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Promoting Sustainable Transport: The Role of Incentive Policies and Subjective Norms in Consumer Purchasing Behavior in the Electric Vehicle Market in China

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Abstract

Going green with travel not only cuts down on energy use and vehiclebon emissions but also is crucial in constructing a sustainable transportation system. This research delves into the influence of incentive policies and subjective norms on Chinese consumers' decisions to buy electric vehicles, drawing on the theory of planned behavior, consumer behavior theory, and government intervention theory. A cross-sectional survey approach was employed, and a random sample was selected to guarantee the representativeness of the data and the broad applicability of the research findings. Ultimately, 351 Chinese consumers took part in the survey. The results indicate that both incentive policies and subjective norms have a substantial positive effect onpurchasing behavior. The incentive policies offered by the government are key in lowering the barriers for consumers to make a purchase and boosting their buying actions. Meanwhile, subjective norms from the social context impact consumers' purchase choices regarding the acceptance and promotion of electric vehicles. Based on the research outcomes, recommendations are put forward for optimizing the promotion strategy of electric vehicles, providing a foundation for building a sustainable transportation ecosystem.

Keywords

Incentive Policies; Subjective Norms; Purchasing Behavior; Electric Vehicle.

1. Introduction

Global warming has far-reaching environmental, economic, and social implications. The transportation industry is a major contributor to vehiclebon emissions, making up 25% of the global total (IEA). In 2022, China's vehiclebon emissions from the transportation sector accounted for 10.4% of the national sum. Due to the vast road transportation network and high passenger and freight turnover, vehiclebon emissions are likely to stay elevated in the long run. To tackle environmental and energy challenges (Qian & Yin, 2017), China has set a "dual vehiclebon" goal, aiming to peak vehiclebon emissions by 2030 and achieve vehiclebon neutrality by 2060. The sustainable electrification of the transportation sector has become crucial, and the promotion of electric vehicles is regarded as an important way to cut vehiclebon emissions, meet transportation demands, and reduce energy consumption and pollution (Li et al., 2020). Research indicates that policy incentives play a significant part in boosting the development of the electric vehicle market.

The government and enterprises entice consumers into choosing electric vehicles via incentive policies, aiming to ease the growth of private vehicles and boost low-vehiclebon travel (Zhang et al., 2020; Liu et al., 2024). Jenn & Springel (2018) noted that incentives have a significant

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impact on the willingness to purchase. However, as the market reaches maturity, the spotlight has shifted towards the gradual phasing out of policies. Existing research has leaned more towards the function of policies and less on consumer perceptions (Yang et al., 2019). Hence, further research on consumer perceptions of policies is crucial for pinpointing effective policies.

Subjective normative factors wield a substantial influence on green consumption decisions. The viewpoints of neighbors, reference groups, and family members can shape an individual's perception of electric vehicles and their inclination to buy them (Ehsan et al., 2024; Sandman et al., 2024). Moral norms are likewise a crucial influencing element in public energy-saving behavior (Kim et al., 2014). Nevertheless, the role of social norms in electric vehicle purchase decisions lacks systematic research and is a matter of contention (Bobeth & Kastner, 2020). Hence, an in-depth exploration of the mechanism by which social norms impact electric vehiclepurchasing behavior is of great importance for the market's sustainable development.

This research delves into the influence of incentive policies and subjective norms on the purchasing behavior of Chinese electric vehicle consumers via a questionnaire survey. A pre-designed questionnaire was employed in this study to gather feedback from consumers regarding their electric vehiclepurchasing behavior. Respondents encompassed electric vehicle users. The study holds great significance for boosting the development of China's electric vehicle industry, cutting vehiclebon emissions, and enhancing environmental quality. It also offers scientific backing for attaining the "double vehiclebon" goal and promoting sustainable development, assisting in ensuring ecological and environmental safety as well as the long-term interests of the public.

2. Literature Review

2.1. Basic overview of Electric Vehicles in China

Since 1980, China's vehicle ownership has skyrocketed. Since 2009, it has become the world's biggest vehicle market. However, it's grappling with serious environmental and energy challenges (Qian & Yin, 2017). Despite the meteoric rise in the popularity of electric vehicles, as of January 2024, they only made up 7.18% of the country's 440 million motor vehicles. To tackle vehiclebon emissions and energy dependence, the Chinese government has been pushing hard for the development of the electric vehicle industry as a key way to solve environmental and energy issues. Currently, China has built a complete industrial chain for electric vehicles, covering areas like power batteries, electronic control, electric drive systems, and intelligent driving. It also leads the global power battery market, taking up over 60% of the global market share of vehicles with batteries and more than 70% of the global market share of shipments of key materials (Ma, 2023). By the end of 2023, there were over 9 million charging facilities and more than 14,000 power battery recycling companies in China, both ranking number one in the world. The improvement of the industrial chain has spurred the maturity of technology and boosted market competitiveness.

The growth of the electric vehicle market has been spurred by policies like lower purchase taxes, waived road tolls, purchase subsidies, and tax incentives (Yue et al., 2021). Nevertheless, the hefty purchase price continues to be a significant roadblock to consumer uptake (Yang, 2023; Du, 2021). Although financial incentives have helped boost market growth, innovative incentive schemes are still required to attain the industry's sustainable development. China's highly competitive electric vehicle market, where multinational and local firms are vying with one another, has driven product and technology improvements and enhanced consumer acceptance.

