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Factors Influencing Purchase Intention of Electric Vehicles of Consumers in Chengdu, China

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Abstract

Purpose: This study aims to explore the factors influencing consumers' purchase intention of electric vehicles in Chengdu. The researcher used a quantitative survey method to conduct the study. The conceptual framework of this study includes perceived benefit, perceived risk, attitude, environmental concerns, subjective norm, perceived behavioral control, and purchase intention. **Research design, data, and methodology:** This research comprises 500 consumers who are residents of Chengdu, aging 18 years old and above, and possess a driver's license, with an adequate income to buy electric vehicles. The validity of the research instrument was assessed by item-objective congruence (IOC), and the reliability of internal consistency was assessed by Cronbach's alpha. In addition, various sampling techniques were used including judgmental, quota, and convenience sampling. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were used as statistical analysis tools in this thesis to assess the data. **Results:** perceived benefit and perceived risk significantly influence attitude. Environmental concerns, subjective norm, and perceived behavioral control are significant factors of purchase intention. Conversely, Attitude has no significant influence on purchase intention. **Conclusions:** This study provides valuable insights for stakeholders aiming to promote sustainable transportation solutions in the region, ultimately contributing to the broader goal of reducing carbon emissions and mitigating environmental impact.

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

JEL Classification Code: E44, F31, F37, G15

1. Introduction

According to the International Energy Agency (IEA), the transport sector has emerged as the second largest contributor to the energy crisis, accounting for 29% of total final energy consumption and 20.3% of global greenhouse gas (GHG) emissions (IEA). The transport industry has the highest level of fossil fuel dependency compared to other sectors, as evidenced by the fact that 37% of global carbon CO_2 emissions come from transport end uses. The transport sector has experienced the fastest growth in CO_2 emissions over the past decade, largely due to increased demand and limited access to low-carbon technologies (Turiel & Antonio, 2022).

As a result, the growth of the international EV industry has accelerated significantly in recent years, characterized by a significant increase in both the production and sales of EVs. In 2013, 200,000 EVs were sold on the global market. By 2022, a cumulative total of 10.5 million new pure EVs and plug-in hybrids will have been delivered, representing a significant increase of 55% compared to the previous year. The expected growth rate of the global EV industry is expected to be higher in 2013 than in 2022, resulting in the delivery of around 1.5 million new vehicles that are either pure electric or plug-in hybrids (Roland, 2023).

Chengdu has a long history and culture, is the birthplace

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of the ancient Shu civilization, and is the best tourist city in China. The Jinsha Ruins in its territory have a history of 3,000 years and a resident population of 21,268,000 people. The people of Chengdu live a comfortable life and are particularly avant-garde when it comes to consumption. By the end of June this year, the number of new energy vehicles in Chengdu reached 510,000, ranking sixth among all Chinese cities. The number of EVs in Chengdu will reach about 600,000 units by 2025 (Fusheng, 2023).

With the number of automobiles in the world increasing yearly, the rapid growth of oil consumption, and the increasing pressure on environmental protection, the automobile industry is forced to take the road of developing energy conservation and environmental protection. As an effective means to reduce pollution and emissions, EVs have attracted more and more attention and have become the new favorite of the automobile industry. At present, major automobile manufacturers are trying to solve EVs' power, range, and manufacturing costs. In the future, the development of EVs will develop in the direction of strong power, long range, and low manufacturing cost to realize green transportation and environment-friendly travel (Kosai 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, and examines the relationships among these factors. The aim is to provide information for developing policies to popularize EVs to reduce carbon emissions from transport, provide the necessary references for car manufacturers to develop new EV products, and provide consumers with decision-making references for purchasing EVs.

2. Literature Review

2.1 Perceived Benefit

Perceived benefit refers to the perceived likelihood of a positive outcome from a purchase (Yang et al., 2020). As a cognitive emotion, it positively influences consumer intentions and behavior (Yan et al., 2019). The perceived benefit of a product or service is an important determinant of consumer purchasing behavior (Jing et al., 2019).

