



**DETERMINANTS OF ELECTRIC VEHICLE ACCEPTANCE:
 EVIDENCE FROM AN URBAN CONTEXT**

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ARTICLE INFO	ABSTRACT
<p>Article History: Received: 29 October 2025 Revised: 24 January 2026 Accepted: 28 January 2026 Published: 15 March 2026</p>	<p>The globe’s inclination towards cleaner transportation has ensured increased demand for Electric Vehicles (EVs). This study aims to determine the major drivers for electric vehicle adoption in Kuala Lumpur, Malaysia’s most developed urban area. A survey approach was used, with a standard questionnaire administered to 432 urban residents, both EV users and non-users. The research framework was developed based on the Technology Acceptance Model (TAM) with environmental awareness, vehicle price perception, government subsidy, infrastructure availability, and social influence as the variables. Multiple regression and correlation analyses were conducted to examine the determinants of consumer acceptance of electric vehicles. The research indicates that determinants such as perceived usefulness, environmental concern, and government incentives strongly influence urban residents’ intention to use EVs. But the fear of limited charging infrastructure and high initial costs is a significant deterrent. The study concludes that policy intervention, consumer education, and infrastructure investment must be enhanced to promote the uptake of EVs in the city. This case study provides useful lessons for policymakers, manufacturers, and urban planners on how to forge successful policies for sustainable city transportation in Malaysia that align with the sustainability goals of the New Industrial Master Plan 2030.</p>
<p>Keywords: Electric vehicle, technology acceptance model, consumer behaviour, sustainability, transportation, acceptance determinants.</p>	

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Introduction

The transport industry globally contributes significantly to greenhouse gas emissions, accounting for approximately 24% of direct CO₂ emissions from fuel combustion (International Energy Agency, 2021). Because of the climate and air quality crises, most countries are embracing Electric Vehicles (EVs) as a green alternative to conventional vehicles. EVs have numerous environmental and economic benefits, including reduced tailpipe emissions, improved energy efficiency, and no consumption of fossil fuels (Sierzchula *et al.*, 2014).

In Southeast Asia, Malaysia led the way in adopting regional sustainability trends by introducing mobility-focused green policies. The Low Carbon Mobility Blueprint 2021–2030 and the National Automotive Policy (NAP 2020) indicate the government’s willingness to encourage EV adoption through financing subsidies, research and development support, and infrastructure setup (Ministry of International Trade and Industry, 2020). But at present, the overall level of EV take-up in Malaysia is low, indicative of an imbalance between policy aspirations and consumer response.

Urban districts such as Kuala Lumpur face immediate issues of traffic congestion, urban sprawl, and pollution. Most of these concerns would be addressed by EVs with reduced emissions in confined spaces and by pushing for cleaner urban mobility (Shariff *et al.*, 2021). However, despite Kuala Lumpur being better prepared than other Malaysian cities, the acceptance rate of EVs is low, which creates uncertainties about the drivers of consumer demand. Besides that, Kuala Lumpur also faced related travel-demand problems such as traffic congestion, urbanisation, and air pollution. EVs would address most of these issues by reducing local emissions and promoting a more sustainable mode of transportation in urban hubs (Shariff *et al.*, 2021). Despite Kuala Lumpur's well-developed EV infrastructure compared to other Malaysian cities, and it is relevant to ask what drives consumer acceptance.

Many studies show that acceptance of EVs is influenced by a variety of determinants, including environmental concern, cost-benefit perceptions, driving range, infrastructure availability, and technology anxiety (Egbue & Long, 2012; Rezvani *et al.*, 2015). Determinants are context-specific. The drivers of EV demand in developed countries may be different in emerging economies due to differences in infrastructure, consumer awareness, and market readiness (Gnann *et al.*, 2015). Kuala Lumpur, as the economic hub of Malaysia, offers a unique sociotechnical setting in which EV adoption can be studied. It has a growing middle-income demographic, rising car penetration, and pilot smart city initiatives. All these offer a strong case study for examining Malaysians' attitudes towards EVs in urban settings and the drivers and dampeners of their acceptance intentions (Azmi *et al.*, 2020).

