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Determinants of Electric Vehicle Purchase Intention among Fresh Graduates for Sustainable Mobility in Selangor

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ABSTRACT

The rising demand for sustainable transportation underscores the importance of understanding the behavioral factors that influence electric vehicle (EV) adoption, particularly among fresh graduates, who represent future drivers of change. This study models the intentions of fresh graduates in Selangor to purchase EVs by investigating the influence of performance expectancy, environmental concern, social influence, and government commitment. The research objectives were to identify the demographic characteristics of fresh graduates, examine the relationships between the key determinants and EV purchase intention, and assess the relative impact of these determinants on EV adoption. A quantitative approach involving 400 respondents was employed, using a structured survey to collect behavioural data. The findings revealed that survey participation was higher among male respondents (63.0%) and individuals of Chinese ethnicity (51.2%). Correlation analysis revealed that all determinants were significantly and positively associated with EV purchase intention, with correlation coefficients ranging from 0.667 (government commitment) to 0.686 (performance expectancy). However, multiple regression analysis showed that only performance expectancy, social influence, and government commitment significantly predicted EV purchase intention, with performance expectancy (β = 0.271) emerging as the strongest determinant, followed by government commitment and social influence. Although environmental concern was positively correlated with EV purchase intention, its effect became non-significant after controlling for the other determinants. This research provides practical insights for policymakers, EV manufacturers, and marketers to develop targeted strategies that promote EV adoption and support the achievement of Sustainable Development Goal (SDG) 11: Sustainable Cities and Communities.

Keywords: Electric vehicle (EV), Factors, Fresh graduates, Selangor, Sustainable transportation.

1. INTRODUCTION

Transportation contributes significantly to global carbon dioxide (CO_2) emissions, representing one of the major environmental externalities associated with the transport sector [1]. The transportation sector accounts for 24% of energy-related emissions, with road transport being the largest contributor [2]. Road transport alone accounts for 74.5% of transportation emissions, with freight vehicles such as trucks and lorries contributing 29.4%, while passenger vehicles,

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including cars, motorcycles, buses, and taxis, generate 45.1%. Other transportation modes, such as aviation and shipping, account for 11.6% and 10.6% of the total, respectively, while rail transport and other modes constitute smaller proportions. These findings emphasize the importance of prioritizing the reduction of road transportation emissions in global efforts to combat climate change. Due to rising environmental concerns, climate change, and the depletion of natural resources, the world has shifted towards sustainable transportation [3]. Based on the Paris Agreement, the primary goal is to combat climate change by limiting global warming [4] to below 2°C. In line with the Paris Agreement, Malaysia has committed to reducing transportation-related emissions and transitioning to greener, more sustainable transportation to address climate change and air pollution [5].

Carbon emissions and climate change have been recognized as the biggest challenges of the 21st century [4]. One reason is the growing global car population, which has nearly reached 1 billion vehicles. These vehicles consume almost 22×10^6 barrels of oil per day, approximately 22.45% of the total global oil demand per day. Moreover, these vehicles released 114×10^{12} British Thermal Units of heat daily [6]. These emissions significantly increase concerns about air quality and global climate change, particularly in urban areas where the majority of mobility activities occur.

The adoption of electric vehicles (EVs) has emerged as one of the potential solutions for reducing greenhouse gas emissions and dependence on fossil fuels, thereby promoting sustainable transportation [7]. The Nissan Leaf, the first mass-produced EV, was released in 2010 which became a global milestone in EV adoption [8]. As of 2023, there are over 40×10^6 EVs in use globally, highlighting the rapid growth of green technology [9]. With transportation being a major contributor to pollution, many countries have transitioned from conventional vehicles to EVs as part of their commitment to greener, more sustainable countries [10].

In line with global efforts, Malaysia has also been taking steps to reduce carbon emissions and support sustainable transportation development through the Green Technology Master Plan Malaysia 2017-2030 [11]. With a rising population and strong demand among younger generations for personalized vehicles, the total number of registered vehicles in Malaysia increased from 999,007 in 2016 to 1,375,183 in 2023. At the same time, EV have been shown rapid growth, rising from 1,058 in 2021 to 15,669 in 2024 [12]. There are 15 EV models available in Malaysia's market [12], [13], with foreign brands like Tesla currently leading it, Build Your Dreams and Bayerische Motoren Werke. [14] found that the government's initiatives and incentives are the main factors driving the EV market to become more accessible and appealing to consumers. In rapidly growing urban areas like Selangor, where population growth and migration are rapid, the market for sustainable transportation, such as EVs, holds significant promise [15].