Studies by Potoglou and Kanaroglou (2007) and Wang et al. (2013) confirmed that incentives to purchase an EV can bring economic benefits to consumers, such as price subsidies and purchase tax exemptions. In addition, the fact that EVs do not consume fuel and that manufacturers provide satisfactory after-sales services are two factors that contribute to consumer preference for EVs. Secondly, the fact that EVs do not consume fuel means they are environmentally sustainable (Morganti et al., 2017). Therefore, a hypothesis is indicated:

H1: Perceived benefit has a significant influence on attitude.

2.2 Perceived Risk

Perceived risk is originally a research topic in psychology and refers to consumers' predictions of negative consequences of purchasing a particular product (Beneke et al., 2012). Perceived risk occurs when an individual considers the likelihood of negative outcomes (Swan et al., 1985). According to Ng et al. (2021), perceived risk and the variable in question typically have a negative association. Due to the limited adoption of EVs, there exists a prevailing consumer prejudice against them (Yang et al., 2020) about safety concerns (Lim & Chia, 2015), dependability issues (Yan et al., 2019), and battery longevity (Graham-Rowe et al., 2014).

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 (Duangekanong, 2023). Furthermore, it is important to note that perceived benefits drive consumers and consider perceived risks when forming their intentions and engaging in certain behaviors. Before making a final decision and actively seeking the optimal solution, consumers carefully weigh the potential benefits against the associated risks (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 is an individual's internal experience that influences the consumer's purchase intention, which is the consumer's tendency to act (Ajzen & Fishbein, 1977). Attitude is an individual's positive or negative evaluation of behavior through observation, experience, research, etc., and the tendency to perform the behavior (Bianchi et al., 2017). Attitude can be defined as the degree to which an individual expresses approval or disapproval of an action prior to its achievement (Al-Debei et al., 2015). It refers to an individual's positive or negative evaluation of participating in a particular behavior. According to Armitage and Conner (2001), individuals are more likely to behave if their attitude towards it is positive. Similarly, they evaluate the purchasing behavior of others, as highlighted by Chetioui et al. (2020).

According to Ajzen (2002), behavior ATT refers to the evaluation made by potential buyers regarding the positive

or negative consequences of purchasing EVs. When individuals perceive EVs as being environmentally friendly, cost-effective, benefiting from government regulations, emitting less noise, and capable of meeting their daily transportation needs, they are more likely to favor purchasing EVs. In contrast, the inclination of prospective consumers to purchase EVs is adversely affected by their perception of inconveniences associated with charging, frequent issues encountered with EVs, and concerns over the limited cruising range that may not align with their daily requirements (Yan et al., 2019). Based on previous studies, the researcher proposes a hypothesis:

H3: Attitude has a significant influence on purchase intention.

2.4 Subjective Norm

Subjective norms are the social opinions and pressures that individuals perceive when deciding to behave in a certain way (Liao et al., 2023). In their theory of reasoned action, Fishbein and Ajzen (1975) define rational action as a person's belief that most people who are important to him/her think that he/she should or should not behave in a certain way. Schiffman and Kanuk (2007) further state that SN can be assessed by evaluating an individual's perception of how his/her related group perceives his/her behavior. According to Yang et al. (2020), an individual's perception of societal expectations to conform to certain behaviors is social pressure to perform. SN is influenced by an individual's social networks, including friends, family, colleagues, and communities.

Based on the existing literature, SN significantly influences consumers' decision-making process regarding the acquisition or rejection of specific products and services. Furthermore, it is observed that SN has a greater impact on individuals' purchase intentions than their actual purchase behavior. This conclusion is supported by various studies by Ali et al. (2019). Therefore, it has been acknowledged that subjective norm plays a significant role in shaping customers' purchase intentions (Peña-García et al., 2020). Accordingly, this study can conclude that:

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

2.5 Perceived Behavioral Control

Perceived behavioral control is the perception of the ease or difficulty of performing certain behaviors (Ajzen, 2002). This concept can be defined as an individual's perception of their ability to perform a behavior. In addition, the more resources and opportunities individuals believe they have, the fewer obstacles they anticipate and the more perceived control they have over their behavior. PBC represents an individual's perception of how difficult it will be to perform a behavior (Kraft et al., 2005).

