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Determining Intention of Consumers to Purchase Electric Vehicles in Chongqing, China

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Abstract

Purpose: The primary objective of this research is to investigate the determinants that shape consumers' purchase intention towards electric vehicles in the region of Chongqing. To achieve this, the study employs a conceptual framework encompassing several key factors including perceived benefit, perceived risk, attitude, environmental concerns, subjective norm, perceived behavioral control, and purchase intention. **Research design, data, and methodology:** This study employed a quantitative approach with a sample of 500 Chongqing residents aged 18 and above, holding driver's licenses, and having sufficient income to consider electric vehicle purchases. The research instrument was validated using Item-Objective Congruence (IOC), and internal consistency was confirmed with Cronbach's alpha. Various sampling techniques, including judgmental, quota, and convenience sampling, were used. Statistical analysis involved Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). **Results:** Perceived benefit and perceived risk significantly influence attitude. Attitude, subjective norm, and perceived behavioral control are significant factors of purchase intention. Conversely, environmental concerns have no significant influence on purchase intention. **Conclusions:** Stakeholders can craft more effective strategies and policies to foster the adoption of sustainable transportation options in the region. Recommendation addresses a specific aspect of consumer decision-making and can collectively contribute to a more sustainable and environmentally friendly transportation future for the city.

Keywords : Subjective Norm, Perceived Behavioral Control, Purchase Intention, Electric Vehicles

JEL Classification Code: E44, F31, F37, G15

1. Introduction

According to Roland (2023), more than 17.4 million new Electric Vehicles (EVs) will be registered in the European Union, the United States, and China, now the world's three largest automotive markets, by 2030. This figure is expected to account for around 27% of total vehicle sales in these regions. By 2035, the share of EVs in the European car market is forecast to reach 67.4%.

The growth of the international EV industry Governments of major nations worldwide are currently developing comprehensive, long-term strategic initiatives to promote EVs. The EV market is expected to experience sustained growth over the next decade, becoming a major catalyst for economic development. The following discourse provides an overview of the historical development of EVs in prominent nations worldwide (Roland, 2023).

Chongqing is the largest municipality in China, with a total area of 82,402,000 square kilometers and a population of 32.12 million. According to statistics, by 2023, the number of new energy vehicles in Chongqing will have reached 223,000, accounting for more than 15% of the city's vehicle fleet. This includes 126,000 pure EVs and 97,000 plug-in hybrid vehicles. Chongqing Municipal Government plans to reach more than 500,000 new energy vehicles by 2025, becoming China's new leading place in the new energy

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vehicle industry (Fusheng, 2023).

Climate change, energy, and environmental issues are long-term problems facing human society (Duangekanong, 2023). The three major issues of greenhouse gas emissions, energy consumption, and exhaust emissions in the transport sector directly impact whether the common problems of humanity can be effectively solved (Ahmed Ali et al., 2020). The research on the market of traditional energy vehicles is very common, and the research on the factors influencing consumers to buy traditional energy vehicles is also quite mature. At the critical moment when the automobile industry is shifting from the production of conventional vehicles to the research, development, and production of EVs, the purchase of EVs by consumers will have a great impact on the popularization of EVs and the development of the whole industry, so it is necessary to explore the factors that motivate consumers to purchase EVs (Ling et al., 2021).

This study analyses the factors affecting consumers' intention to purchase EVs and derives the following seven possible factors based on intrinsic attributes and consumer needs: perceived benefits, perceived risks, attitudes, environmental concerns, subjective norms, perceived behavioral control and purchase intention. The results of this study will be helpful to the teams of electric vehicle sales and service companies, such as managers, marketing departments, marketing departments, data analysis departments, and after-sales service departments. Users' intention to purchase EVs is still the focus of researchers and practitioners, and many parties, such as EV sales companies, will benefit from understanding the antecedents of consumers' behavioral intention to purchase EVs. In addition, the study will help the government to formulate relevant environmental policies, increase public participation in environmental protection, encourage the public to purchase electric vehicles and build a green, low-carbon, and energy-saving society.