Selangor, as a key economic and industrial hub in Malaysia [16], plays a significant role in the nation's transition to sustainable transport. It is one of the most developed and populous states [17], with a high level of infrastructure and technological readiness that can support the widespread use of EVs. Additionally, the urban population of Selangor is likely to be more aware of the environmental benefits of EVs and current environmental issues through education and media, thereby increasing their inclination toward EV adoption [18]. Fresh graduates represent a particularly important demographic because they are at a transitional stage of life, having recently entered the workforce and begun making long-term financial and lifestyle decisions, including vehicle ownership. As first-time or prospective car buyers, they have less experience with previous vehicle ownership and are more likely to shape future transportation choices. Moreover, fresh graduates tend to possess higher levels of environmental awareness [19] and are generally more receptive to emerging technologies, making them a strategically important group for understanding the future adoption of EVs.

In Malaysia's Budget 2023, the government introduced a range of incentives to boost EV adoption and local manufacturing [20]. The import and excise duty exemption for fully-imported (completely built up) EVs, initially set to expire in 2023, but have been extended to 31 December 2025, while the excise duty and sales tax exemptions for locally assembled (completely knocked down) EVs have been extended to 31 December 2027, along with import tax exemption on components for completely knocked down assembly. It is also noted that EV charging equipment manufacturers receive a 100% income tax exemption from 2023 to 2032 and a five-year 100% investment tax allowance, reflecting the government's commitment to advancing EV adoption and local industry growth [20]. According to [21], the Malaysian government has set ambitious targets to boost the number of EV on the road by enhancing supporting infrastructure, including plans to install 10,000 charging stations by 2025. In another report published on 9 September 2024, the Ministry of Transport (MOT) and Road Transport Department (JPJ) launched a standardized JPJePlate number plate for EV [22]. The report also noted that the JPJePlate offers an incentive: each EV owner with the plate receives RM20 in ChargEV credits, with 3,000 owners per month eligible for this benefit over 12 months [22]. This initiative aimed to support EV adoption by providing RM720,000 in free charging credits to 36,000 EV owners.

2. LITERATURE REVIEW

Climate change and carbon emissions are recognized as priority global challenges for the 21st century. The contribution of the transport sector to these emissions was estimated in 2022 at over 7.96×10^9 t of CO_2, which accounts for 20.7% of the global emissions [23]. Road transport accounted for most of these emissions, with private cars, light trucks, and buses combined making almost 73.5% of transport-related CO_2 emissions [24]. In addition, air and environmental quality is further degraded in urban centers with high traffic congestion and limited public transport provision. The energy consumption of the transport sector remains heavily dependent on fossil fuels, making the transition toward lower-carbon transportation increasingly important. As more people drive vehicles and cleaner transportation alternatives develop more slowly, it becomes more difficult to reduce emissions. Consequently, this clearly indicates the need for sustainable transport solutions like EVs that could significantly reduce the carbon footprint of transportation.

All over the world, governments are competing to minimize carbon emissions, placing emphasis on the shift to renewable energy sources, energy efficiency and sustainable transport systems [25]. For instance, the European Union has set a CO_2 emissions target of 55% below 1990 levels by 2030, with many member states accelerating the adoption of EVs to achieve these goals [26]. The reasons for the global shift towards EVs are their potential to reduce oil dependency and lower direct carbon emissions. It contributes to cleaner urban environments and sustainable growth [25]. To increase EV adoption in Malaysia, Malaysia's Low Carbon Mobility Blueprint has promised to reduce the country's carbon emissions intensity by 45% relative to 2005 levels, with EV adoption as a cornerstone [27]. Besides, the Malaysian government announced several EV incentives as part of its energy transition plan during Budget 2024. These include rebates of up to RM2,500 for electric motorcycle owners with annual incomes below RM120,000, the purchase of 150 electric buses for Prasarana Malaysia Berhad, along with the construction of three bus depots, with a total allocation of $RM600\times10^6$. Additional incentives include extended tax exemptions for EV charging facility expenses and rebates for EV rentals [28]. Such initiatives signal Malaysia's commitment to fostering sustainable transportation, with Putrajaya set to become a model low-carbon city through measures like government EV adoption and solar panel installation on government buildings. With these efforts, EV adoption is positioned as a pivotal solution to reducing oil dependence and carbon emissions, thereby promoting Malaysia's alignment with global sustainability goals.