A study conducted by Wang et al. (2013) examined the influence of perceived behavioral control on customers' decisions to purchase EVs. Subsequent studies have provided additional evidence to support this conclusion. In addition, research examining EV adoption has predominantly identified perceived behavioral control as a significant predictor of consumers' pro-environmental behavior (Yadav & Pathak, 2016). Building upon the insights gleaned from previous findings, the following hypotheses are posited:

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

2.6 Environmental Concerns

The concept of environmental concerns can be described as critically evaluating information and assessing one's and others' attitudes and behaviors towards the environment (Duangekanong, 2023). Environmental concern is often understood as a reliable predictor of an individual's intention to engage in environmentally friendly purchasing behavior (Newton et al., 2015). Individuals with a high environmental concern intend to protect the environment, making it easier for individuals to adopt green products (Li et al., 2017).

Ng et al. (2021) conducted a study in Hong Kong to explore the effects of environmental concern, perceived value, confidence in EVs, response efficacy, and willingness to pay on the public's willingness to purchase EVs. The researchers found that environmental concerns significantly affected the public's willingness to accept electric vehicles. Degirmenci and Breitner (2017) argued that environmental concerns can predict an individual's attitude toward the intention to purchase an electric vehicle compared to factors such as price value and range confidence. Therefore, the presence of environmental concern significantly impacts the intention to purchase EVs. Hence, a hypothesis is set:

H5: Environmental concerns have a significant influence on purchase intention

2.7 Purchase Intention

Purchase intention is the exchange behavior that occurs when a customer makes a general assessment of a good. It is a perceptual response to one's attitude towards a good. In other words, customers' purchase intention is formed by combining their quality evaluation or attitude towards a brand and the influence of external stimuli. In a study conducted by Tu and Yang (2019), it was found that the main determinants of behavioral intention can be categorized as attitude toward the behavior, subjective norm, and self-control ability (Ajzen, 2002). Furthermore, these factors

have been found to have a significant positive correlation with behavioral intention (Tweephoncharoen & Vongurai, 2020). Consequently, the present study posits that self-control ability positively influence consumers' behavioral intention toward EVs (Yeğin & Muhammad, 2022).

3. Research Methods and Materials

3.1 Research Framework

The researcher developed the conceptual framework for this study by drawing on previous research, as presented in Figure 1. This study includes perceived benefit, perceived risk, attitude, environmental concerns, subjective norm, perceived behavioral control, and purchase intention. The variables were adopted from three studies which are Yang et al. (2020), Yan et al. (2019), and Yeğin and Muhammad (2022).

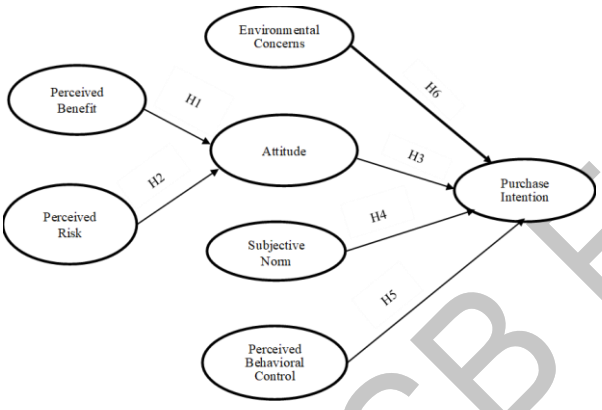

Figure 1: Conceptual Framework

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

The study employed a quantitative methodology, utilizing a questionnaire as the primary instrument for data gathering. To streamline and speed up data collecting, a QQ form survey tool was utilized to administer the questionnaire. The survey comprises screening questions, measuring items with five-point Likert scale and demographic information. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were used as statistical analysis tools in this thesis to assess the data.