2. Literature Review

2.1 Perceived Benefit

Perceived benefit reflects someone's belief that it is beneficial to engage in a certain behavior (Yan et al., 2019). Perceived benefit can be interpreted as the user's belief that using the technology will bring benefits that will increase the user's productivity (Foster et al., 2022). Therefore, these motivations are incentives influencing the willingness to perform a certain behavior (Hamari et al., 2016).

Kim et al. (2008) stated that perceived benefit refers to an individual's subjective assessment of the extent to which they expect to experience positive outcomes from engaging in an online transaction with a particular website. In their study, Karmawan et al. (2019) defined perceived advantage as the degree to which an individual is assured that using technology can enhance the user's productivity. According to Deci and Ryan (2008), intrinsic motivation generates innate happiness and inner contentment, whereas extrinsic motivation aims to fulfill external objectives such as rewards and recognition. In addition, EVs are characterized by low noise, high technology, and smooth acceleration (Yang et al., 2020). Consumers' perception of these benefits will positively impact their purchase behavior. Therefore, a hypothesis is indicated:

H1: Perceived benefit has a significant influence on attitude.

2.2 Perceived Risk

Dowling and Staelin (1994) describe perceived risk as the uncertainty an individual feels when making a judgment. The level of uncertainty an individual perceives when making a judgment (Wu et al., 2021). Perceived risk is a customer's subjective expectation of the loss resulting from a particular consumption decision. According to Chiou and Shen (2012), risk is an inherent component of all commercial transactions. Nevertheless, the perception of risk tends to escalate in circumstances characterized by heightened uncertainty or a greater likelihood of bad outcomes.

Due to the limited uptake of EVs, there is a prevailing bias among customers towards these vehicles (Yadav et al., 2023), particularly about concerns related to safety (Ng et al., 2021). The following are the determinants that influence consumer choice of EVs. A lack of consumer knowledge about EVs correlates with increased prejudice against them, resulting in an increased prevalence of negative consequences. Furthermore, it is important to note that perceived benefits drive consumers and consider perceived risks when forming their intentions and engaging in certain behaviors (Wang et al., 2013). Perceived risk may have an impact on consumer attitudes. Hence, the following hypothesis is proposed:

H2: Perceived risk has a significant influence on attitude.

2.3 Attitude

Attitude has been conceptualized as evaluations of goods or services and studied through affective and cognitive categorization (Yang & Yoo, 2004). Ajzen (2002) described attitude as the degree to which an individual holds favorable or unfavorable evaluation of a behavior (Abu-ELSamen et al., 2011). Attitude implicitly refers to the degree to which an individual, prior to performing a behavior, holds favorable or unfavorable evaluations of the behavior (Al-Debei et al., 2015). It indicates people's evaluative preference for a particular behavior. In particular, good, promising attitude motivates people to perform certain behaviors and vice versa

(Ng et al., 2021).

According to Ng et al. (2021), a positive attitude can motivate individuals to engage in certain behaviors, while a negative attitude can have the opposite effect. Attitude is a crucial element that can either hinder or benefit marketers, depending on whether it is negative or positive. From the consumer's perspective, attitude is critical in shaping purchase intention and subsequent behavior (Duangekanong, 2023). Based on previous studies, the researcher proposes a hypothesis:

H3: Attitude has a significant influence on purchase intention.

2.4 Subjective Norm

Subjective norm refers to people's perceptions of external pressure on whether to perform a behavior (Fishbein & Ajzen, 1975). Subjective norm is the positive or negative evaluations an individual receives from an external social or reference group when engaging in a particular behavior. Subjective norm is an important aspect when assessing a customer's purchase intention. Subjective norm may also be affected by others' perceptions about a particular action combined with the person's incentive to conform to those expectations (Kim et al., 2008).

Family members, friends, and peers can influence an individual's behavior and beliefs. According to Park et al. (2007), young consumers in Korea were motivated to make luxury purchases by a desire to differentiate themselves from others and a need to conform to societal norms. Evidence suggests that individuals belonging to Generation Y tend to conform to group norms (Kim et al., 2008; Martin & Turley, 2004). Several scientific studies have shown a positive correlation between SN and the intention to purchase fashion goods (Bellman et al., 2009; Summers et al., 2006). Accordingly, this study can conclude that:

H4: Subjective norm has a significant influence on purchase intention.