EVs are gaining popularity worldwide, with approximately 40×10^6 electric cars on the road globally in 2023 [29]. Globally, about 14% of passenger cars sold in 2022 were electric, which

showed a significant shift from traditional internal combustion engine vehicles [30]. The adoption of EVs has been led by countries like Norway, which became the first to widely adopt EVs due to strong government incentives. Norway achieved a milestone in 2022, with over 80% of new car sales being electric. Other regions, such as China, the United States and Europe, have also contributed significantly to the growth of EV adoption [10]. In Malaysia, EV adoption is steadily rising. In 2023, 13,301 EVs were registered, accounting for 1.60% of the 832,340 total vehicles registered that year. From January to April 2024, 6,298 EVs were registered out of a total of 275,712 vehicles, accounting for 2.28% of all new vehicle registrations during that period [31].

Although EVs have made some headway, they still account for a very small portion of the total vehicle fleet compared to conventional internal combustion engine vehicles like petrol and diesel engines, which remain the most consumed by users. For instance, in 2023, there were 730,630 petrol vehicles registered, making up a significant 87.78% of the total [31]. The adoption of EVs in Malaysia is crucial, as it will enable the country to continue pursuing its sustainable development goals and reduce carbon emissions. Given the transport sector's contribution to greenhouse gas emissions, transitioning to EVs could support Malaysia's sustainability objectives by reducing vehicle-related emissions and dependence on fossil fuels [23]. At the same time, it contributes to Malaysia's long-term sustainable economic and environmental goals through technological innovation, new business ventures, and improved energy efficiency.

Various studies have sought to identify the factors influencing the intention to buy an EV. Such studies have offered insights that are both relevant and useful to fresh graduates in Selangor. [6] identified government support, performance, environmental concern, infrastructure attributes, financial considerations, social influence, and demographic characteristics as important determinants of EV purchase intention. The findings showed that Malaysians who are highly aware of environmental issues and the benefits of adopting green practices demonstrate a greater intention to adopt EVs, which is further reinforced with social validation from friends. Similarly, a cross-cultural study by [32] examined EV adoption in India and Spain using an integrated model that combines the Unified Theory of Acceptance and Use of Technology (UTAUT) with the Value-Belief-Norm (VBN) model. The findings indicated that environmental values had a positive effect on adoption in both countries, while cultural context mattered more. For instance, whereas environmental norms and convenience influenced Spanish consumers, Indian consumers were more concerned with performance and infrastructure availability. In a study conducted in Thailand, environmental concern, social influence, and performance expectancy were identified as significant factors influencing EV adoption [33]. However, generally high costs and inadequate charging infrastructure were major limiting factors. The findings indicated that greater infrastructure accessibility, paired with affordability, is necessary to enhance EV adoption among rural consumers.

With these insights, there is a lack of studies specifically investigating EV purchase intention among fresh graduates, leaving a research gap in understanding how this group responds to EV adoption initiatives. This gap presents an opportunity to examine how factors such as performance expectancy, environmental concern, social influence, and government commitment influence EV purchase intention among fresh graduates in Selangor.

2.1 Performance Expectancy

Performance expectancy is the degree to which an individual believes that using the system will help them to attain gains in job performance [34]. For instance, performance expectancy can help to measure whether the fresh graduates believe that using the EV will offer them advantages, such as cost savings, convenience, and improved transportation performance.. According to expectancy theory, a person will set goals and be motivated if they have specific expectations about the system. If people believe that their efforts to learn a product or system will lead to benefits, they become more motivated to learn it [35].

When applying the UTAUT together with the VBN model, individuals' performance expectancy of a technological system can influence their behavioral intention to use it [34]. This suggests that individuals are more likely to adopt EVs if they perceive benefits such as improved efficiency (e.g., longer driving range per charge) and cost savings. Studies also indicate that performance expectancy positively influences individuals' decisions to adopt new technologies such as EVs [36].