Even though the Chinese electric vehicle market is growing by leaps and bounds, it still grapples with safety, cost, and technological hurdles. Safety hazards linked to lithium batteries and inadequate body rigidity dent consumer confidence, while steeper selling prices hold back purchasing choices. Matters like driving range, charging speed, and infrastructure also sway

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consumer opinions (Moons et al., 2012). Despite consumers acknowledging the environmental perks of electric vehicles, they harbor misgivings about technology, price, and safety. Investigating the pivotal factors that shape conflicting consumer attitudes and devising corresponding strategies is crucial for boosting market growth.

2.2. Consumer Purchasing Behavior of Electric Vehicles in China

Intentions play a crucial role in behavior decision-making (Ajzen, 1991), and low-vehiclebon travel intentions are tightly linked to behavior.purchasing behavior is a multi-disciplinary research area that encompasses psychology, sociology, economics, marketing, etc., and delves into the decision-making process of consumers when it comes to product selection, purchase, use, and disposal (Kotler, 2020). The mechanisms of Purchasing behavior consist of demand formation, willingness generation, decision-making, behavior implementation, and feedback, which are split into three stages: before, during, and after the purchase. Each stage involves distinct psychological and behavioral patterns (Zong, 2023). When emotions take the wheel, consumers might make impulse buys (Ahn & Kwon, 2022), which are the outcome of emotional rather than rational thinking (Hartama, 2022).

As electric vehicles make their way into the market, the key challenge that governments and industries are grappling with is how to boost consumer acceptance and encourage purchases (Salari, 2022). Research has indicated that elements like attitudes, subjective norms, perceived behavioral control, price, and environmental self-image have a favorable influence on purchase intention, whereas perceived risk has an adverse effect (Vafaei-Zadeh et al., 2022). Moreover, the bundled sales of electric vehicles along with charging services can notably enhance purchase intention (Plananska & Gamma, 2022). Even though a plethora of studies have centered on purchase intention, there is still a dearth of research on actualpurchasing behavior. Merely increasing purchase intention isn't sufficient to fuel market growth. It's only actualpurchasing behavior that can attain environmental protection objectives (Hoang et al., 2022).

Consequently, this research endeavors to delve into the impacts of incentive policies and subjective norms on the purchasing behavior of Chinese consumers regarding electric vehicles. In recent times, the Chinese government has rolled out a slew of policies to boost the consumption of electric vehicles, like financial subsidies, tax incentives, road rights policies, and the building of charging infrastructure (Yue et al., 2022). Nevertheless, the effects of these incentive policies might vary across different groups. Moreover, sociocultural factors such as face culture and social identity could also sway consumerpurchasing behavior via subjective norms (Zhao et al., 2021). This study aims to bridge the gaps in existing research, analyze how policy and social factors interact to influencepurchasing behavior, and foster the sustainable development of the electric vehicle market, grounded in consumers' perceptions of incentive policies and subjective norms.

3. Factors Influencing the Purchasing Behavior of Chinese Electric Vehicle Consumers

3.1. Incentive Policy

Motivated by a global sustainability strategy, the Chinese government is vigorously fostering a new energy economy, particularly in the electric vehicle sector. To boost the expansion of the electric vehicle market, a slew of fiscal incentives have been rolled out, like vehicle purchase subsidies, cuts in purchase taxes, and exemptions from vehicle purchase restrictions (Yang et al., 2019). Research indicates that these financial incentives have had a significant impact on the development of the electric vehicle market. Shang et al (2024) evaluated the overall efficacy of financial incentives using data from Chinese cities between 2016 and 2019 and discovered

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that purchase subsidies can effectively enhance electric vehicle sales. Nevertheless, different studies have arrived at diverse conclusions regarding the effectiveness of financial incentives. Some studies back a positive impact, while others demonstrate that the effect has fallen short of expectations.

In a study on policy impacts, Zheng et al (2022) utilized data from 286 Chinese cities and discovered that fiscal incentive policies have a lasting positive influence on the sales of electric vehicles by employing the DID and PSM methods. Liu et al (2023) noted from the viewpoint of policy combinations that in the short run, a combination of purchase subsidies, purchase tax cuts, and purchase restrictions can more effectively boost demand, while in the long run, it depends on the building of charging infrastructure and preferential policies. Chen et al (2023) demonstrated via an evolutionary game model that the marginal effect of investment subsidies lessens, while construction and operation subsidies can steadily promote market growth in the long term. Nevertheless, the policy effect differs according to country, region, and policy type. Additionally, Zhuge et al (2020) pointed out that non-monetary policies also have a significant impact on purchase decisions.

In a nutshell, current research regarding the influence of financial incentive policies on the electric vehicle market chiefly zeroes in on the functionality of these policies, yet scant attention is paid to consumers' perceptions of the policies and their impact on purchasing behavior. Some studies contend that financial incentive policies can boost the willingness to purchase, whereas non-monetary incentive policies have rather limited effects (Huang & Ge, 2019). Nevertheless, at present, there's a dearth of research on the mechanism of consumer policy perception. Hence, future research should delve deeper into how consumers perceive government incentive policies and how this perception sways their purchase decisions, to offer a theoretical foundation for the government to formulate more effective policies to promote electric vehicles. This leads to the following hypothesis:

H1 Incentive policy positively influences electric vehicle purchasing behavior.

