocate for clean energy are more likely to perceive charging infrastructure as accessible, convenient, and well-supported by institutions. This implies that support for renewable energy aligns closely with positive perceptions of infrastructure development. Supporting this, the International Renewable Energy Agency (2025) highlighted that promoting clean energy initiatives strengthens public support for EV infrastructure expansion. Furthermore, Zaino et al. (2024) emphasized that clean energy awareness significantly enhances acceptance of supporting infrastructure systems.

As to social and community environmental support, all relationships remain positive and statistically significant. The strongest correlation is with convenience and ease of use, followed by government and private sector support and economic feasibility, while availability and accessibility shows a weaker association. These findings indicate that respondents who value collective environmental responsibility are more likely to perceive charging infrastructure as user-friendly and supported by institutions. This suggests that community-driven environmental awareness contributes to positive perceptions of infrastructure effectiveness and usability. Meanwhile, the lowest relationship observed is between pollution reduction and environmental friendliness and availability and accessibility, although it remains highly significant. This suggests that while environmental awareness influences general perceptions of infrastructure, it may have less impact on perceptions of physical infrastructure distribution. However, literature emphasizes that improving accessibility remains essential for

strengthening both awareness and adoption. According to the International Energy Agency (2024), expanding charging infrastructure networks is necessary to address accessibility concerns and promote widespread EV adoption. Additionally, Rotimi-Ojo (2025) highlighted that investments in infrastructure development are crucial for meeting growing demand and improving public confidence in EV systems.

Overall, the findings indicate that all dimensions of environmental awareness—pollution reduction, clean energy advocacy, and social/community support—are significantly associated with perceptions of charging infrastructure. Among these, clean energy advocacy demonstrates the strongest relationships, particularly with convenience and accessibility, suggesting that individuals who actively support clean energy are more likely to view charging infrastructure positively. These results highlight the importance of strengthening environmental awareness to enhance perceptions of infrastructure and support the broader adoption of electric vehicles.

Table 9
Relationship Between Environmental Awareness and Consumer Adoption Of Electric Vehicles

Pollution Reduction and Environmental Friendliness	r-value	p-value	Interpretation
Adoption Intention	0.356 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.535 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.653 ***	< .001	Highly Significant
Clean Energy Advocacy			
Adoption Intention	0.591 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.652 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.810 ***	< .001	Highly Significant
Social and Community Environmental Support			
Adoption Intention	0.762 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.911 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.666 ***	< .001	Highly Significant

Legend: Significant at p-value < 0.05

Table 9 presents the relationship between environmental awareness and consumer adoption of electric vehicles (EVs) using correlation analysis. Results indicate that all variables exhibit positive correlation coefficients with p-values less than .001, signifying highly significant relationships. This implies that higher levels of environmental awareness are associated with stronger consumer adoption of EVs. Individuals who are more conscious of environmental issues tend to display greater intention, perceived value, and openness toward adopting EV technology. Finding is consistent with prior studies, which show that environmental awareness significantly influences consumer adoption of sustainable innovations, including electric vehicles (Zaino et al.,2024). International Energy Agency (2024) emphasized that increased environmental concern drives the transition toward cleaner mobility and strengthens consumer willingness to adopt EVs.

In terms of pollution reduction and environmental friendliness, the results show significant relationships with all dimensions of consumer adoption. The strongest correlation is observed with innovativeness and curiosity, followed by perceived value and reasonableness and adoption intention. These findings indicate that respondents who are more aware of pollution issues are more likely to show interest in EV technology and perceive it as valuable. This suggests that environmental concern not only influences attitudes but also enhances curiosity and engagement with innovative transport solutions. Sovacool et al. (2023) highlighted that individuals concerned about environmental sustainability are more likely to adopt new clean technologies. Additionally, Nguyen et al. (2023) found that environmental awareness positively affects consumers' perception of product value and their willingness to engage in eco-friendly behavior. For clean energy advocacy, the correlation results demonstrate strong positive relationships with all consumer adoption variables. The highest correlation is observed with innovativeness and curiosity, followed by perceived value and reasonableness and adoption intention. These findings suggest that respondents who actively support clean energy initiatives are more likely to be curious about EV technologies and perceive them as valuable and worth adopting. This implies that advocacy for renewable energy strongly influences both behavioral intention and perception. Supporting this, the International Renewable Energy Agency (2025) emphasized that promoting clean energy awareness significantly enhances public

acceptance of electric mobility. Furthermore, research indicates that individuals who endorse clean energy policies are more inclined to adopt technologies aligned with sustainability goals (Zaino et al., 2024).