2.5 Perceived Behavioral Control

Relevant experience and positive expectations of difficulty contribute to increased perceived behavioral control. In general, a more favorable attitude towards the consequences of the behavior, greater pressure from significant others, and greater behavioral control lead to a greater willingness to perform the behavior (Ajzen, 2002). According to Yan et al. (2019), individuals with sufficient financial means, decision-making authority, and access to convenient charging infrastructure in their residential and work environments are likelier to perceive the future purchase of EVs as a straightforward process. This perception, in turn, increases their perceived control over purchasing EVs.

A study conducted in India showed a significant correlation between EV adoption and the phenomenon known as perceived behavioral control (Shalender & Sharma, 2021). Previous research has shown that perceived behavioral control refers to consumers' perceptions of the presence or absence of opportunities and resources needed to perform a particular behavior (Farah & Newman, 2010). Consequently, when consumers perceive a higher level of controllability, it tends to lead to a higher intention to purchase, which ultimately leads to actual purchase behavior (Charag et al., 2020; Jaiswal & Kant, 2018; Lai et al., 2015; Yadav & Pathak, 2016). Thereby, the following hypothesis is pointed out:

H5: Perceived behavioral control has a significant influence on purchase intention.

2.6 Environmental Concerns

The concept of environmental concerns refers to several factors influencing an individual's propensity to engage in environmentally friendly practices (Martínez García de Leaniz et al., 2017). Scholars working within the ecological domain propel the notion that environmental concern motivates environmental purchase intentions toward electric vehicles (Li et al., 2017) and green energy brands (Hartmann & Apaolaza, 2012). The findings of Lai et al. (2015) suggest that individuals' behavioral intentions are influenced by environmental concerns, which, in turn, is mediated by norms, attitudes, and beliefs.

According to Kahn (2007), those who consider themselves environmentalists are more likely to purchase hybrid vehicles than those who do not prioritize the environment. According to Duangekanong (2023), there was a good correlation between environmental concerns and EV propensity before and after experiencing an EV firsthand. According to Peters and Dütschke (2014), the environmental benefits of owning environmental concerns drive EV adoption. Hence, a hypothesis is set:

H6: Environmental concerns have a significant influence on purchase intention

2.7 Purchase Intention

Blackwell et al. (2001) stated that purchase intention requires an individual's interpretation of a potential action. It implicates that he/she wants to buy in the future (Lai et al., 2015). Purchase intention is the psychological tendency to buy a particular item. According to Fishbein and Ajzen (1975), purchase intention is a consumer's subjective tendency to buy a particular item and is an important predictor of consumer purchase behavior (Tweephoncharoen & Vongurai, 2020). Purchase intention is the psychological

result of consumers' comprehensive evaluation under the influence of perceived value (Chen et al., 2015). Purchase intention results from customers perceiving a need to be satisfied (Omar et al., 2012). Consumers' future purchase decisions can be influenced by their purchase intention. The construct of purchase intention has significant predictive value about consumers' subsequent purchase behavior, as demonstrated by the research of Sparks and Browning (2011). According to the research conducted by Bashir (2019), customers' purchase intention was found to have a notable influence on their purchasing behavior.

3. Research Methods and Materials

3.1 Research Framework

The foundation of this study's conceptual framework was established by integrating findings from prior research, as illustrated in Figure 1. The framework comprises seven key variables: perceived benefit, perceived risk, attitude, environmental concerns, subjective norm, perceived behavioral control, and purchase intention. These variables were sourced from three seminal studies conducted by Yang et al. (2020), Yan et al. (2019), and Yeğin and Muhammad (2022).