3.2. Subjective Norm

The subjective norm pertains to an individual's perception of the social pressure or sway that stems from the expectations of significant others regarding a specific behavior (Sreen et al., 2018). The notion of social norms encompasses the approval and advocacy of behavior by a particular person or group (Han et al., 2020; Shalender et al., 2021). When the important people in a consumer's life are typically engaged in a certain behavior, the individual is more inclined to opt for the same due to social influence and emotional connection. Moreover, an individual's behavior is frequently propelled by their perceived conviction in a particular behavior, and this influence is especially substantial when the behavior aligns with their personal preferences and is environmentally friendly (Li, 2020).

Prior studies have indicated that subjective norms play a substantial role in green consumption and the willingness to buy electric vehicles. Social norms, the opinions of family members, and peer behavior can all shape green consumption and decisions regarding the purchase of electric vehicles (Zhang et al., 2019; Sandman et al., 2024; Zhao et al., 2022). Individual moral norms are also a key influencing factor in public energy-saving behavior (Wang et al., 2018). Even though research on social norms remains controversial (Bobeth & Kastner, 2020), its impact on attitudes andpurchasing behavior towards electric vehicles merits in-depth investigation. As the electric vehicle market grows, the influence of consumers' social attributes on adoption behavior is becoming ever more significant.

In China, the concept of “mian zi” mirrors consumers' circumspect stance towards innovative products (Wang & Lin, 2009), which might give rise to resistance against electric vehicles on account of technological change and uncertainty (Zhang et al., 2023). Nevertheless, “mian zi” also stands for the prestige attained through success and ostentation (Hu, 1944). Studies have

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revealed that prosocial considerations regarding consumer image and social status prompt the adoption of electric vehicles (Liu et al., 2021). Buying an electric vehicle not only showcases a prosocial attitude but also displays purchasing power and offers psychological gratification (Bhardwaj et al., 2023). Moreover, “mian zi” notably impacts consumers' assessment and purchase intention of electric vehicles (Zhao et al., 2022). All in all, consumers' social attributes are pivotal factors influencing the adoption of electric vehicles (Zhao et al., 2019). This leads to the following hypothesis:

H2 Subjective norms positively influence electric vehicle purchasing behavior

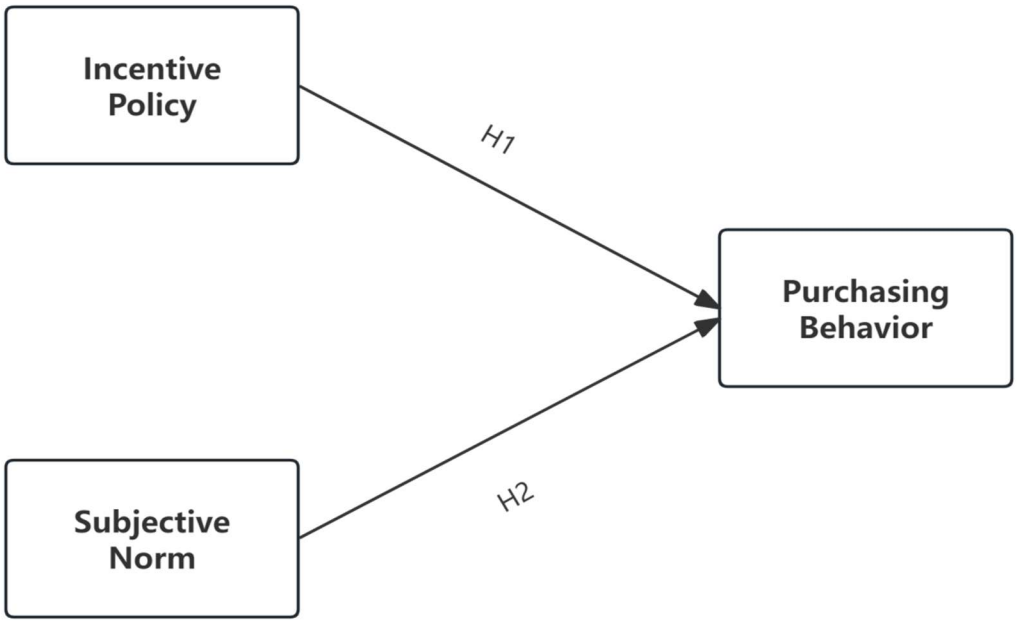

Figure 1. Conceptual framework

Figure 1 summarizes the proposed research model for electric vehicle purchasing behavior in this study.

4. Methodology

4.1. Sample and Data Collection

This study used a questionnaire survey to collect data. The questionnaire was designed based on a relevant theoretical framework and hypotheses, focusing on the key factors influencing thepurchasing behavior of electric vehicle consumers (Davis, 1989; Ajzen, 1991; Venkatesh et al., 2003). All questionnaire items were referenced to established scales and adjusted according to the research context to improve relevance, reliability, and respondents' understanding. The questionnaire was provided in both Chinese and English to reduce the impact of language barriers on data quality (Brislin, 1980).