In terms of social and community environmental support, the results show the strongest correlations among all variables. The highest relationship is with perceived value and reasonableness, followed by adoption intention and innovativeness and curiosity. These findings indicate that respondents who believe in collective environmental responsibility are more likely to view EVs as valuable and demonstrate strong intentions to adopt them. This suggests that community influence and social responsibility significantly shape consumer perceptions and decisions. Social norms and community-based values may enhance trust in EVs and encourage adoption through shared beliefs and collective actions. Meanwhile, the lowest relationship observed is between pollution reduction and environmental friendliness and adoption intention, although it remains highly significant. This suggests that environmental concern alone may not be sufficient to directly drive purchase intention without the support of other factors such as perceived value or social influence. However, literature confirms that environmental awareness still plays an essential role. According to the International Energy Agency (2024), combining environmental awareness with economic incentives and infrastructure improvements significantly strengthens adoption intention. Additionally, Sovacool et al. (2023) emphasized that environmental concern must be complemented by practical considerations to effectively influence consumer decisions. Overall, the findings indicate that all dimensions of environmental awareness—pollution reduction, clean energy advocacy, and social/community environmental support—are significantly associated with consumer adoption of electric vehicles. Among these, social and community environmental support demonstrates the strongest overall relationships, particularly in influencing perceived value and adoption intention. This highlights the importance of social influence and shared responsibility in promoting EV adoption. These results suggest that increasing environmental awareness, particularly through community engagement and clean energy advocacy, can significantly enhance consumer acceptance and adoption of electric vehicles.

Table 10 presents the relationship between charging infrastructure and consumer adoption of electric vehicles (EVs) using correlation analysis. The results indicate that all variables exhibit positive correlation coefficients (r-values) with p-values less than .001, signifying highly significant relationships. This implies that better perceptions of charging infrastructure are associated with higher levels of consumer adoption of EVs. In other words, as charging infrastructure becomes more available, convenient, affordable, and supported, consumers are more likely to develop stronger intentions, perceive greater value, and show increased interest in EV technologies. This finding is supported by Zaino et al. (2024), which emphasized that infrastructure readiness is a crucial determinant of EV adoption. Similarly, the International Energy Agency (2024) highlighted that the expansion and improvement of charging infrastructure significantly enhance consumer confidence and adoption rates.

Table 10
Relationship Between Charging Infrastructure and Consumer Adoption Of Electric Vehicles

Availability and Accessibility	r-value	p-value	Interpretation
Adoption Intention	0.622 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.547 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.586 ***	< .001	Highly Significant
Convenience and Ease of Use			
Adoption Intention	0.519 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.594 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.792 ***	< .001	Highly Significant
Economic Feasibility			
Adoption Intention	0.384 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.370 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.609 ***	< .001	Highly Significant
Government and Private Sector Support			
Adoption Intention	0.681 ***	< .001	Highly Significant
Perceived Value and Reasonableness	0.697 ***	< .001	Highly Significant
Innovativeness and Curiosity	0.667 ***	< .001	Highly Significant

Legend: Significant at p-value < 0.05

In terms of availability and accessibility, the results show strong positive relationships with all adoption variables. The highest correlation is observed with adoption intention, followed by innovativeness and curiosity and perceived value and reasonableness. These findings indicate that respondents who perceive charging stations as widely available and accessible are more likely to intend to adopt EVs and view them positively. This suggests that ease of access to infrastructure reduces uncertainty and increases consumer willingness to adopt EVs. Supporting this, the International Energy Agency (2024) reported that widespread availability of charging stations is essential in reducing range anxiety and encouraging EV adoption. Studies show that accessibility of charging facilities directly influences consumer confidence and decision-making (Zaino et al., 2024). For convenience and ease of use, the results reveal significant relationships with all consumer adoption variables. The strongest correlation is with innovativeness and curiosity, followed by perceived value and reasonableness and adoption intention. These findings suggest that when charging systems are easy to use and integrate into daily routines, consumers are more likely to explore and adopt EV technologies. This implies that user-friendly infrastructure enhances both the practical value and appeal of EVs. Supporting this, the International Energy Agency (2024) emphasized that improvements in charging convenience, such as faster and simpler charging processes, increase user satisfaction and adoption. Additionally, research shows that ease of use is a critical factor influencing acceptance of new technologies (Zaino et al., 2024).