2.2 Environmental Concern

Environmental concern is viewed as an evaluation or attitude toward facts, personal behavior, or others' actions that impact the environment [37]. It indicates that individuals with high levels of environmental concern are more likely to adopt eco-friendly products and services, such as EVs. Environmental concern is considered a construct comprising values, environmental attitudes and ecological responsibility [38]. It is defined as a psychological tendency toward environmental issues, where individuals with a stronger sense of environmental responsibility are more likely to purchase EVs as a mode of transportation.

Based on the Theory of Planned Behavior (TPB), an individual's intention to engage in a behavior is influenced by attitude, subjective norms, and perceived behavioral control [39]. This suggests that individuals with great environmental concern may demonstrate stronger intentions to purchase and adopt EVs. If a person perceives their attitude as supportive of eco-friendly practices, social influence can enhance their intention to adopt EVs [40].

2.3 Social Influence

Social influence is defined as the degree to which an individual perceives that others are important to him/her in using a new system [41]. This perception can affect an individual's attitude towards adopting new technologies such as EVs. According to social influence theory, it explains that social influence can impact an individual through three processes: compliance, identification, and internalization [42]. Individuals may conform to social norms if they feel pressured to fit in.

An individual often looks to social norms to gain an accurate understanding, especially when uncertain [43]. An individual will conform to social norms to gain society's acceptance. While this theory can directly influence the decision-making of an individual, for example, when they see their social circle is supporting eco-friendly values and practices, they will feel motivated to adopt similar behavior, which is using EV [39]. It can be concluded that social influence has played a crucial role in encouraging society to adopt new technologies, including EVs. The social influence theory has highlighted that peers, family, and society can positively influence the intention to use EV [44].

2.4 Government Commitment

Government commitment also plays a significant role in boosting EV adoption among fresh graduates. The government's choice of a strategy to follow unconditionally in its interactions with the private sector, as opposed to taking unconditional actions [45]. The government is a party that balances income redistribution and controls the country's economic conditions [46]. The government has a crucial role in shaping the country's economy. The study defines government commitment as a significant commitment among key decision-makers for particular activities [47].

The government's commitment can help to encourage people's intention to adopt EVs. This is because of the government's commitment to supporting policies, including subsidies, tax incentives, equity finance, access to infrastructure and services, and other measures. With these

supportive policies, intentions to purchase and adopt EVs increase. Moreover, the government's commitment is crucial for fostering public trust and confidence to adopt EVs, and government welfare can directly benefit EV users and potential users by offering financial incentives and relevant support programs [48].

2.5 Theoretical Framework

Several studies have employed the TPB as the foundational framework for examining individuals' behavioral intentions. TPB posits that behavioral intention is determined by three core constructs: attitude, subjective norms, and perceived behavioral control [49].

Specifically, Social Influence Theory is used to operationalize and strengthen the subjective norms construct within TPB, as it explains how perceived expectations and opinions from significant others shape individual decision-making processes [50], [51]. In this context, when fresh graduates perceive strong social approval or encouragement from peers and society regarding EV adoption, their intention to purchase EVs is likely to increase.

Furthermore, Institutional Theory is integrated to extend the perceived behavioral control construct in TPB. Institutional support mechanisms, such as government policies, subsidies, and charging infrastructure, constitute external facilitating conditions that influence individuals' perceived ability to perform a behavior [52]. Accordingly, stronger governmental commitment enhances perceived behavioral control by increasing both the accessibility and feasibility of EV adoption among fresh graduates.

In addition, elements of the UTAUT and VBN theories are conceptually embedded within the attitude construct of TPB. Performance expectancy (UTAUT) and environmental concern (VBN) jointly shape individuals' positive or negative evaluations of EV adoption, thereby influencing their overall attitude toward EVs.

The research framework is informed by TPB and complemented by Social Influence Theory, Institutional Theory, UTAUT, and VBN perspectives. Performance expectancy and environmental concern represent considerations that may shape individuals' evaluations of EV adoption, social influence reflects the role of perceived social expectations, and government commitment represents external facilitating conditions that may affect the feasibility of EV adoption. Together, these theoretical perspectives provide an integrated explanation of EV purchase intention among fresh graduates in Selangor.

3. RESEARCH FRAMEWORK AND HYPOTHESES

The hypotheses of this study are based on prior research highlighting key factors influencing EV purchase intentions. [6] emphasized performance expectancy and government commitment, while [53] focused on environmental concern. [32] highlighted the role of social influence, showing how peer norms impact EV adoption. Figure 1 illustrates the research framework, which examines the relationship between four independent variables, including performance expectancy, environmental concern, social influence, and government commitment, and the dependent variable (purchase intentions of EVs).