Therefore, this study adopts a micro-level, consumer-centric view to assess the drivers of EV uptake in Kuala Lumpur. Specifically, this work examines how purchase price, perceived

environmental consciousness, range anxiety, awareness of EV technology, and charging point availability affect consumers' decision-making. These drivers are examined using the Technology Acceptance Model (TAM) and Diffusion of Innovations Theory (Rogers, 2003) as the theoretical bases for analysis.

Aside from consumer decisions, this study recognises that the adoption of EVs is likewise affected by systemic factors such as public infrastructure, policy consistency, and social norms. The nascent stage of EV charging station infrastructure and the existence of supportive government agencies in Kuala Lumpur provide a context for studying such macro-environmental drivers (Malaysia Green Technology Corporation, 2022). It requires a compassionate understanding of these determinants to construct effective policies. For example, if the strongest deterrent is shown to be high initial costs, then cost subsidies or tax incentives would be appropriate. Or, if ignorance or lack of information is the strongest inhibiting factor, demonstration projects and information programmes will likely prove more effective (Lane & Potter, 2007).

That is why this article attempts to close the gap between policy design and consumer action by examining the determinants of EV acceptance in Kuala Lumpur. The main contribution of this study is an overall analysis of the determinants of EV adoption in the Malaysian setting. This is a result consistent with providing policymakers, automobile firms, and urban planners with insights into strategic interventions that could boost EV demand in Malaysian cities and support wider environmental sustainability ambitions.

The rest of the article is organised as follows. The literature review section summarises the findings of relevant prior studies and elaborates on the research framework and hypotheses. The methodology and data collection procedures are

outlined in the following section, followed by the results analysis. Discussion and implications of the findings are recorded in the discussion and recommendation section, while the last section provides the conclusion.

Literature Reviews

The global automotive sector is undergoing a radical transformation towards low-emission, sustainable mobility. Adoption rates of EVs vary globally, guided by more situation-specific local socio-economic, policy, and infrastructural factors (Sierzchula *et al.*, 2014; IEA, 2023), in spite of technological advancements and environmental imperatives. Kuala Lumpur, Malaysia is spearheading this transformation and represents the challenge and opportunity of harnessing EV adoption in urban cities. This literature review summarises the results from some of the strongest drivers, including the Technology Acceptance Model (TAM), Electric Vehicles (EVs), environmental concern, perceived cost, government incentives, infrastructure, and social influence, in the following sections.

Technology Acceptance Model (TAM) and Electric Vehicles (EVs)

The Technology Acceptance Model (TAM), originally developed by Davis (1989), remains one of the most well-established theoretical models for explaining user behaviour towards new technology. Two constructs (perceived usefulness and perceived ease of use) are presumed to be determinants of user intention and behaviour according to the model (Venkatesh & Davis, 2000). TAM has been applied to the context of EVs by several studies. For example, Moons and De Pelsmacker (2015) expanded TAM by adding environmental concern and found that perceived usefulness in the context of environmental and economic benefits was a

highly effective predictor of EV adoption. Zhou *et al.* (2020) and Liu *et al.* (2021) also found that when EVs were perceived as practical, reliable, and useful, consumers were more likely to adopt them. In Malaysia, Samsudin *et al.* (2021) found that perceived ease of use (e.g., charging and driving experience) significantly influenced attitudes toward EVs among urban professionals. The above findings suggest that using TAM to account for local infrastructure and policy settings improves explanatory power, thereby justifying its application in this study.

Environmental Concern and Sustainability Awareness

Environmental consciousness has been widely recognised as a key driver of EV adoption (Barbarossa *et al.*, 2015). Environmentally conscious consumers are more likely to adopt and utilise environmentally friendly technologies such as electric vehicles. Abdul Hamid *et al.* (2020) established that environmental consciousness is a key driver of green car adoption among youths and professionals in Malaysia. Consistent with Nordin *et al.* (2022), findings from the Klang Valley demonstrated that urban Malaysians increasingly respond to issues of air pollution and climate change. Cross-cultural studies abroad such as those by Rezvani *et al.* (2018) and Li *et al.* (2019), also attest that environmentally friendly values really determine consumer behaviour regarding EVs. Such environmental driving forces, with the backing of facilitating infrastructure and policies have a greater intention to adopt.