The highest correlation is with innovativeness and curiosity, followed by adoption intention and perceived value and reasonableness. These findings indicate that respondents who perceive EV charging as affordable are more likely to show interest and curiosity toward EV technologies. This suggests that financial feasibility not only influences practical decisions but also encourages engagement with innovation. Consumer Reports (2023) noted that lower operating costs increase consumer willingness to adopt EVs. Similarly, Environmental Defense Fund (2023) emphasized that economic affordability enhances perceived value and supports adoption behaviors. The lowest relationships are observed within economic feasibility, particularly with perceived value and reasonableness, although still statistically significant. This suggests that while cost considerations are important, they may not be as influential as infrastructure convenience or accessibility in shaping perceived value. However, literature confirms that cost remains a key factor. According to the International Energy Agency (2024), affordability and cost transparency are critical in improving adoption rates. Studies highlight that economic incentives and cost reductions contribute significantly to long-term EV acceptance (Zaino et al., 2024).

Lastly, for government and private sector support, the results demonstrate strong positive relationships with all adoption variables. The highest correlation is with perceived value and reasonableness, followed by adoption intention and innovativeness and curiosity. These findings suggest that respondents who perceive strong institutional support are more likely to view EVs positively and intend to adopt them. This implies that policies, incentives, and investments from both sectors enhance consumer trust and confidence in EV systems. Supporting this, Abas et al. (2024) emphasized that government incentives and policy support significantly increase EV adoption rates. Additionally, the U.S. Department of Energy (2024) highlighted that coordinated public and private investments are essential in building consumer confidence and accelerating EV adoption. Overall, the findings indicate that all dimensions of charging infrastructure—availability and accessibility, convenience and ease of use, economic feasibility, and government and private sector support—are significantly associated with consumer adoption of electric vehicles. Among these, convenience and ease of use and institutional support demonstrate the strongest relationships, highlighting the importance of user-friendly systems and policy backing. These results underscore that improving infrastructure quality and support mechanisms is essential in promoting widespread adoption of electric vehicles.

Table 11 presents the results of the multiple linear regression analysis conducted to determine which factors significantly influence electric vehicle adoption. The findings reveal that the regression model identified several significant predictors of electric vehicle adoption, as indicated by their corresponding p-values being less than the 0.05 level of significance. Among the predictors, Social and Community Environmental Support emerged as the strongest positive predictor of electric vehicle adoption indicating that greater community encouragement, societal

responsibility, and support for environmental sustainability substantially increase the likelihood of consumers adopting electric vehicles. Clean Energy Advocacy significantly and positively influenced electric vehicle adoption, suggesting that individuals who strongly support renewable energy initiatives are more inclined to adopt electric vehicles.

Table 11
Predictors Influencing Electric Vehicle Adoption

Indicators	B	t-value	p-value	Interpretation
(Intercept)		9.049	< .001	Highly Significant
Cost Efficiency	-0.15845	-3.783	< .001	Highly Significant
Performance and Functionality	-0.01649	-0.648	0.518	Not Significant
Social and Psychological Value	-0.07214	2.560	0.011	Significant
Pollution Reduction and Environmental Friendliness	0.15529	5.332	< .001	Highly Significant
Clean Energy Advocacy	0.55578	13.875	< .001	Highly Significant
Social and Community Environmental Support	0.92181	49.765	< .001	Highly Significant
Availability and Accessibility	0.08910	4.150	< .001	Highly Significant
Convenience and Ease of Use	-0.67696	-18.925	< .001	Highly Significant
Economic Feasibility	-0.00473	-0.130	0.897	Not Significant
Government and Private Sector Support	0.22730	7.684	< .001	Highly Significant

Legend: Significant at p-value < 0.05

Government and Private Sector Support was found to be a highly significant positive predictor, indicating that incentives, policies, and investments from both government and private organizations contribute to increased consumer adoption. Likewise, Pollution Reduction and Environmental Friendliness and Availability and Accessibility of charging infrastructure positively influenced electric vehicle adoption, highlighting the importance of environmental concerns and adequate charging infrastructure in shaping consumer decisions. Cost Efficiency showed a statistically significant but negative relationship with electric vehicle adoption. This suggests that when the effects of all other variables are controlled, respondents' perceptions regarding cost efficiency may not necessarily translate into higher adoption levels, possibly due to concerns about the initial purchase cost of electric vehicles. Convenience and Ease of Use demonstrated a highly significant negative effect, indicating an inverse relationship with adoption when considered alongside the other predictors in the model. Result may suggest the presence of overlapping effects with other infrastructure-related variables.