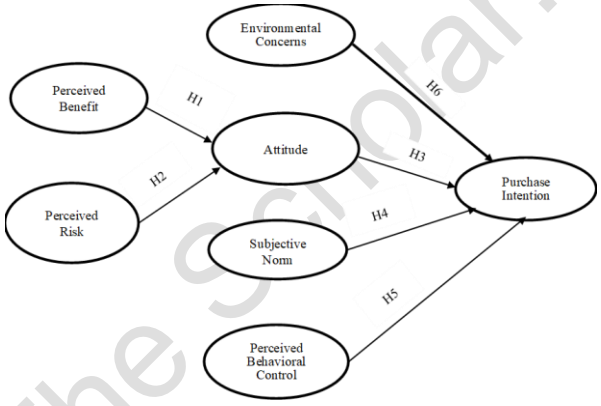

Figure 1: Conceptual Framework

H1: Perceived benefit has a significant influence on attitude.
H2: Perceived risk has a significant influence on attitude.
H3: Attitude has a significant influence on purchase intention.
H4: Subjective norm has a significant influence on purchase intention.
H5: Perceived behavioral control has a significant influence on purchase intention.
H6: Environmental concerns have a significant influence on purchase intention.

3.2 Research Methodology

This study employed a quantitative research approach, utilizing a questionnaire as the primary data collection tool. To enhance the efficiency of data collection, a QQ form survey tool was employed for questionnaire administration. The survey consisted of three main sections: screening questions, measurement items using a five-point Likert scale, and demographic information. Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were employed as the principal statistical analysis techniques to assess and analyze the collected data.

To validate the questionnaire with Item-Objective Congruence (IOC) Analysis, three experts independently assessed each item. Notably, all items received scores of 0.67 or higher, signifying a substantial consensus among experts regarding the alignment of questionnaire items with the study's objectives.

A pilot test was conducted involving a sample of 30 participants to evaluate the questionnaire's reliability. The Cronbach alpha coefficient was used for this assessment, and the results indicated that all items within the questionnaire exhibited strong internal consistency, achieving a reliability score of 0.7 or higher, in accordance with the criteria established by Nunnally and Bernstein (1994).

3.3 Population and Sample Size

This study includes participants who are residents of Chongqing, falling within the age range of 18 to 65 years. To be eligible, participants must hold a driver's license of C1 level or higher, in accordance with the legal regulations in China. Additionally, participants are required to have an income sufficient to consider the purchase of electric vehicles.

The decision to target a sample size of 500 consumers in Chongqing aligns with Israel's recommendation (1992), emphasizing the need for a sufficiently large sample, typically ranging from 200 to 500, for multiple regression analysis. This sample size ensures the robustness of the research findings and enhances the statistical validity of the study.

3.4 Sampling Technique

The researcher employed a combination of non-probability sampling techniques to assemble the study's participant pool. These techniques were tailored to select individuals who meet specific criteria, including residency in Chongqing, an age range of 18 to 65 years, possession of a driver's license of C1 level or higher, and the presence of sufficient income for potential electric vehicle purchases.

To initiate the selection process, judgmental sampling was employed, allowing the researcher to handpick participants who precisely met the specified criteria. Quota sampling was utilized to ensure that the selected sample closely mirrored the population's key characteristics, as outlined in Table 1. For convenience sampling, the researcher distributed questionnaires to employees of a car sales organization, while consumer respondents accessed and completed the questionnaire via a provided QQ form link.

Table 1: Sample Units and Sample Size

Top 4 Electric Vehicle Brands by Sales Volume	Sales in 2022 (million vehicles)	Percentage Allocation (%)	Sample Size
BYD	158.3	59%	295
TESLA	45.1	17%	85
Wuling Hongguang	44.2	16%	80
CHANG AN	22.5	8%	40
Total	**270.1**	**100%**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

The demographic information collected from the respondents (N=500). The gender distribution among the respondents shows a significant predominance of males, constituting 74.2% of the sample, while females represent 25.8%. The majority of respondents are under 30 years old, accounting for 75.0% of the sample. The limited representation of older age groups, especially those above 50 years (1.4%), may impact the generalizability of findings to older populations. A large proportion of respondents are single (73.8%), while 26.2% are married. A significant portion of respondents report an income under 4000 RMB (50.2%), with varying proportions in higher income brackets. The majority of respondents have attained at least an undergraduate or junior college level of education (74.2%). The "Others" category dominates the occupational distribution, comprising 79.8% of respondents.