This research employs random sampling as the primary data-collection method. It's a technique that's commonly utilized in social science investigations to enhance the sample's representativeness and minimize sampling bias (Zhao, 2021). Stratified random sampling entails a process of stratification or segregation, and then subjects are randomly chosen from each stratum (Fowler, 2009). Sekaran (2003) contends that it enables every dimension within the population to have an equal probability of being picked. In this study, stratified random

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sampling was initially utilized. Here, each electric - vehicle owner had an equal shot at being selected, thereby ensuring the sample's representativeness.

Data collection was conducted online via the Questionnaire Star platform from February 1 to February 30, 2025, covering Shandong Province, China, and 351 valid questionnaires were obtained (Evans & Mathur, 2005). Data analysis was conducted using SPSS 22.0 and PLS-SEM 4.0 software, including descriptive statistics, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA) to assess validity and reliability (Hair et al., 2018), and partial least squares structural equation modeling (PLS-SEM) was used to test hypotheses and relationships between variables to ensure model robustness and theoretical interpretability (Chin, 1998; Henseler et al., 2010).

4.2. Variables and Measurement

This study's questionnaire has two parts to guarantee data comprehensiveness and study scientificity.

The first part is based on a theoretical framework and a questionnaire designed with scales to collect data related to the underlying structure and to measure the research variables. Respondents answer based on their perceptions, attitudes, or behavioral tendencies, providing a basis for analyzing the relationships between variables and ensuring the reliability and validity of the research instrument (Hair et al., 2019).

The second part collects demographic information such as the respondent's gender, age, education level, income level, and vehicle purchase experience, which is used to describe the characteristics of the sample and provide background support for data analysis. This information helps to compare the differences in purchasing behavior between different groups.

The questionnaire design was revised based on a literature review and preliminary research to ensure scientific validity, rationality, and applicability (DeVellis, 2016). To improve content validity, domain experts were invited to evaluate the questionnaire, and some questions were adjusted to reduce measurement bias and better meet the research needs.

This research employed a 5-point Likert scale (where 1 represents“strongly disagree”and 5 stands for “strongly agree”) to gauge the three core variables of incentive policies, subjective norms, and purchasing behavior (Likert, 1932). This scale boasts high reliability and is a breeze for statistical analysis (like calculating the mean, and standard deviation, and conducting structural equation modeling). It can efficiently capture the attitude inclinations of the respondents (Henseler et al., 2009) and precisely evaluate the key factors.

5. Data Analysis and Results

5.1. Response Rate

A total of 400 questionnaires were distributed for this study. After excluding 49 questionnaires from consumers who had not purchased electric vehicles, a total of 351 were returned. The response rate was 87.75%. According to Baruch & Holtom (2008), the average response rate for survey research is about 52.7%, and a response rate of over 80% is considered quite ideal. Therefore, the response rate of this study is high, the data quality is more reliable, and the research results are more generalizable.

5.2. Background of the Respondents

The respondents to this study were mainly male (69.2%), with women accounting for 30.8%, indicating that men dominate the consumption of electric vehicles, but women's influence is gradually increasing. In terms of age distribution, the 26-30 age group accounted for the highest proportion (44.4%), followed by the 31-40 age group (22.8%), indicating that young consumers are the main users, while the proportion of the 41-and-over group is relatively low, which may

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be related to technology acceptance or vehicle purchase demand. The occupational distribution shows that people working for state organs, enterprises, and public institutions (23.1%) and those working in the business and service industries (20.2%) account for a relatively high proportion. Knowledge-based professionals (such as technical professionals, education, scientific research, and medical personnel) have a higher acceptance of electric vehicles, while the proportion of students is low (3.7%). In terms of education level, those with a bachelor's degree or above account for 74.3%, indicating that the highly educated group has a higher acceptance of electric vehicles, which may be related to their environmental awareness, technological interest, and economic ability.

Household vehicle ownership shows that 50.7% of households only own pure electric vehicles, while 49.3% of households own both fuel vehicles and electric vehicles, indicating that some households have already adopted electric vehicles as their main mode of transport, but a considerable proportion of consumers still choose the "dual-vehicle model" to compensate for the shortcomings of electric vehicles in terms of range and charging convenience. This phenomenon shows that despite the high market penetration of electric vehicles, consumers are still balancing between fuel vehicles and electric vehicles, and the market is still in a transitional stage.

Table 1. Background of the Respondents

Category		**sample size**	**percentage**
Gender	Male	243	69.2
	Female	108	30.8
Age	18-25	36	10.3
	26-30	156	44.4
	31-40	80	22.8
	41-50	55	15.7
	51-60	19	5.4
	Over 60	5	1.4
Occupation	Personnel of State organs, party organizations, enterprises, and institutions	81	23.1
	Professional Technical Personnel	53	15.1
	Commercial and service sector personnel	71	20.2
	Agricultural, forestry, animal husbandry, fishery and water conservancy production personnel	49	14.0
	Workers in the fields of education, research, and health	60	17.1
	Students	13	3.7
	Other freelance workers	24	6.8
Education	Junior high school and below	13	3.7
	High school	20	5.7
	Junior College	56	16.0
	Bachelor	178	50.7
	Master	74	21.2
	PhD and above	10	2.8
Type of vehicle owned by the household	Electric Vehicles	178	50.7
	Fuel powered vehicles	0	0
	Both of the above vehicles have	173	49.3

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5.3. Measurement Model Analysis

This research employs composite reliability (CR), Cronbach's Alpha, and average variance extracted (AVE) to evaluate the reliability and convergent validity of the measurement model. CR is utilized to gauge the consistency of latent variable measurements and is more precise than Cronbach's Alpha (Hair et al., 2019). Cronbach's Alpha examines internal consistency, and the nearer the value is to 1, the higher the reliability (Nunnally & Bernstein, 1994). AVE assesses the capacity of latent variables to account for the variance of observed variables and should exceed 0.50 (Fornell & Larcker, 1981).