Perceived Vehicle Cost and Economic Considerations

The high initial purchase cost is widely recognised as a principal barrier to the adoption of EVs, particularly in developing and middle-

income countries (Rezvani *et al.*, 2015; Koirala *et al.*, 2021). While EVs generally offer lower lifetime operating costs, consumers tend to prioritise upfront expenses, which discourages adoption. Yusof *et al.* (2019) observed that, despite awareness of fuel savings, high ownership costs such as battery replacement, and the lack of affordable vehicle options continue to deter consumers in Malaysia. For instance, a survey by Mustapa and Bekhet (2016) found that over 60% of urban respondents were unwilling to pay a premium for EVs without substantial subsidies. Comparative studies in China (Wang *et al.*, 2021) and India (Saxena *et al.*, 2022) demonstrate that price-sensitive consumers require significant economic incentives to view EVs as viable alternatives. Therefore, perceived cost remains a crucial factor in models predicting EV adoption behaviour.

Government Incentives and Policy Support

Public policy plays a crucial role in facilitating the adoption of EVs. Measures such as tax rebates, purchase subsidies, road tax exemptions, and investment in charging infrastructure have proven effective in countries like Norway, China, and the Netherlands (Jin *et al.*, 2020; IEA, 2022). Government incentives have also been identified as significant factors influencing EV acceptance (Hasudungan *et al.*, 2024; Zang *et al.*, 2024). Malaysia has implemented policy initiatives, including the Low Carbon Mobility Blueprint (2021–2030) and the New Industrial Master Plan 2030, to encourage the adoption of EVs. According to Azmi *et al.* (2022), these efforts are essential for communicating the government's long-term commitment and reducing perceived consumer risk. However, Lim *et al.* (2023) note that Malaysian incentives are less ambitious than those of regional leaders such as Singapore and Thailand. Despite awareness of these incentives, bureaucratic inefficiencies and uncertainty in implementation

guidelines have limited their impact on EV adoption in Kuala Lumpur (Nordin *et al.*, 2021). These inconsistent policy signals contribute to the sluggish rate of EV adoption in the Malaysian capital.

Infrastructure Availability and Technological Support

Charging infrastructure is the most commonly reported physical limitation to EV adoption (Hall & Lutsey, 2017; Tran *et al.*, 2020; Tin *et al.*, 2024). Accessibility to charging stations impacts perceived ease of use, range anxiety, and overall satisfaction with EV ownership. Rahman *et al.* (2022) found that Kuala Lumpur lacks sufficient public charging stations relative to population density and vehicle ownership. EVs users tend to rely on home charging, which is not possible for high-rise residents or renters (Syed Mansor & Anuar, 2025). In addition, the maintenance and unavailability of fast-charging facilities fuel user reluctance. In a regional study, Sun *et al.* (2021) found that well-distributed, accessible, and interoperable charging infrastructure in urban China had a positive impact on EV acceptance. Malaysia needs to improve infrastructure accessibility to catch up with the preparedness of other urban Association of Southeast Asian Nations (ASEAN) countries.

Social Influence and Public Perception

Peer pressure and social norms also shape sustainable technology adoption. Subjective norms (other people's perceived attitude towards a behaviour) play a pivotal role in behavioural intention in Ajzen's Theory of Planned Behaviour (1991). Shamsul and Ishak (2020) observed that Malaysian consumers would rely on peer reviews, public opinion, and online feedback when buying EVs. Similarly, Wang *et al.* (2019) and Martins and Gomes (2024) found that individuals exposed to EVs

through family members or friends are more likely to adopt EVs as they become familiar and comfortable with them. Opinion leaders, pioneers, and public sector leaders can make EVs acceptable and overcome the psychological distance to the technology. However, Khor *et al.* (2022) noted that in Malaysia, the absence of robust role models or advocacy has limited the diffusion of social influence in EV marketing. Shalu and Pandey (2023) also revealed that social influence is an important determinant of the intention to accept EVs among respondents,

compared with performance expectancy and price value. In Africa, Adebayo and Kazeem (2025) show that significant social influence and perception play a key role in shaping EVs' acceptance.

Research Framework and Hypotheses

Figure 1 depicts the model intended to examine the determinants of EV acceptance among consumers. Five independent construct factors appear in the model below.