Overall, the demographic data reveals a sample that is predominantly young, male, single, and well-educated, with a wide range of income levels and occupational backgrounds. Researchers should consider the potential impact of these demographic characteristics on the study's outcomes and interpretations.

Table 2: Demographic Profile

Characteristics		Respondents (N=500)	
		f	%
Gender	Male	371	74.2%
	Female	129	25.8%
Age	Under 30	375	75.0%
	31–40	74	14.8%
	41–50	44	8.8%
	Above 50	7	1.4%
Marital status	Single	369	73.8%
	Married	131	26.2%
Income (RMB)	Under 4000	251	50.2%
	4001–6000	54	10.8%
	6001–12,000	133	26.6%
	12,001–18,000	34	6.8%
	Above 18,001	28	5.6%
Education	Middle school and below	4	0.8%
	High school or technical secondary school	41	8.2%
	Undergraduate or junior college	371	74.2%
	Graduate	84	16.8%
Occupation	Manufacturing	24	4.8%
	Medical care	13	2.6%
	Finance	5	1.0%
	Design	15	3.0%
	Services	44	8.8%
	Others	399	79.8%

Source: Constructed by author

4.2 Confirmatory Factor Analysis (CFA)

In Table 3, Confirmatory Factor Analysis (CFA) was employed to rigorously evaluate the reliability and validity of the measurement model. The results of this analysis are essential in ensuring the credibility of subsequent data interpretations and analyses.

Cronbach's Alpha coefficient, a widely accepted measure of internal consistency, was employed to assess the reliability of the constructs. The outcomes of the CFA affirmed strong internal consistency for all constructs, consistently exceeding the conventional reliability benchmark of 0.7, in line with established research practices (Nunnally & Bernstein, 1994).

This robust internal consistency was further supported by the data, which clearly indicated Cronbach's Alpha values surpassing the 0.7 threshold for all constructs, signifying a high level of internal consistency. Composite Reliability (CR), another crucial indicator of reliability, consistently exceeded the benchmark of 0.70 for all constructs. The CR values reiterate the reliability of the measurements and reinforce the credibility of the data.

Convergent validity, a critical aspect of construct validation, was assessed by examining the Average Extracted Variance (AVE) values. The AVE values consistently exceeded the robust threshold of 0.50, indicating strong convergent validity. Additionally, all factor loading values surpassed the conventional threshold of 0.50. These results provide substantial evidence for the validity of the underlying factors, corroborating the reliability and accuracy of the measurement instruments used in this study (Hair et al., 2006).

In summary, the findings from the CFA analysis collectively demonstrate the robustness and reliability of the measurement instruments employed in this study. These results instill confidence in the accuracy and validity of subsequent data analyses and interpretations, enhancing the overall credibility of the research outcomes.

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Perceived Benefit (PB)	Yan et al. (2019)	6	0.911	0.669–0.905	0.914	0.641
Perceived Risk (PR)	Jiang et al. (2021)	3	0.841	0.755–0.892	0.845	0.646
Attitude (ATT)	Yan et al. (2019)	4	0.804	0.677–0.769	0.814	0.523
Subjective Norm (SN)	Yan et al. (2019)	5	0.925	0.773–0.890	0.923	0.707
Perceived Behavioral Control (PBC)	Yan et al. (2019)	4	0.841	0.649–0.836	0.840	0.570
Environmental Concerns (EC)	Yeğin and Muhammad (2022)	4	0.886	0.697–0.864	0.878	0.644
Purchase Intention (PI)	Bhutto et al. (2022)	3	0.926	0.859–0.926	0.928	0.818

The assessment of goodness-of-fit results for the measurement model is a critical step in determining its adequacy in representing empirical data. Table 4 presents the analysis of these results, both before and after adjustment, providing insights into the model's accuracy in capturing the observed data.

The goodness-of-fit measures indicated room for improvement in the model's fit to the empirical data.