In the IOC analysis, three experts independently rated each item on the scale. Notably, all items received scores of 0.67 or higher, indicating a high level of agreement among experts regarding the congruence of the items with the intended objectives of the questionnaire.

Additionally, the researcher conducted a pilot test with a sample of 30 participants and calculated the reliability using the Cronbach alpha coefficient. The results of this analysis demonstrated that all items within the questionnaire exhibited strong internal consistency, with a reliability score of 0.7 or greater (Nunnally & Bernstein, 1994).

3.3 Population and Sample Size

This research comprises individuals who are residents of Chengdu, ranging from 18 to 65 years of age and possess a driver's license of C1 level or above, with an adequate income to buy electric vehicles. As per the legal provisions in China, individuals who have attained the age 18 are eligible to acquire a driver's license for operating motor vehicles. Israel (1992) asserted that a sufficiently large sample size, such as 200-500, is required for multiple regression. Hence, the researcher intends to get a sample size of 500 consumers in Chengdu.

3.4 Sampling Technique

The researcher employed the non-probability sampling strategy known as judgmental sampling to select individuals who are residents of Chengdu, ranging from 18 to 65 years of age and possess a driver's license of C1 level or above, with an adequate income to buy electric vehicles. In addition, the quota sampling technique ensures that the sample selected in quota sampling has the same characteristics as the population, as calculated in Table 1. For convenience sampling, the researcher distributed the questionnaire to the employees of a car sales organization, while the respondents, who were consumers, completed the questionnaire by accessing the 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) provides valuable insights into the characteristics of the study participants. In terms of gender distribution, the sample is fairly balanced, with 55.8% of respondents identifying as male and 44.2% as female. This gender balance suggests that the study's findings may be applicable to both male and female populations.

Age distribution reveals that a significant portion of respondents are under 30 years old (50.6%). Marital status indicates a nearly equal split between single (50.6%) and married (49.4%) respondents. Income distribution highlights a diverse range of income levels among the respondents. The largest group falls in the "Under 4000" category (30.4%), followed by "6001–12,000" (31.2%).

The education level of respondents is varied, with the majority having completed "Undergraduate or junior college" (57%), followed by Graduate (25%). This distribution reflects a relatively well-educated sample, which may influence their online learning experiences and expectations. The occupational diversity among respondents is notable, with the majority falling into the "Others" category (62.6%).

Table 2: Demographic Profile

Characteristics		Respondents (N=500)	
		f	*%*
Gender	Male	279	55.8%
	Female	221	44.2%
Age	Under 30	253	50.6%
	31–40	129	25.8%
	41–50	92	18.4%
	Above 50	26	5.2%
Marital status	Single	253	50.6%
	Married	247	49.4%
Income (RMB)	Under 4000	152	30.4%
	4001–6000	112	22.4%
	6001–12,000	156	31.2%
	12,001–18,000	46	9.2%
	Above 18,001	34	6.8%
Education	Middle school and below	27	5.4%
	High school or technical secondary school	63	12.6%
	Undergraduate or junior college	285	57%
	Graduate	125	25%
Occupation	Manufacturing	57	11.4%
	Medical care	28	5.6%
	Finance	27	5.4%
	Design	15	3.0%
	Services	60	12%
	Others	313	62.6%

Source: Constructed by author

4.2 Confirmatory Factor Analysis (CFA)

In Table 3, Confirmatory Factor Analysis (CFA) was employed as a statistical tool to examine theoretical constructs that, while initially showing promise in terms of reliability, required a more in-depth evaluation. The outcomes of the CFA revealed strong internal consistency across all constructs, consistently exceeding a reliability score of 0.7, as supported by prior research (Nunnally & Bernstein, 1994).