H1: There is a significant impact between performance expectancy and purchase intentions of EV.
H2: There is a significant impact between environmental concern and purchase intentions of EV.
H3: There is a significant impact between social influence and purchase intentions of EV.
H4: There is a significant impact between government commitment and purchase intentions of EV.

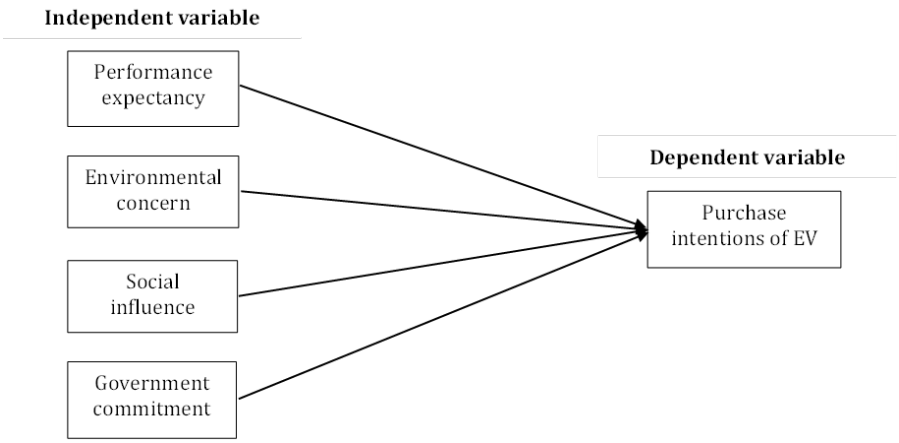

Figure 1: Research framework.

4. METHODOLOGY

This study adopted a quantitative research design to collect numerical data and examine the relationships between independent and dependent variables. Quantitative research is characterized by the systematic collection and statistical analysis of numerical data to identify patterns and draw objective conclusions about relationships among variables [54], [55]. In addition, this research adopted a field study approach, with data collected in real-world environments, and the selection of a sampling strategy aligned with the research objectives further enhanced the study's validity [55], [56]. Furthermore, this study employed a structured survey questionnaire as the primary research instrument. The questionnaire was designed with an introductory page providing an overview of the survey, followed by two main sections. Section A gathered respondents' demographic information, while Section B comprised measurement items for both the independent and dependent variables. The items in Section B were adapted from established studies, with minor modifications to ensure alignment with the specific objectives of this research. A 5-point rating scale (1: Strongly Disagree, 2: Disagree, 3: Neither Agree nor Disagree, 4: Agree, 5 = Strongly Agree) was used in Section B, allowing respondents to indicate their level of agreement or disagreement with each statement [57].

The respondents of this study comprised 400 fresh graduates in Selangor. A non-probability convenience sampling technique was employed in this study. Respondents were selected based on their accessibility, eligibility, and willingness to participate in the survey. Convenience sampling was considered suitable for accessing eligible fresh graduates in Selangor within the study period. To ensure consistency in respondent selection, only individuals who had completed their university education within the past 24 months and were located in Selangor were included in the study. In addition, Selangor was chosen as the study area due to its high population density, strong economic activity, and well-developed transportation infrastructure, making it a suitable representation of urban consumer behaviour in Malaysia.

This research employed the Statistical Package for the Social Sciences (SPSS) version 27 for data analysis, including descriptive, correlation, and regression analyses. Descriptive analysis was used as a foundational statistical technique to summarize, organize, and present the raw data in a meaningful and comprehensible manner [58]. Correlation analysis was conducted to examine the strength and direction of relationships among two or more quantitative variables, assuming linear associations [59]. Meanwhile, regression analysis was performed to investigate relationships among variables by estimating a regression equation, enabling prediction and explanation of the dependent variable's behavior [60].

5. RESULTS AND DISCUSSION

The findings of the data analyses for this study are presented in this chapter. The demographic profile of the respondents is provided in the first part of the section. The findings from descriptive, reliability, correlation, and multiple regression analyses are then highlighted.

5.1 Demographic Characteristics

The demographic characteristics of the survey respondents in this study are presented in Table 1. The results show that 63.0% of respondents are male (252), while females account for 37.0% (148). This finding is consistent with [61], who reported that male applicants for California's Clean Vehicle Rebate outnumbered female applicants by three to one. Addressing this imbalance by encouraging greater female participation in EV adoption could contribute to more gender-inclusive development within EV markets.