As evident from Table 2, the composite reliability (CR) of all latent variables exceeds 0.70, suggesting a high level of internal consistency (Hair et al., 2010). To be more precise, the CR values for purchasing behavior, incentive policies, and subjective norms are 0.943, 0.925, and 0.875 respectively, all surpassing the 0.70 benchmark (Fornell & Larcker, 1981). Cronbach's Alpha also exceeds 0.70, with purchasing behavior having the highest alpha value of 0.924. Regarding the average variance extracted (AVE),purchasing behavior (0.768) and incentive policies (0.672) both exceed 0.50, fulfilling the criterion for convergent validity. However, the AVE value of subjective norms is 0.505, right at the critical point and potentially in need of optimization (Hair et al., 2019).

In a nutshell, the measurement model fared well when it came to reliability and convergent validity. Every latent variable boasted a CR≥0.70, Cronbach's Alpha≥0.70, and AVE≥0.50, which goes to show that the measurement model had a high level of reliability and validity.

Table 2. Reliability and validity analysis of variables

Construct	Indicator	Loading	Composite Reliability	Cronbach's Alpha	AVE
Purchasing Behavior	PB1	0.844	0,943	0.924	0.768
	PB2	0.891			
	PB3	0.886			
	PB4	0.885			
	PB5	0.875			
Incentive Policies	IP1	0.802	0.925	0.902	0.672
	IP2	0.821			
	IP3	0.818			
	IP4	0.830			
	IP5	0.815			
	IP6	0.741			
Subjective Norms	SN1	0.557	0.875	0.839	0.505
	SN2	0.624			
	SN3	0.636			
	SN4	0.776			
	SN5	0.757			
	SN6	0.822			
	SN7	0.756			

This study computed the mean and standard deviation of each latent variable along with the correlation matrix, and the findings are presented in Table 3. The mean mirrors the overall evaluation tendency of the respondents, while the standard deviation gauges the extent of data dispersion (Hair et al., 2010). The value on the diagonal is the square root of the AVE, which is utilized to evaluate the convergent validity (Fornell & Larcker, 1981).

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As depicted in Table 3, the mean value of PB stands at 3.9447, with a standard deviation of 0.92842. The correlation coefficients with IP and SN are 0.457 and 0.275 respectively. This shows that PB has a stronger correlation with IP and a weaker one with SN, yet both correlations are positive. The mean value of IP is 4.1500, its standard deviation is 0.71799, and the correlation coefficient with SN is 0.314, indicating a positive correlation. The mean value of SN is 4.2055, the standard deviation is 0.52641, and it exhibits a positive correlation with both PB and IP.

As per Fornell & Larcker (1981), to show discriminant validity, the square root of the AVE should exceed the correlation coefficient between variables. For PB, the square root of the AVE is 0.876, which is larger than its correlation coefficients with IP (0.457) and SN (0.275). For IP, the square root of the AVE is 0.820, greater than its correlation coefficient with SN (0.314). For SN, the square root of the AVE is 0.710, also fulfilling the discriminant validity criterion.

In short, the measurement model lives up to expectations regarding mean, standard deviation, and correlation. Discriminant validity is confirmed through the AVE square root test, suggesting that the variables are independent and make sense.

Table 3. Means, standard deviations, and correlations of constructs of sub-study

Construct	Mean	SD	PB	IP	SN
PB	3.9447	0.92842	0.876		
IP	4.1500	0.71799	0.457	0.820	
SN	4.2055	0.52641	0.275	0.314	0.710

Upon conducting reliability and validity analyses, the measurement model of this research exhibits high internal consistency and stability, fulfilling the requirements for convergent validity and discriminant validity. Consequently, the applicability of the measurement tool can be verified, offering reliable backing for subsequent structural equation modeling analysis (Hair et al., 2019).

5.4. Hypotheses Testing

This study adopts the partial least squares structural equation modeling (PLS-SEM) method, combined with Bootstrapping technology to assess the significance and robustness of path coefficients (Hair et al., 2019). The bias-corrected confidence interval was used to improve the accuracy of the estimates. Table 4 shows the paths of the influence of Incentive Policies and Subjective Norms on Purchasing Behavior and their Beta values, t values, and p values, verifying the statistical significance of the research hypotheses.