This robust internal consistency is reinforced by the data, which clearly demonstrates Cronbach's Alpha values exceeding the threshold of 0.7, thus indicating a high level of internal consistency. Furthermore, the composite reliability (CR) consistently surpassed the benchmark of 0.70, further bolstering the reliability of the measurements.

In addition to evaluating reliability, we assessed convergent validity, which is a critical component of construct validation. The Average Extracted Variance (AVE) values consistently exceeded 0.50, signifying strong convergent validity. Additionally, all factor loading values surpassed the 0.50 threshold, providing additional evidence for the validity of the underlying factors (Hair et al., 2006).

These findings collectively demonstrate the robustness and reliability of the measurement instruments used in this study, offering confidence in the accuracy and validity of our subsequent analyses and interpretations of the data.

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	0.856	0.617–0.832	0.890	0.577
Perceived Risk (PR)	Jiang et al. (2021)	3	0.808	0.669–0.829	0.812	0.592
Attitude (ATT)	Yan et al. (2019)	4	0.780	0.601–0.721	0.777	0.467
Subjective Norm (SN)	Yan et al. (2019)	5	0.887	0.730–0.870	0.892	0.624
Perceived Behavioral Control (PBC)	Yan et al. (2019)	4	0.811	0.682–0.820	0.826	0.545
Environmental Concerns (EC)	Yeğin and Muhammad (2022)	4	0.854	0.729–0.797	0.850	0.587
Purchase Intention (PI)	Bhutto et al. (2022)	3	0.918	0.826–0.929	0.920	0.793

According to Table 4, the analysis of goodness-of-fit results for the measurement model before and after adjustment is a critical step in assessing the model's adequacy in representing the empirical data. In measuring the goodness of fit of the model structure, The ratio of the chi-square value to the degree of freedom (CMIN/DF) is 3.603, which is more than the acceptable value of 3. The GFI is 0.840, which is not up to the acceptable value of 0.85. Hence, the model needs to be adjusted. After the adjustment, the goodness of fit after adjustment was CMIN/df =2.000, GFI=0.917, AGFI=0.891, NFI=0.933, CFI=0.965, TLI=0.957, and RMSEA=0.045.

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)	3.603	2.000
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.840	0.917
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.805	0.891
NFI	≥ 0.80 (Wu & Wang, 2006)	0.869	0.933
CFI	≥ 0.80 (Bentler, 1990)	0.902	0.965
TLI	≥ 0.80 (Sharma et al., 2005)	0.888	0.957
RMSEA	< 0.08 (Pedroso et al., 2016)	0.072	0.045
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

As seen in Table 5, the square root of the AVE (shown on the diagonal line) was greater than the inter-correlated constructs' values and ranged from 0.683 to 0.891. Thus, discriminant validity for this research was achieved. Furthermore, construct validity was established since convergent and discriminant validity were proved (Fornell & Larcker, 1981).

Table 5: Discriminant Validity

	PB	PR	ATT	SN	PBC	EC	PI
PB	**0.760**						
PR	0.173	**0.769**					
ATT	0.674	0.276	**0.683**				
SN	0.568	0.238	0.585	**0.790**			
PBC	0.454	0.287	0.594	0.67	**0.738**		
EC	0.559	0.258	0.623	0.526	0.573	**0.766**	
PI	0.574	0.141	0.535	0.719	0.649	0.600	**0.891**