In terms of ethnicity, 51.2% of respondents are Chinese, followed by Indians (27.5%), Malays (13.5%), and others (7.8%). Regarding employment status, the sample is dominated by employed individuals (34.3%), followed by unemployed respondents (30.8%), freelance/contract workers (20.3%), and self-employed individuals (14.8%). The income distribution indicates that 43.8% of respondents earn RM 15,000–33,999, while 35.3% earn less than RM 15,000. Higher income levels have been associated with a greater likelihood of EV adoption [62], highlighting the importance of targeted incentives to support lower-income groups.

Car ownership among respondents is relatively high (65.3%), suggesting a potentially strong market for EV adoption among existing vehicle owners. Awareness of EVs varied among respondents: 47.8% reported being very familiar with EVs, 6.0% were extremely familiar, 19.5% were familiar, 15.5% were slightly familiar and 11.3% were not familiar at all. This is supported by [63], which emphasizes the need for greater public education on EV technologies.

In terms of mobility behavior, most respondents reported daily travel distances of 50 km or less., which is consistent with [64], who found that typical daily trips utilise only a fraction of EV battery capacity. This suggests that range anxiety may not represent a significant barrier for most users in the study context. Overall, the findings indicate that addressing income disparities, enhancing public awareness, and tailoring EV designs to diverse user needs are critical factors in promoting EV adoption and improving sustainability outcomes.

5.2 Descriptive and Reliability Analyses

The results of descriptive and reliability analysis are presented in Table 2. The descriptive analysis highlights respondents' moderate to positive attitudes toward EV adoption, as reflected by mean scores above 3.8 across all variables. Intention to purchase (M = 3.81, SD = 0.86) indicates a positive inclination toward EVs, consistent with TPB's focus on attitudes influencing intentions [39]. Performance expectancy (M = 3.88, SD = 0.81) indicates high expectations for EV efficiency, aligning with Expectancy Theory [35]. Environmental concern (M= 3.87, SD= 0.85) reflects heightened sensitivity to environmental issues, while social influence (M= 3.87, SD= 0.86) emphasizes societal pressure in decision-making, consistent with the UTAUT [65]. Government commitment (M = 3.87, SD = 0.87) indicates positive perceptions of policy support, consistent with Institutional Theory [66].

Cronbach's Alpha values exceeded the 0.7 threshold [67], indicating satisfactory scale reliability. Table 2 shows that intention to purchase (α = 0.702), performance expectancy (α = 0.785), environmental concern (α = 0.827), social influence (α = 0.818), and government commitment (α = 0.833) all demonstrated acceptable to good internal consistency, confirming the robustness of the scales used in this study.

Table 1: Respondents' profile.

Demographic variable	Category	Frequency	Percentage (%)
Gender	Male	252	63.0
	Female	148	37.0
Race	Chinese	205	51.2
	Indian	110	27.5
	Malay	54	13.5
	Others	31	7.8
Employment status	Employed	137	34.3
	Unemployed	123	30.8
	Freelance/Contract	81	20.3
	Self-employed	59	14.8
Income (RM)	Less than 15,000	141	35.3
	15,000 - 33,999	175	43.8
	More than 33,999	84	21.0
Ownership of private cars	Owns Private Car	261	65.3
	Does Not Own	139	34.8
Awareness of EV	Not Familiar at All	45	11.3
	Slightly Familiar	62	15.5
	Familiar	78	19.5
	Very Familiar	191	47.8
	Extremely Familiar	24	6.0
Kilometres travelled daily	Less than 10 km	78	19.5
	10 - 20 km	145	36.3
	21 - 30 km	90	22.5
	31 - 40 km	62	15.5
	41 - 50 km	25	6.3

Table 2: Descriptive and reliability analyses.