Table 4. Structural Model Assessment

Hypotheses	**Relationships**	**Beta**	**t**	**Sig.**	**Summary**
H1	Incentive Policies ->Purchasing Behavior	0.411	6.211	0.000	Accepted
H2	Subjective Norms ->Purchasing Behavior	0.146	3.183	0.001	Accepted

As presented in Table 4, H1 reveals that the path coefficient for the impact of incentive policies on purchasing behavior is β=0.411, with a t-value of 6.211 and a p-value less than 0.001, suggesting that incentive policies have a substantial positive influence on purchasing behavior. H2 indicates that the path coefficient for the impact of subjective norms on purchasing behavior is β= 0.146, with a t-value of 3.183 and a p-value less than 0.01, signifying that the effect of subjective norms on purchasing behavior is also statistically significant.

The Bootstrapping method of PLS-SEM was used to test the hypotheses. The results support hypotheses H1 and H2, indicating that both incentive policies and subjective norms have a

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significant impact on thepurchasing behavior of electric vehicles. Figure 2 shows the structural equation model diagram, which displays the factor loadings of latent variables and their measurement indicators, as well as the path coefficients between latent variables, corresponding to the results in Tables 2, 3, and 4.

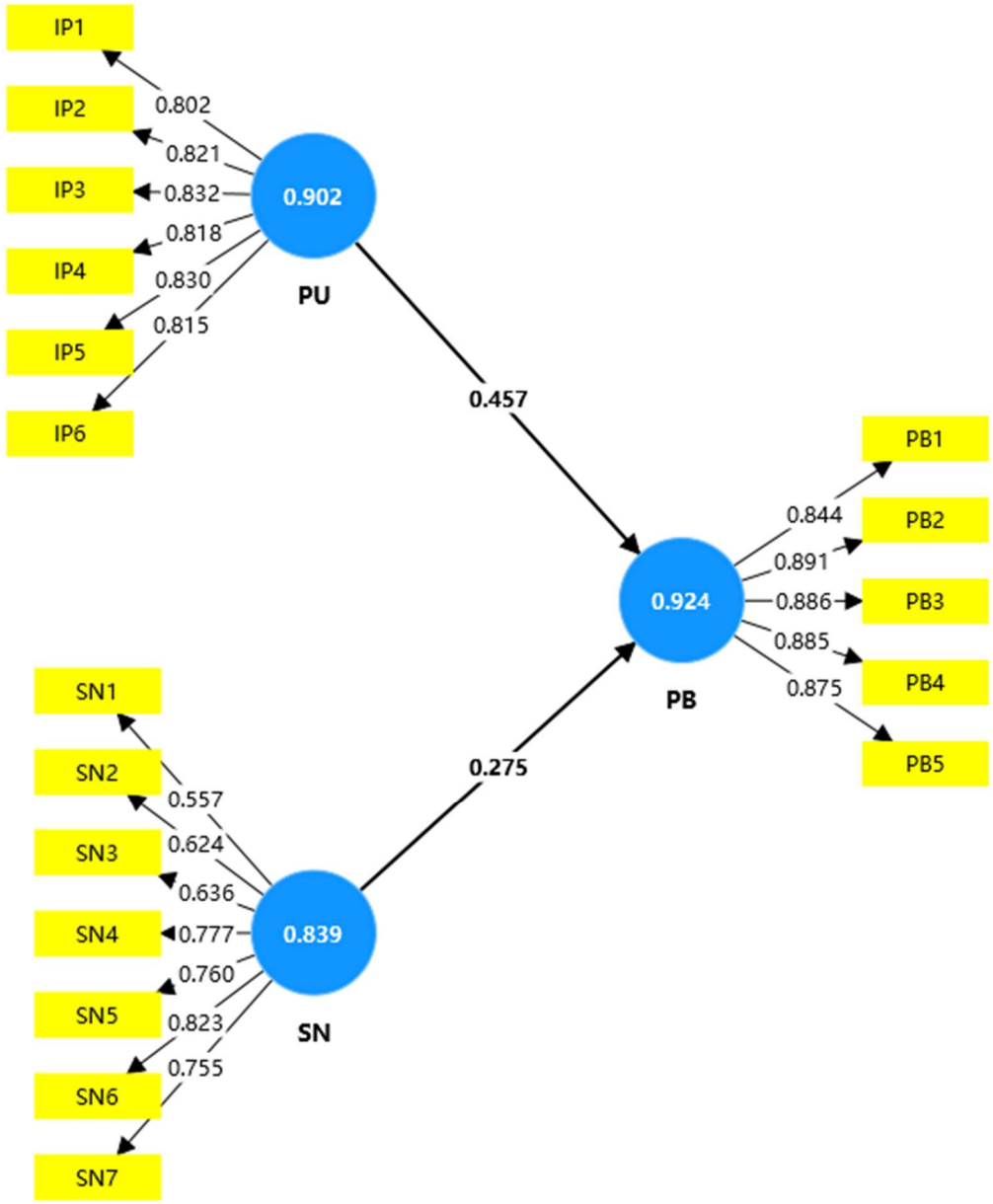

Figure 2. model path coefficient plot

6. Discussion

This research discovered that incentive policies exert a substantial positive influence on the purchase of electric vehicles, a finding that aligns with prior studies like those by Yang et al. (2019), Shang et al. (2024), Panchal (2018), Chen et al. (2019), Sovacool et al. (2019), Zheng et al. (2022), Liu et al. (2023), Chen et al. (2023), Zhu Ge et al. (2020), and Huang & Ge (2019). It turns out that fiscal incentives are effective in boosting the popularization and market expansion of electric vehicles in the short run, yet their marginal impact is waning. In the long haul, non-fiscal incentives play a more crucial role in the market's sustainable development. Even though the current policy framework is relatively comprehensive, solely relying on financial incentives isn't sufficient to secure market acceptance. Non-financial incentives and

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socioeconomic factors must be taken into account. Future policies ought to zero in on the comprehensiveness and sustainability of non-financial incentives, optimize the policy blend, and conduct in-depth research on consumer behavior to guarantee the stable growth of the electric vehicle market and environmental sustainability.