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 = 1.924 Goodness-of-fit statistic (GFI) = 0.918, Adjusted Goodness-of-fit statistic (AGFI) = 0.893, Normed Fit Index (NFI)=0.935, Comparative Fit Index (CFI) = 0.967, Tucker-Lewis Index (TLI) = 0.960 and Root Mean Square Error of Approximation (RMSEA) = 0.043. 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)	5.970	1.924
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.746	0.918
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.703	0.893
NFI	≥ 0.80 (Wu & Wang, 2006)	0.775	0.935
CFI	≥ 0.80 (Bentler, 1990)	0.804	0.967
TLI	≥ 0.80 (Sharma et al., 2005)	0.786	0.960
RMSEA	< 0.08 (Pedroso et al., 2016)	0.099	0.043
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 seen in Table 7, five of the six hypotheses were supported. Perceived benefit significantly impacted attitude. The perceived risk significantly influences attitude, but attitude does not affect purchase intention. Subjective norms have an impact on purchase intentions. Perceived behavioral control has had an impact on purchase intention. Environmental concerns have an impact on 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.	0.646	11.478*	Supported

Hypothesis	(β)	t-value	Testing result
H2: Perceived risk has a significant influence on attitude.	0.123	4.626*	Supported
H3: Attitude has a significant influence on purchase intention.	-0.057	-0.556	Not Supported
H4: Subjective norm has a significant influence on purchase intention.	0.742	9.045*	Supported
H5: Perceived behavioral control has a significant influence on purchase intention.	0.293	3.589*	Supported
H6: Environmental concerns have a significant influence on purchase intention.	0.299	4.455*	Supported

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

H1 confirmed the significant influence between perceived benefit and attitude, and this suggests that perceived EV value has a positive impact on consumer attitudes because EVs bring them both economic and non-economic benefits (Wu & Wu, 2014; Yan et al., 2019; Yang et al., 2020).

H2 was proven the significance of the relationship between perceived risk and attitude. This suggests that perceived EV risk also has an impact on consumer attitudes, as perceived EV risk affects consumers' purchase attitudes, which in turn affects their purchase intention to consume (Yan et al., 2019; Yang et al., 2020).

H3 was argued as the results show no significant relationship among attitude and purchase intention, and it is that consumer attitudes are influenced by perceived benefit and perceived risk, and if consumers feel that the risk of purchasing an electric vehicle is greater than their perceived benefit, then that will affect their willingness to purchase intention (Hamzah & Tanwir, 2021; Yang et al., 2020).

H4 Subjective norms affect purchase intention, and the hypothesis is tested. It indicates that consumers' subjective norms affect purchase intention (Shalender & Sharma, 2021).

H5 Perceived behavioral control has a significant influence on purchase intention. The hypothesis is verified, and the assumption is valid (Hamzah & Tanwir, 2021; Shalender & Sharma, 2021; Wang et al., 2013).

H6 Environmental concerns have a significant impact on purchase intentions. The hypothesis is validated, and the hypothesis is established. It indicates that consumers' concern for the environment drives their intention to purchase electric vehicles (Shalender & Sharma, 2021; Wang et al., 2013; Yeğin & Muhammad, 2022).

5. Conclusion and Recommendation

5.1 Conclusion and Discussion

This study set out to explore the determinants of consumers' purchase intention regarding electric vehicles in Chengdu. The research design incorporated a quantitative survey method and a comprehensive conceptual framework that considered perceived benefit, perceived risk, attitude, environmental concerns, subjective norm, perceived behavioral control, and purchase intention.

The research design and methodology employed in this study were robust. The validity of the research instrument was rigorously assessed using item-objective congruence (IOC), ensuring that the measurement items accurately represented the constructs under investigation. Additionally, the internal consistency reliability was assessed using Cronbach's alpha, confirming that the questionnaire items exhibited strong internal consistency.

Various sampling techniques, including judgmental, quota, and convenience sampling, were employed to capture a diverse range of respondents, contributing to the generalizability of the findings. Statistical tools such as Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were utilized to analyze the data, enabling a comprehensive examination of the relationships among the variables.

The findings of this study have several implications for electric vehicle marketing and promotion strategies in Chengdu. Firstly, emphasizing the perceived benefits while addressing perceived risks can enhance consumers' attitudes towards electric vehicles. Additionally, campaigns focusing on environmental concerns, subjective norms, and enhancing consumers' perceived behavioral control can be effective in driving purchase intentions.