The ratio of the chi-square value to the degree of freedom (CMIN/DF) was 4.722, exceeding the acceptable threshold of 3. The GFI (Goodness of Fit Index) was 0.796, the AGFI (Adjusted Goodness of Fit Index) was 0.750, and the RMSEA (Root Mean Square Error of Approximation) was 0.086. These values did not meet the acceptable criteria, suggesting the need for model adjustments.

Following the necessary adjustments, the goodness-of-fit measures improved significantly, indicating a better alignment between the model and the empirical data. The adjustments made to the model significantly improved its goodness of fit, as evidenced by the revised goodness-of-fit measures. These results indicate that the modified model aligns better with the empirical data, enhancing its representational accuracy and credibility.

Table 4: Goodness of Fit for Measurement Model

Index	Acceptable Values	Statistical Values Before Adjustment	Statistical Values After Adjustment
CMIN/DF	< 3.00 (Hair et al., 2006)	4.722	2.631
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.796	0.897
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.750	0.858
NFI	≥ 0.80 (Wu & Wang, 2006)	0.862	0.932
CFI	≥ 0.80 (Bentler, 1990)	0.888	0.956
TLI	≥ 0.80 (Sharma et al., 2005)	0.872	0.944
RMSEA	< 0.08 (Pedroso et al., 2016)	0.086	0.057
Model summary		**Not in harmony with empirical data**	**In harmony with empirical data**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index and RMSEA = root mean square error of approximation

The assessment of discriminant validity is a crucial aspect of construct validation, ensuring that distinct constructs are indeed different from each other. Table 5 presents the results of this analysis, revealing the discriminant validity for the research constructs.

The diagonal entries in Table 5 represent the square root of the Average Variance Extracted (AVE) for each respective construct. Notably, these diagonal values consistently exceeded the inter-correlation coefficients among the various constructs, ranging from 0.723 to 0.904. The observed pattern in the data strongly supports the achievement of discriminant validity for this research.

The square root of the AVE values being greater than the correlation coefficients between the constructs signifies that each construct is distinct from the others. Additionally, these findings further substantiate the construct validity of the research, as both convergent and discriminant validity were confirmed (Fornell & Larcker, 1981).

Table 5: Discriminant Validity

	PB	PR	ATT	SN	PBC	EC	PI
PB	**0.801**						
PR	0.206	**0.804**					
ATT	0.738	0.335	**0.723**				
SN	0.63	0.295	0.688	**0.841**			
PBC	0.442	0.28	0.563	0.64	**0.755**		
EC	0.537	0.313	0.621	0.545	0.57	**0.802**	
PI	0.62	0.119	0.635	0.762	0.665	0.583	**0.904**

Note: The diagonally listed value is the AVE square roots of the variables
Source: Created by the author.

4.3 Structural Equation Model (SEM)

Prior SEM data results were not harmonized, the model is necessary to be adjusted. SEM analysis after modification presented Chi-Square = 2.854, Goodness-of-fit statistic (GFI) = 0.888, Adjusted Goodness-of-fit statistic (AGFI) = 0.850, Normed Fit Index (NFI)=0.924, Comparative Fit Index (CFI) = 0.949, Tucker-Lewis Index (TLI) = 0.936 and Root Mean Square Error of Approximation (RMSEA) = 0.061. Hence, Table 6 expressed that the model of SEM analysis after modification has met good fit thresholds.

Table 6: Goodness of Fit for Structural Model

Index	Acceptable Values	Statistical Values Before Adjustment	Statistical Values After Adjustment
CMIN/DF	< 3.00 (Hair et al., 2006)	7.086	2.854
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.708	0.888
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.658	0.850
NFI	≥ 0.80 (Wu & Wang, 2006)	0.784	0.924
CFI	≥ 0.80 (Bentler, 1990)	0.808	0.949
TLI	≥ 0.80 (Sharma et al., 2005)	0.79	0.936
RMSEA	< 0.08 (Pedroso et al., 2016)	0.110	0.061
Model summary		**Not in harmony with empirical data**	**In harmony with empirical data**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, , NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index and RMSEA = root mean square error of approximation