Variables	No. of items	Mean (M)	Standard deviation (SD)	Variance	Skewness	Kurtosis	Cronbach's Alpha	Kolmogorov-Smirnov Sig. (p-value)
Intention to purchase	3	3.8075	0.86060	0.741	-0.929	0.157	0.702	<0.001
Performance expectancy	5	3.8765	0.81259	0.660	-0.768	-0.431	0.785	<0.001
Environmental concern	5	3.8720	0.84948	0.722	-0.780	-0.458	0.827	<0.001
Social influence	5	3.8745	0.85708	0.735	-0.799	-0.291	0.818	<0.001
Government commitment	5	3.8710	0.87342	0.763	-0.806	-0.402	0.833	<0.001

5.3 Correlation Analysis

Correlation coefficients (Table 3) revealed strong positive relationships between independent variables and the intention to purchase EV. Performance expectancy ($r = 0.686$, $p < 0.001$), environmental concern ($r = 0.679$, $p < 0.001$), social influence ($r = 0.682$, $p < 0.001$), and

government commitment (r= 0.667, p < 0.001) were all significantly and positively associated with EV purchase intention. These findings align with Expectancy Theory, TPB, UTAUT, and Institutional Theory, emphasizing the roles of efficiency, environmental attitudes, social norms, and government policies in driving EV adoption.

Table 3: Correlation analysis.

Factors	Intention to purchase	Performance expectancy	Environmental concern	Social influence	Government commitment
Intention to purchase	1.000	0.686	0.679	0.682	0.667
Sig. (2-tailed)	-	< .001	< .001	< .001	< .001

5.4 Multiple linear regression analysis

Before examining the individual determinants, the overall model fit was assessed (see Table 4a). The multiple regression model was statistically significant, $F(4, 395) = 115.77$, $p < 0.001$, indicating that the four independent variables collectively explained a significant proportion of the variance in EV purchase intention. The model produced an R value of 0.735 and an R^2 value of 0.540, showing that 54.0% of the variance in EV purchase intention was explained by performance expectancy, environmental concern, social influence, and government commitment. The adjusted R^2 value of 0.535 further indicates that the model maintained strong explanatory power after adjusting for the number of determinants.

The standardized coefficient Beta (β) values in Table 4b show the relative contribution of each independent variable to the dependent variable, namely intention to purchase EV, with higher β values indicating stronger effects when the relationship is statistically significant at $p< 0.05$. Performance expectancy ($\beta = 0.287$, $p < 0.001$) was the strongest significant determinant, supporting H1 and aligning with Expectancy Theory [35], which emphasizes the importance of perceived cost savings and technological benefits. Government commitment ($\beta = 0.189$, $p = 0.004$) also had a significant positive effect on EV purchase intention, supporting H4 and Institutional Theory [66] and highlighting the role of subsidies, incentives, and supportive policies. Similarly, social influence ($\beta = 0.193$, $p = 0.008$) significantly influenced EV purchase intention, supporting H3 and the UTAUT perspective [65], which emphasizes the importance of peer influence and societal norms in shaping technology adoption.

However, environmental concern ($\beta= 0.142$, $p= 0.058$) did not have a statistically significant effect on purchase intention, because p p-value was more than 0.05, leading to the rejection of H2. This finding does not necessarily contradict the VBN model; rather, it suggests a boundary condition in the context of EV purchase decisions among fresh graduates. Although the VBN model emphasizes that environmental values and ecological responsibility can motivate pro-environmental behaviour, EV purchase is a high-involvement and financially demanding decision. Therefore, environmental concern alone may be insufficient to translate into purchase intention when respondents are also considering affordability, vehicle performance, charging convenience, and policy support. This is particularly relevant for fresh graduates, who are in the early stage of their careers and may prioritize economic security and practical benefits over ecological values when making major consumption decisions. The result is also consistent with the idea that young consumers may be environmentally conscious yet pragmatic in their purchase decisions. In this study, environmental concern showed a significant positive correlation with EV purchase intention, indicating that respondents were generally aware of and concerned about environmental issues. However, when performance expectancy, social influence, and government commitment were entered into the regression model, the unique effect of environmental concern became weaker and non-significant. This implies that environmental awareness may create a favourable attitude toward EVs, but actual purchase intention is more strongly shaped by

whether EVs are perceived as useful, affordable, socially acceptable, and supported by government incentives. Compared with previous studies that reported a stronger role of environmental concern, the present finding suggests that ecological values may not operate independently in the Malaysian fresh graduate context. Instead, environmental concern may function as a supportive background attitude, while practical considerations act as the main decision triggers. For fresh graduates, the intention to purchase an EV appears to depend less on environmental concerns alone and more on whether EV ownership is economically realistic, technologically reliable, and socially encouraged. Thus, the insignificant effect of environmental concern highlights the importance of combining green messaging with practical value propositions, such as lower operating costs, accessible charging infrastructure, subsidies, and flexible financing schemes. Although TPB [39] suggests that attitudes can influence behavioral intention, the findings indicate that performance expectancy, government commitment, and social influence may be more important than environmental concern in shaping EV purchase intention among fresh graduates.