This study found that incentive policies have a significant positive impact on thepurchasing behavior of electric vehicles. This conclusion is consistent with existing research, Bobeth & Kastner (2020), Lin & Wu (2018), Chen et al . (2019), Qian & Yin, (2017), and Chen et al. (2019). The study shows that individuals are significantly influenced by significant others and social norms in their purchase decisions for electric vehicles. Social influence and emotional identification prompt individuals to imitate the behavior of others, while social norms shape consumers' perceptions and value judgments of behavior. Despite government advocacy of environmental advantages, consumers are more concerned about social status and the sense of “mian zi,” and tend to show social status by purchasing high-priced electric vehicles. In the short term, social norms can promote the promotion of electric vehicles, but in the long term, consumer social attributes have a greater impact on market penetration. Future research needs to explore in depth the internal mechanisms of social norms and consumer psychology and optimize marketing strategies to improve market acceptance and competitiveness.

7. Conclusion

This research delves into the influence of incentive policies and subjective norms on the behavior of purchasing electric vehicles in China and discovers that both play a vital role in consumers' decision-making processes. Even though the intensity of fiscal incentive policies has diminished, they shouldn't be overlooked. Non-fiscal incentive policies are also essential for the market's sustainable development. It is advisable that the government roll out incentive policies in a phased manner at the local level, grant local governments the authority to make flexible adjustments, improve charging infrastructure, particularly in rural areas, boost smart charging networks, and ease range anxiety. Simultaneously, the government and enterprises should collaborate to facilitate the construction of charging facilities and enhance product competitiveness.

Moreover, consumers are significantly swayed by subjective norms when making purchasing decisions. Governments and automakers can boost consumers' sense of social responsibility by heightening environmental awareness, intensifying the sense of crisis, and disseminating the adverse consequences of fuel vehicles via the media. Meanwhile, they can promote experiential marketing (like test drive activities) and build high-end brands to elevate product quality and technology levels, so that electric vehicles can become a marker of social status, fulfill consumers' sense of "face", enhance the brand appeal, and encourage purchasing behavior.

Limitations of this study: First, the sample was collected in Shandong Province, China, limiting its generalizability across the country. In the future, it can be expanded to different provinces. Second, the conceptual framework has not been validated in other countries, and cross-cultural research can be conducted in the future. Third, using cross-sectional data cannot reflect the dynamic changes in consumer behavior, and a longitudinal research design can be used in the future. Finally, the study takes consumers as the unit and does not consider the influence of social groups. In the future, it is possible to explore differences at the group or organizational level and conduct more in-depth research.

References

[1] Ahn, J., & Kwon, J. (2022). The role of trait and emotion in cruise customers impulsive Purchasing behavior: an empirical study. Journal of Strategic Marketing, 30(3), 320-333.

ISSN: 2692-7608 DOI: 10.6981/FEM.202505_6(5).0011

[2] Ajzen, I. (1991). The theory of planned behavior. Organizational behavior and human decision processes, 50(2), 179-211.

[3] Baruch, Y., & Holtom, B. C. (2008). Survey response rate levels and trends in organizational research. Human relations, 61(8), 1139-1160.

[4] Bhardwaj, S., Sreen, N., Das, M., Chitnis, A., & Kumar, S. (2023). Product specific values and personal values together better explains green purchase. Journal of Retailing and Consumer Services, 74, 103434.

[5] Bobeth, S. & Kastner, I. (2020). Buying an electric vehicle: A rational choice or a norm-directed behavior? Transportation Research Part F: Traffic Psychology and Behaviour, 73, 236–258. https://doi.org/10.1016/j.trf.2020.06.009.

[6] Brislin, R. W. (1980). "Translation and content analysis of oral and written material, in Handbook of Cross-Cultural Psychology, Vol. 2, eds H. C. Triandis and J. W. Berry (Boston, MA: Allyn & Bacon), 389–444.

[7] Chen, R., Fan, R., Wang, D., & Yao, Q. (2023). Effects of multiple incentives on electric vehicle charging infrastructure deployment in China: An evolutionary analysis in complex network. Energy, 264, 125747.

[8] Chin, W.W. (1998), "The Partial Least Squares Approach to Structural Equation Modeling", in Marcoulides, G.A. (Ed.) Modern Methods for Business Research, Erlbaum, Mahwah, pp.295-358.

[9] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management science, 35(8), 982-1003

[10] DeVellis, R.F. (2016). Scale development: Theory and applications (4th ed.). Los Angeles: Sage

[11] Du, Huibin, Zou, Hongyang, Zhang, Y. J., & Zhao, Qianqian. (2021). Technology Adoption and Diffusion of electric vehicless under Heterogeneous Behavior. Journal of Management Science.