4.4 Research Hypothesis Testing Result

As illustrated in Table 7, five out of six hypotheses were corroborated. Attitude was significantly impacted by both perceived benefit and perceived risk. Furthermore, purchase intention was influenced by attitude, subjective norms, and perceived behavioral control. However, it was found that environmental issues did not affect purchase intention.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Testing result
H1: Perceived benefit has a significant influence on attitude.	0.873	12.042*	Supported
H2: Perceived risk has a significant influence on attitude.	0.194	6.547*	Supported
H3: Attitude has a significant influence on purchase intention.	0.145	4.577*	Supported
H4: Subjective norm has a significant influence on purchase intention.	0.545	7.541*	Supported
H5: Perceived behavioral control has a significant influence on purchase intention.	0.348	5.345*	Supported
H6: Environmental concerns have a significant influence on purchase intention.	0.203	1.635	Not Supported

Note: * $p<0.05$
Source: Created by the author

H1 Perceived benefits have a significant effect on attitudes. As shown in H1, the standardized coefficient between perceived benefits and attitude is 0.873, with a t-value of 12.04. This finding supports previous findings about the effect of perceived benefits on attitude and influences purchase intention (Yan et al., 2019; Yang et al., 2020).

H2 Perceived risk had a significant effect on attitudes. The standardized coefficient between perceived risk and attitude was 0.194, with a t-value of 6.547. This hypothesis is in line with prior research findings concerning the impact of perceived risk on attitudes and purchasing intentions (Dutta & Hwang, 2021; Jiang et al., 2021; Xie et al., 2022).

H3, the hypothesis that attitude has a significant effect on consumers' purchase intention was tested. The standardized coefficient between attitude and purchase intention was 0.145, with a t-value of 4.577. This finding supports the results of previous research on the effect of attitudes on purchase intentions (Hamzah & Tanwir, 2021; Yang et al., 2020; Yeğin & Muhammad, 2022).

H4 Subjective norms have a significant effect on purchase intention. The standardized coefficient between subjective norms and purchase intention was 0.545, with a t-value of 7.541. This suggests that subjective norms have a positive influence factor on consumers' purchase intentions (Shalender & Sharma, 2021).

H5 Perceived behavioral control has a significant influence on purchase intention. The standardized coefficient between perceived behavioral control and purchase intention was 0.348, with a t-value of 5.345. It is known from the data that this hypothesis is supported (Hamzah & Tanwir, 2021; Shalender & Sharma, 2021; Wang et al., 2013).

H6 the impact of environmental concerns purchase intention to consume failed to be supported. This may have something to do with consumers' environmental awareness, environmental responsibility, and other factors (Duangekanong, 2023; Shalender & Sharma, 2021; Yeğin & Muhammad, 2022).

5. Conclusion and Recommendation

5.1 Conclusion and Discussion

The research findings have illuminated several essential insights regarding the determinants of consumers' purchase intention toward electric vehicles in Chongqing. It was found that perceived benefit and perceived risk significantly influence consumers' attitudes toward electric vehicles. This indicates that individuals weigh the potential advantages and drawbacks of electric vehicles when forming their attitudes.

Attitude, subjective norm, and perceived behavioral control were identified as significant factors shaping consumers' purchase intention. These factors collectively contribute to consumers' intentions to consider electric vehicles as a viable option. Surprisingly, we did not observe a significant influence of environmental concerns on consumers' purchase intention. This may suggest that other factors, such as economic or practical considerations, hold greater weight in consumers' decision-making processes regarding electric vehicle adoption.

These findings carry several implications for both academia and industry. Understanding the role of perceived benefit, perceived risk, attitude, subjective norm, and perceived behavioral control can guide marketing strategies and public policies aimed at promoting electric vehicle adoption. Moreover, the lack of a significant influence of environmental concerns highlights the complexity of consumer decision-making in this context, warranting further investigation.

It is crucial for automakers and policymakers to tailor their approaches to accommodate these diverse determinants and adapt to the evolving landscape of electric vehicle adoption. Future research endeavors could delve deeper into the multifaceted nature of environmental concerns and investigate additional factors that may influence consumers' decisions in this domain.