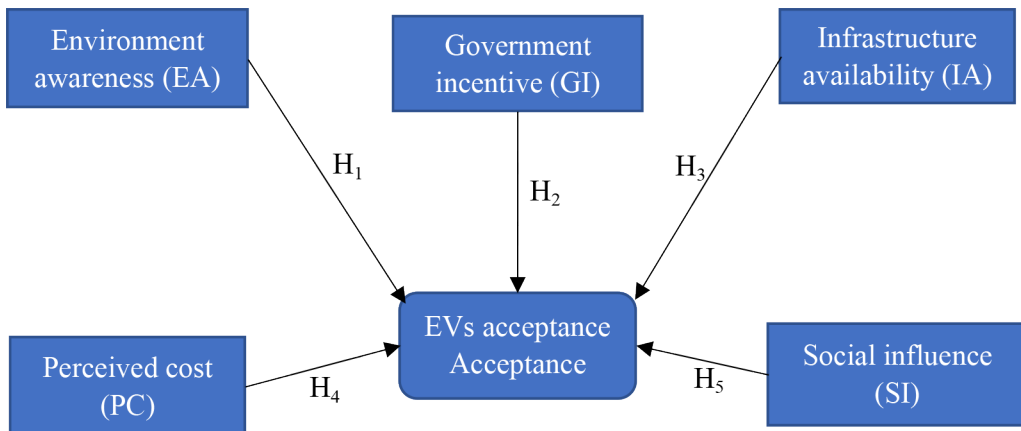


Figure 1: Research framework

Environmental Awareness (EA)– H_1

This variable measures the level of consciousness, concern, and familiarity consumers possess regarding environmental issues such as carbon emissions, global warming, and pollution. The hypothesis assumes that the higher an individual's level of environmental awareness, the greater the likelihood that he or she will adopt and accept EVs, since they are more eco-friendly than traditional cars.

Government Incentive (GI)– H_2

This factor involves government financial and non-financial support in the form of tax credits,

buying subsidies, reduced registration fees, and toll-free operation. The belief is that exorbitant government incentives positively influence consumers' preference for EVs by reducing costs and increasing their attractiveness.

Infrastructure Availability (IA)– H_3

Infrastructure availability refers to the accessibility of service stations, charging stations, and parking lots suitable for EVs. In accordance with the theory, the greater the dissemination and development of EV infrastructure, the greater the likelihood of consumer acceptance, as it reduces inconvenience and "range anxiety".

Perceived Cost (PC)–H₄

This structure encompasses the perceived life costs of driving and EV ownership (purchase price, battery replacement, electricity costs, and repairs). The hypothesis is that if people know EVs are cost-effective in the long term, they would be willing to embrace them; however, high perceived cost is a setback.

Social Influence (SI)–H₅

Social influence refers to the impact of peer groups, social norms, family and friends, and broader societal trends on an individual's behaviour. This assumption assumes that positive attitudes, acceptance, or encouragement by social groups would have a significant impact on the intention of an individual to use EVs

Methodology

Research Design

This study employed a quantitative approach to examine the determinants of EV acceptance in Kuala Lumpur. The approach was appropriate for statistically comparing the relationships among seminal constructs of the Technology Acceptance Model (TAM) and extrinsic variables, including concern for the environment, vehicle cost, government incentives, infrastructure availability, and social influence. This cross-sectional study used a structured, self-administered survey to collect primary data from urban residents.

Population and Sampling

The target population was urban Kuala Lumpur inhabitants, both EV owners and non-owners. The city was selected due to its high rates of urbanisation and motor vehicle ownership, and its location on Malaysia's National Low Carbon Mobility Agenda. A purposive sampling technique was used to determine participants

aged 18 years and older, residing in Kuala Lumpur for 1 year or longer, and with ownership status (EV users and non-users). With Cochran's formula for large populations and a moderate effect size assumed, the sample size of 380 participants was calculated to give a sufficient amount of statistical power and is also in line with guidelines by Hair *et al.* (2019) to be used in the case of multiple predictors in the analysis. The research supplemented the sample by an additional 15% to account for potential incomplete returns from participants.