The unexpected finding that attitude did not significantly impact purchase intention suggests that traditional approaches emphasizing attitude change may not be as effective in this context. Instead, marketers and policymakers should prioritize interventions that address the factors found to be significant, such as environmental concerns and perceived behavioral control.

In conclusion, this study contributes to our understanding of the complex factors influencing consumers' purchase intention of electric vehicles in Chengdu. It provides valuable insights for stakeholders aiming to promote sustainable transportation solutions in the region, ultimately contributing to the broader goal of reducing carbon emissions and mitigating environmental impact. Future research could delve deeper into the specific determinants of perceived benefit, perceived risk, and attitude to further refine marketing strategies for electric vehicles in Chengdu

5.2 Recommendation

Based on the findings of this study regarding the factors influencing consumers' purchase intention of electric vehicles in Chengdu, several recommendations can be made: Given the significant influence of environmental concerns on purchase intention, it is advisable for relevant authorities and electric vehicle manufacturers to invest in public awareness campaigns highlighting the environmental benefits of electric vehicles. These campaigns should emphasize how electric vehicles contribute to reducing air pollution and greenhouse gas emissions, aligning with local and global environmental goals.

Providing consumers with accurate and accessible information about electric vehicles, their benefits, and how to address perceived risks can be instrumental. Workshops, informational sessions, and online resources can help consumers make informed decisions about electric vehicle adoption.

Recognizing the impact of subjective norms, creating programs that encourage word-of-mouth recommendations and testimonials from current electric vehicle owners can be influential. Peer influence can play a pivotal role in shaping consumers' attitudes and purchase intentions. Chengdu should continue to invest in electric vehicle charging infrastructure to enhance consumers' perceived behavioral control. The availability of convenient and reliable charging options can alleviate concerns about the practicality of electric vehicles.

Government incentives and subsidies for electric vehicle adoption can further boost purchase intentions. These incentives might include tax benefits, rebates, and reduced registration fees, making electric vehicles more financially attractive. Given the unexpected finding that attitude did not significantly impact purchase intention, further research into the specific factors influencing attitude formation in the Chengdu context is recommended. Understanding what drives consumers' attitudes can help tailor marketing strategies more effectively.

Providing consumers with clear and transparent information on the long-term cost savings associated with electric vehicles, such as lower fuel and maintenance costs, can enhance perceived benefit and positively influence purchase intentions. Chengdu's government can play a pivotal role in promoting electric vehicle adoption by introducing and enforcing policies that prioritize sustainable transportation. This may include implementing stricter emissions standards and promoting electric vehicle usage in public fleets.

Collaboration among various stakeholders, including government bodies, electric vehicle manufacturers, charging infrastructure providers, and environmental organizations, can facilitate a comprehensive approach to promoting electric vehicle adoption. Regularly monitoring consumer attitudes and purchase intentions towards electric vehicles and adjusting strategies accordingly is essential. Consumer preferences and perceptions can evolve over time, and staying responsive to these changes is crucial for the success of electric vehicle promotion initiatives.

In summary, a multifaceted approach that addresses environmental concerns, provides information and education, leverages peer influence, and supports infrastructure development and incentives is recommended to enhance consumers' purchase intentions for electric vehicles in Chengdu. These recommendations align with the broader goals of reducing emissions and promoting sustainable transportation solutions in the region.

5.3 Limitation and Further Study

The study specifically focuses on Chengdu, and the findings may not fully represent the diversity of consumer preferences and behaviors in other regions of China or globally. Cultural, economic, and regulatory factors can vary significantly between regions, impacting electric vehicle adoption, Next, while various sampling techniques were employed, including judgmental, quota, and convenience sampling, there is still a possibility of sampling bias. Respondents who participated in the study may have unique characteristics that differ from the broader population of Chengdu. In addition, the study focused on a specific set of variables within its conceptual framework. There may be other unexplored factors that could also play a role in influencing purchase intentions, such as government policies or economic conditions.

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