In contrast, Performance and Functionality and Economic Feasibility were found to be non-significant predictors of electric vehicle adoption. This implies that perceptions regarding vehicle performance and the affordability of charging-related expenses do not significantly influence adoption decisions once other determinants are taken into account. Overall, the results indicate that environmental awareness factors and institutional support mechanisms are the most influential determinants of electric vehicle adoption, with Social and Community Environmental Support, Clean Energy Advocacy, and Government and Private Sector Support serving as the strongest predictors. These findings suggest that enhancing environmental education, strengthening community engagement, and expanding government and private sector initiatives may be effective strategies for promoting the adoption of electric vehicles.

Table 12
Strategic Action Plan for Improving Consumer Adoption of Electric Vehicles in Bangkok, Thailand

KRA (Key Result Area)	Strategies	Objective of the Strategies	Persons Involved	Expected Outcomes
Perceived Value and Reasonableness Electric vehicles offer benefits that justify their cost.	1. Launch total cost of ownership (TCO) awareness campaigns comparing EV operating and maintenance costs with conventional vehicles.	To help consumers understand the long-term financial benefits of EV ownership.	Government agencies, EV manufacturers, dealerships, consumer advocacy groups	Increased consumer awareness of the economic benefits of EVs.
	2. Develop interactive cost-savings calculators and online platforms for prospective buyers.	To provide consumers with personalized estimates of potential savings from EV adoption.	Government agencies, technology providers, EV dealers	Improved consumer perception that EV benefits justify their cost.

	3. Promote real-life testimonials and case studies of EV owners.	To demonstrate actual financial and practical benefits experienced by EV users.	EV owner associations, media organizations, EV manufacturers	Greater consumer confidence in the value proposition of EVs.
Electric vehicles are worth considering despite their initial purchase price.	1. Expand financial assistance programs such as subsidies, tax incentives, and low-interest financing schemes.	To reduce the perceived burden of the initial purchase price of EVs.	Government agencies, financial institutions, policymakers	Improved affordability and increased willingness to consider EV purchases.
	2. Conduct public information campaigns highlighting long-term savings and return on investment.	To emphasize that higher upfront costs can be offset by lower operating and maintenance expenses.	Government agencies, EV manufacturers, educational institutions	Enhanced perception of EVs as a worthwhile long-term investment.
	3. Introduce promotional programs and flexible payment options through dealerships.	To make EV ownership more financially accessible to a broader consumer market.	EV dealerships, automotive companies, financial institutions	Increased consumer interest and higher EV adoption rates.

4. Conclusions and recommendations

The respondents generally agreed on the the economic benefits of EVs such as cost efficiency, performance functionality, and social and psychological value. The respondents generally recognized the environmental benefits of EVs, particularly their role in reducing pollution and promoting environmental sustainability. The respondents have a moderately positive perception of charging infrastructure, particularly in terms of its economic benefits and user convenience. The respondents have favorable attitude toward EV adoption, driven primarily by consumers' interest in innovation and emerging technologies There is significant relationship among Economic Benefits, Environmental Awareness, and Charging Infrastructure and Electric Vehicle Adoption in Bangkok. The environmental awareness and institutional support are the most influential factors driving electric vehicle adoption. Proposed Strategic Action Plan for Improving Consumer Adoption of Electric Vehicles in Bangkok, Thailand was prepared.

Government agencies and environmental organizations may strengthen environmental awareness campaigns emphasizing pollution reduction, clean energy advocacy, and community environmental responsibility, as these factors were found to be among the strongest predictors of electric vehicle (EV) adoption. Government and private sector stakeholders may continue expanding and improving EV charging infrastructure, particularly in terms of accessibility, availability, and institutional support, to enhance consumer confidence and encourage wider EV adoption. EV manufacturers and dealers may highlight the environmental and innovative aspects of EVs in their marketing strategies, as consumers showed favorable perceptions toward innovativeness, curiosity, and environmental benefits associated with EV ownership. Policymakers may develop supportive programs and incentives that encourage EV adoption, including public-private partnerships, charging station development, and policies that promote sustainable transportation practices. Educational institutions and community organizations may conduct information drives and awareness programs to improve public understanding of the economic and environmental benefits of EVs, thereby strengthening positive consumer perceptions and adoption intentions. The Proposed Strategic Action Plan for Improving Consumer Adoption of Electric Vehicles in Bangkok, Thailand may be considered for implementation. Future researchers may further investigate the unexpected negative effects of certain predictors, such as cost efficiency and convenience and ease of use, to better understand their influence on EV adoption and to validate the findings of the study.

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