Questionnaire Design

The survey instrument was developed in both Malay and English and comprised two main sections. Section A collected demographic information, including education level, income level, vehicle ownership status, and awareness of EVs. Section B contained measurement items designed to assess explanatory and influencing variables using a 7-point Likert scale ranging from strongly disagree to strongly agree. The measurement items for each construct were adapted from evidence-based measures in previous EV-related studies (e.g., Moons & De Pelsmacker, 2015; Liu *et al.*, 2021; Nordin *et al.*, 2022).

Data Collection

Data collection was conducted over four weeks using both online and offline survey distribution methods. The online survey was hosted on Google Forms and disseminated via email, social media, and electric vehicle community groups. Paper copies were distributed in public locations, including shopping malls, universities, and transit hubs in Kuala Lumpur, to reach a broader demographic. Ethical approval was obtained prior to data collection. Participation was voluntary, and respondents' anonymity and

confidentiality were maintained. A total of 432 questionnaires were collected, of which 417 were deemed eligible for inclusion in the study.

Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 26. The analysis followed these steps. First, demographic information was summarised, and the distribution of responses for each variable was presented. Second, reliability analysis was performed using Cronbach's Alpha to assess internal consistency for each construct, with a threshold of $\alpha \geq 0.70$ indicating acceptable

reliability. Third, Spearman's rank correlation coefficients were calculated to quantify the strength and direction of relationships among variables. Fourth, multiple linear regression analysis was conducted to examine the hypothesised relationships between the independent variables [environmental concern (EC), perceived cost (PC), incentives (INC), infrastructure (INFRA), and social influence (SI)] and the dependent variable (intention to accept electric vehicles) [Equation (1)]. Finally, multicollinearity was assessed using the Variance Inflation Factor (VIF) and tolerance values to ensure the absence of multicollinearity among predictor variables.

$$EV_{\text{acceptance}} = \beta_0 + \beta_1 EC + \beta_2 PC_i + \beta_3 INC_i + \beta_4 INFRA_i + \beta_5 SI_i + \varepsilon_i \quad (1)$$

where $EV_{\text{acceptance}}$ is the total score instrument construct for respondent i , EC_p , PC_p , INC_p , $INFRA_p$, and SI_i are explanatory variables is measure in total score of instrument construct for respondent i respectively, β_0 , β_1 , β_2 , β_3 , β_4 , and β_5 are estimated coefficients and ε_i is the error term.

Results

The analysis of the respondents' demographic profile (Table 1) indicates a balanced gender distribution, with male respondents comprising 50.5% and female respondents at 49.5%. This near-equal representation of genders makes the results not biased by gender. In terms of age structure, the 30 to 40-year-old category is the highest at 32.1%, followed by 18 to 29 years old at 23.7%, 41 to 50 years old at 23.7%, and over 50 years old at 20.5%. This age structure indicates that the great majority of respondents are in the working-age group and are making active vehicle ownership decisions.

The respondents' education level is very high, with 72.7% holding a bachelor's degree, 14.6% holding STPM or a diploma, and 9.8% holding SPM or below. Only a few have attained postgraduate levels (Master or PhD) at 2.9%. This reflects a highly educated population sample, which is relevant since education level is likely to correspond with environmental sensitivity and technology adoption. Regarding employment status, most (61.2%) are working in the private sector, 23.3% are working in government offices, 8.9% are self-employed, 4.8% are unemployed, and 1.8% are students. The distribution of monthly income indicates that 41.2% of respondents receive RM3,001.00 to RM5,000.00, followed by 25.4% who earn RM5,001.00 to RM10,000.00, 21.3% who earn RM1,000.00 to RM3,000.00, and 12.1% who earn above RM10,000.00. This means the study covers a broad socioeconomic universe, with a strong presence of middle-income groups. Based on car usage, 48.7% of respondents currently use EVs, and 51.3% do not. This relatively balanced division provides a good foundation for comparing adoption and resistance to EV adoption.