In conclusion, this study sheds light on the intricate interplay of factors influencing consumers' purchase intention regarding electric vehicles in Chongqing. By considering these findings, stakeholders can craft more effective strategies and policies to foster the adoption of sustainable transportation options in the region.

5.2 Recommendation

The findings of this study shed light on the determinants of consumers' purchase intentions towards electric vehicles (EVs) in Chongqing. To leverage these insights and foster greater EV adoption in the region, several strategic recommendations are proposed:

One of the most effective ways to encourage EV adoption in Chongqing is through educational campaigns. These campaigns should be designed to inform consumers about the various benefits of EV ownership, including cost savings on fuel and maintenance, reduced environmental impact, and the technological advantages of EVs. Additionally, addressing common misconceptions and concerns, such as range anxiety and charging infrastructure, can alleviate consumer apprehensions.

Expanding the charging infrastructure network is paramount to easing consumer concerns related to EVs. Chongqing should invest in the development of an extensive and easily accessible charging infrastructure, covering residential areas, commercial districts, and major transportation routes. This initiative will alleviate range anxiety, boost consumer confidence, and make EV ownership more practical.

The government and relevant stakeholders should consider introducing financial incentives and subsidies to make EVs more economically attractive. These incentives may include tax credits, rebates, reduced registration fees, and favorable financing options. By lowering the upfront costs of EVs, more consumers will be inclined to consider them as a viable option.

To familiarize consumers with EVs and address their concerns, organizations should offer opportunities for test drives and information sessions. These events provide a firsthand experience of EV technology and dispel myths or misconceptions. Furthermore, consumer feedback during these sessions can inform product improvements and marketing strategies.

Chongqing should prioritize the electrification of its public transportation systems. This initiative will not only showcase the benefits of EV technology but also contribute to reduced pollution in the city. The sight of electric buses and taxis can inspire consumer confidence in the technology's reliability and efficiency.

Investment in research and development of EV technology, particularly in battery advancements and affordability, is crucial. As battery technology improves, costs decrease, and range increases, EVs become more appealing to a wider consumer base. Collaboration between academic institutions, industry players, and government agencies can facilitate these advancements.

Marketing strategies should be tailored to emphasize the practicality, affordability, and overall value proposition of EVs in Chongqing. Highlighting the long-term cost savings, environmental benefits, and ease of maintenance can resonate with consumers. Messages should be clear, relatable, and localized to the Chongqing context.

Consumers need to be educated about the long-term cost savings associated with EV ownership. Providing them with comprehensive cost comparisons between EVs and traditional internal combustion engine vehicles can motivate informed decision-making. Emphasizing lower operational and maintenance costs can be particularly persuasive.

Stakeholders, including the government, automotive industry, and environmental organizations, should collaborate on comprehensive initiatives to support EV adoption. This includes setting shared goals, aligning policies, and pooling resources to create a conducive environment for EV growth in Chongqing.

As the landscape of EV adoption evolves, it is essential to conduct continuous research to stay updated on the factors influencing consumer preferences and behaviors. Ongoing studies can help tailor strategies and policies to meet changing consumer needs and market dynamics.

In conclusion, by implementing these recommendations, Chongqing can pave the way for increased electric vehicle adoption. Each recommendation addresses a specific aspect of consumer decision-making and can collectively contribute to a more sustainable and environmentally friendly transportation future for the city.

5.3 Limitation and Further Study

Some limitations that future research in the field of electric vehicle (EV) adoption in Chongqing should consider. Firstly, this study focused exclusively on Chongqing, a city in southwestern China. Future research should expand its scope to include a more diverse set of regions within China to capture regional variations in EV adoption factors, as consumer preferences and infrastructure availability can differ significantly between cities and provinces. Secondly, government policies and regulations play a significant role in shaping the EV market. Future research should closely monitor policy developments and assess how changes in incentives, emissions standards, and regulatory frameworks impact consumer choices and the EV market's overall trajectory. Lastly, this study primarily investigated consumers' immediate purchase intentions. Future research should consider conducting longitudinal studies to assess the long-term impact of policies, incentives, and educational campaigns on actual EV adoption rates. Tracking consumer behaviors over an extended period will provide valuable insights into sustained adoption trends.

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