Table 4a: Model summary and ANOVA results for multiple regression analysis.

Model statistic	Value
R	0.735
R^2	0.540
Adjusted R^2	0.535
F-statistic	115.77
df	4, 395
Sig.	< 0.001

Table 4b: Coefficients of multiple regression analysis.

Model	B	Std. Error	Beta	t	Sig. (p value)
(constant)	0.668	0.149	-	4.472	<.001
Performance expectancy	0.287	0.071	0.271	4.055	<.001
Environmental concern	0.142	0.075	0.140	1.898	.058
Social influence	0.193	0.072	0.192	2.684	.008
Government commitment	0.189	0.065	0.192	2.927	.004

6. CONCLUSION

This study examined the factors influencing EV purchase intention among fresh graduates in Selangor. It focused on four key factors: performance expectancy, environmental concern, social influence, and government commitment. The study used descriptive, reliability, correlation, and multiple regression analyses to understand the factors that affect their decisions.

The first research objective examined the demographic characteristics of the fresh graduates who participated in the study. The sample comprised a higher proportion of male respondents and respondents of Chinese ethnicity. Although many respondents were unemployed or engaged in freelance work, private vehicle ownership and EV awareness remained high, suggesting strong potential for EV adoption among fresh graduates, particularly if affordability and charging infrastructure improve.

The second objective examined the relationships between performance expectancy, environmental concern, social influence, government commitment, and EV purchase intention.

The findings revealed significant positive relationships for all variables, with performance expectancy showing the strongest correlation. This indicates that perceived benefits, environmental awareness, social influence, and government incentives are important factors influencing EV purchase intention among fresh graduates.

The third research objective assessed the effects of performance expectancy, environmental concern, social influence, and government commitment on EV purchase intention. The regression model explained 54.0% of the variance in EV purchase intention, with an adjusted R^2 of 53.5%. Performance expectancy emerged as the strongest determinant, followed by social influence and government commitment. In contrast, environmental concern did not exhibit a significant unique effect after controlling for the other determinants. These findings suggest several important implications. First, performance expectancy is the primary driver of EV purchase intention among fresh graduates, highlighting the importance of promoting the functional and economic benefits of EVs through initiatives such as test drives and virtual demonstrations. Second, social influence plays a significant role in shaping purchasing decisions, indicating the value of influencer partnerships, social media campaigns, and referral programmes. Furthermore, improving affordability through graduate-specific incentives, flexible financing options, and bundled ownership benefits can enhance EV accessibility. Although environmental concern was positively associated with EV purchase intention in the correlation analysis, its effect became non-significant in the regression model, suggesting that environmental awareness alone is insufficient to drive purchase decisions when practical and social factors are considered simultaneously. Instead, economic benefits, perceived vehicle performance, government commitment, and social acceptance appear to be more influential in shaping purchase intentions. Therefore, EV promotion strategies should not rely solely on environmental appeals but should also emphasise affordability, cost savings, charging convenience, vehicle performance, and supportive government policies to encourage wider adoption.

This study has several limitations that should be acknowledged. First, the sample was limited to fresh graduates in Selangor, Malaysia, which may restrict the generalizability of the findings to other regions with different socioeconomic conditions, infrastructure, and policy environments. Furthermore, the use of convenience sampling may constrain the external validity and generalizability of the findings, as respondents were not selected through a probability-based sampling method. Therefore, future studies are encouraged to employ probability sampling techniques, such as stratified or random sampling, to improve representativeness and strengthen the external validity of the findings. Second, the cross-sectional research design captures respondents' perceptions and intentions at a single point in time, and therefore does not allow for the assessment of changes over time or causal inferences. Third, the exclusive focus on fresh graduates, while relevant for understanding emerging EV adoption behavior, may not fully represent other population segments such as working adults or older consumers. Future research is encouraged to expand the geographical scope, adopt longitudinal designs, include more diverse demographic groups, and incorporate mixed-methods approaches to gain deeper insights into electric vehicle adoption behavior.

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