Table 1: Profile of respondent (N = 417)

Category	Frequency	Percent (%)
Gender		
Male	211	50.5
Female	206	49.5
Age (years old)		
18–29	99	23.7
30–40	134	32.1
41–50	98	23.7
More than 50	86	20.5
Educational level		
SPM and below	41	9.8
STPM/diploma	61	14.6
Bachelor degree	303	72.7
Master/PhD	13	2.9
Employments		
Private	255	61.2
Government	97	23.3
Students	8	1.8
Self employed	37	8.9
Unemployed	20	4.8
Income level		
RM1,000.00–RM3,000.00	89	21.3
RM3,001.00–RM5,000.00	172	41.2
RM5,001.00–RM10,000.00	106	25.4
More than RM10,000.00	50	12.1
Vehicle classifications		
EVs	203	48.7
Non-EVs	214	51.3

Reliability tests indicate that all variables exhibit high internal consistency, as evidenced by Cronbach's Alpha values ranging from 0.80 to 0.89. Therefore, the dimension constructs are considered reliable. Correlation analysis was subsequently conducted using the Spearman Rank method (Table 2). Findings indicate strong, significant positive correlations among all independent variables, including EC with

PC ($r = 0.768$), GI ($r = 0.739$), IA ($r = 0.761$), and SI ($r = 0.756$) at the 5% significance level. Strong correlations are also observed between GI and IA ($r = 0.774$) and between GI and PC ($r = 0.746$). These positive correlations point to interdependencies among these variables and suggest that interrelated environmental, economic, and social factors shape public awareness and attitudes towards EV take-up.

Table 2: Spearman rank correlation (independent variables)

	Environment Concern (EC)	Perceived Cost (PC)	Government Incentive (GI)	Infrastructure Availability (IA)	Social Influence (SI)
Environmental concern (EC)	1				
Perceived cost (PC)	0.768**	1			
Government incentive (GI)	0.739**	0.746**	1		
Infrastructure availability (IA)	0.761**	0.760**	0.774**	1	
Social influence (SI)	0.756**	0.739**	0.764**	0.730**	1

Note: ** significant level 5%.

Table 3: Multiple regression results

Independent Variables	Coefficient	Standard Error	Variance Inflation Factor (VIF)
Constant	0.390	0.707	
Environmental concern (EC)	0.326**	0.048	6.311
Perceived cost (PC)	0.072	0.049	4.640
Government incentive (GI)	0.313**	0.047	6.187
Infrastructure availability (IA)	0.105**	0.048	4.357
Social influence (SI)	0.166**	0.048	6.094
Adjusted-R ²		0.843	
F-statistics		447.877**	
Heteroscedasticity test		47.888*	

Note: ** significantly with 5% level. Dependent variables are Acceptance of EV. The estimation used robust standard errors correction to mitigate the effects of heteroskedasticity.

The multiple regression analysis further investigates the impact of these independent variables on EV acceptance (Table 3). The model is a good fit with an adjusted-R² of 0.843, implying that the model is able to explain 84.3% of the variance of EVs acceptance. The F-statistic of 447.877 is significant at the 5% level, which confirms the validity of the general model. Of the predictors, environmental concern ($\beta = 0.326$, $p < 0.05$) was found to be the most significant, in that greater knowledge about environmental issues has a positive influence

on the propensity of individuals to use EVs. Government incentives ($\beta = 0.313$, $p < 0.05$) are also significant, pointing to the strength of financial incentives, rebates, and policy support in encouraging the adoption of EVs.

Social influence ($\beta = 0.166$, $p < 0.05$) is also significant, indicating that peer pressure, community practice, and social standards can affect EV adoption. Infrastructure availability ($\beta = 0.105$, $p < 0.05$) is significant but modest, indicating that the number of charging stations and supporting infrastructure available

positively affects decision adoption. Expectedly, perceived cost ($\beta = 0.072$) was not statistically significant in this study, which may be explained by increasing public sentiment that EVs are becoming cheaper or by cost being offset by current incentives and long-term benefits.

The Variance Inflation Factor (VIF) for each variable range from 4.357 to 6.311, which is below the critical value of 10 and indicates that multicollinearity is not a serious issue in this model. Although the report indicates that a heteroscedasticity test was performed, the results are not reported. Assuming there is no heteroscedasticity, the model meets the most critical assumptions for conducting regression analysis and also enhances the validity of the results.

Discussions and Recommendations

The study's findings indicate that environmental awareness is the most significant variable affecting EV acceptance among respondents in Kuala Lumpur. Eco-friendly respondents who are better aware of environmental concerns such as air pollution and carbon footprints, are more likely to embrace electric vehicles. That would mean greater awareness of the green impact of conventional vehicles could encourage consumers to use cleaner modes of mobility. These results of the current study also prove the positive relationship between ecological awareness and EV acceptance, which is similar to the research studies of Ramadhan *et al.* (2024) and Kurniawan and Sidi (2024) in Indonesia, Srichan and Kanchanapibul (2024) in Thailand, Mustafa *et al.* (2024) in China, and Phoon *et al.* (2024) in Malaysia. Outside of environmental concerns, government schemes have also been shown to be a strong and useful driver in EV adoption and uptake in Kuala Lumpur.

These findings also align with those of Hasudungan *et al.* (2024) in Indonesia, Zhang *et al.* (2024), and Wang *et al.* (2019) in China.

For example, tax credits, rebates, subsidies, and reduced registration fees on policies appear to make a positive difference in consumer decisions. This supports the purpose of relentless, visible government incentives to stimulate demand for EVs. These government programs under the Malaysian National Automotive Policy (NAP) are therefore critical and must be reviewed frequently and revised to keep pace with the EV sector.

Social influence was also a strong positive predictor in the acceptance model of EV cars. The findings of this study also support the previous research conducted by Shalu and Pandey (2025), Martins and Gomes (2024), and Adebayo and Kazeem (2025). This factor indicates that family members, friends, workmates, and social media testimonies do have an impact on perceptions and behaviours towards EVs acceptance in Kuala Lumpur. Therefore, social influencer or local leader-based campaigns can be effective channels for communicating the benefits of EVs, particularly among undecided or sceptical target customer segments.

Infrastructure availability, in the form of charging-station availability and servicing, was another significant predictor. Although its coefficient was not as significant as those of some other predictors, its effect should not be eliminated. Unavailability or inconvenient locations of charging stations can hinder adoption, even among environmentally aware consumers. Hence, investment in EV-supporting infrastructure should be accelerated, especially in urban residential enclaves, public parking garages, and highway rest areas, to reduce range anxiety and increase consumer confidence.

Based on these findings, some suggestions may be made. First, public campaigns and environmental education must be intensified to enhance ecological literacy and highlight the long-term benefits of EV use. Second, government incentives must not only be

sustained but also extended to cover battery replacement, energy subsidy, and insurance rebate. Third, collaboration with the private sector and municipalities to expand EV charging infrastructure must be pursued. Finally, activating social networks and influencers to make EV ownership mainstream can influence the general public and boost adoption. All these measures are necessary to reconcile consumer behaviour with country-level sustainability goals and facilitate a transition to an effective low-carbon transportation sector.

Conclusions

The aim of this study was to investigate the most significant determinants of EV adoption in Malaysia's most developed urban area such as Kuala Lumpur. Empirically grounded on 417 respondents, it finds environmental concern, government subsidy, public opinion, and facility existence as the significant determinants towards EVs adoption, while perceived price did not affect it in a statistically significant manner. The results show that policy, social norms, and awareness have a greater effect on consumer decision-making regarding EVs.

The regression model fit is very good regarding the value of adjusted-R² (0.843). There is an indication that the variables here provide an explanatory model that is representative of EVs acceptance dynamics in an urban Malaysian context. The fact that government subsidies and infrastructure were found to be statistically significant indicates that institutional support must be guaranteed in addition to public investment. Similarly, "role of environmental awareness" means greater concern among the masses for sustainability issues, which can be tapped through concerted awareness campaigns and environmental education.

Lastly, launching EV market entry in Malaysia will be a three-pronged effort encompassing policy incentives, consumer

awareness, and the development of supporting infrastructure. As the country shifts towards achieving its energy and environmental protection goals, cooperation among stakeholders such as government institutions, automobile manufacturers, and city planners will be key to developing an EV system that not only offers EVs but also a green, acceptable alternative. Further research can examine longitudinal trends, cross-regional comparisons, and behaviour interventions to better understand EV adoption patterns in Malaysia and beyond.

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Conflict of Interest Statement

The authors agree that this research was conducted in the absence of any self-benefits, commercial, or financial conflicts and declare absence of conflicting interests with the funders.

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