[12] Ehsan, F., Habib, S., Gulzar, M. M., Guo, J., Muyeen, S. M., & Kamwa, I. (2024). Assessing policy influence on electric vehicle adoption in China: An in-Depth study. Energy Strategy Reviews, 54, 101471.

[13] Evans, J.R. and Mathur, A. (2018), "The value of online surveys: a look back and a look ahead", Internet Research, Vol. 28 No. 4, pp. 854-887.

[14] Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of marketing research, 18(1), 39-50.

[15] Fowler, F. J. Jr. (2009). Survey research method. London: Sage Publications.

[16] Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2018). Multivariate data analysis (8th ed.). CENGAGE.

[17] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate data analysis (7th ed.). Pearson Prentice Hall.

[18] Hair, J.F., Sarstedt, M. and Ringle, C.M. (2019), "Rethinking Some of the Rethinking of Partial Least Squares", European Journal of Marketing, Vol. 53 No. 4, pp. 566-584.

[19] Han, H., Chua, B. L., & Hyun, S. S. (2020). Consumers' intention to adopt eco-friendly electric airplanes: The moderating role of perceived uncertainty of outcomes and attachment to eco-friendly products. International Journal of Sustainable Transportation, 14(9), 671-685.

[20] Hartama, E. (2022). Exploring the value factors in consumers purchasing decisions: case: electric vehicles in Finland.

[21] Henseler, J. and Chin, W.W. (2010), "A Comparison of Approaches for the Analysis of Interaction Effects Between Latent Variables Using Partial Least Squares Path Modeling", Structural Equation Modeling, Vol. 17 No. 1, pp. 82-109.

[22] Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In New challenges to international marketing (Vol. 20, pp. 277-319). Emerald Group Publishing Limited.

ISSN: 2692-7608 DOI: 10.6981/FEM.202505_6(5).0011

[23] Hoang, T.T., Pham, T.H., Vu, T.M.H.(2022). Examining customer purchase decision towards battery electric vehicles in Vietnam market: a combination of self-interested and pro-environmental approach. Cogent Business & Management 9 (1), 2141671.

[24] Hu, H.C.(1944). The Chinese concepts of face. Am. Anthropol. 46 (1), 45–64.

[25] Huang, Y., & Qian, L. (2021). Consumer adoption of electric vehicles in alternative business models. Energy Policy, 155, 112338.

[26] IEA. 2023. Global EV Outlook 2023 Executive Summary. Retrieved from < https://www.iea.org/reports/global-ev-outlook-2023/executive-summaryhttps://www.iea.org/reports/global-ev-outlook-2023/executive-summary> Retrieved on 28 September 2023.

[27] Jenn, A., Springel, K., & Gopal, A. R. (2018). Effectiveness of electric vehicle incentives in the United States. Energy policy, 119, 349-356.

[28] Kim, S., & Kim, S. (2024). Does social value matter in energy saving behaviors?: Specifying the role of eleven human values on energy saving behaviors and the implications for energy demand policy. Energy Strategy Reviews, 52, 101327.

[29] Kotler, P. (2020). Marketing and value creation. Journal of creating value, 6(1), 10-11.

[30] Li, L., Wang, Z., Chen, L., & Wang, Z. (2020). Consumer preferences for battery electric vehicles: A choice experimental survey in China. Transportation Research Part D: Transport and Environment, 78, 102185.

[31] Likert, R., (1932). The Method of Constructing an Attitude Scale. Archives of Psychology, 22(140), 44-45.

[32] Liu, J., Li, L., He, L., Ma, X., & Yuan, H. (2024). Consumers or infrastructure firms? Who should the government subsidize to promote electric vehicle adoption when considering the indirect network and herd effects. Transport Policy, 149, 163-176.

[33] Liu, R., Ding, Z., Wang, Y., Jiang, X., Jiang, X., Sun, W., ... & Liu, M. (2021). The relationship between symbolic meanings and adoption intention of electric vehicles in China: The moderating effects of consumer self-identity and face consciousness. Journal of Cleaner Production, 288, 125116.

[34] Liu, X., Sun, X., Zheng, H., & Huang, D. (2021). Do policy incentives drive electric vehicle adoption? Evidence from China. Transportation Research Part A: Policy and Practice, 150, 49-62.

[35] Liu, Y., Zhao, X., Lu, D., & Li, X. (2023). Impact of policy incentives on the adoption of electric vehicle in China. Transportation research part A: policy and practice, 176, 103801.

[36] Ma, Y., Shang, R., Liu, Y., Lake, R., Ozkan, M., & Ozkan, C. S. (2023). Enabling fast-charging capability for all-solid-state lithium-ion batteries. Journal of Power Sources, 559, 232647.

[37] Moons, I., & De Pelsmacker, P. (2012). Emotions as determinants of electric vehicle usage intention. Journal of marketing management, 28(3-4), 195-237.

[38] Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric theory (3rd ed.). New York, NY: McGraw-Hill.

[39] Plananska, J., Gamma, K.(2022). Product bundling for accelerating electric vehicle adoption: a mixed-method empirical analysis of Swiss customers. Renew. Sustain. Energy Rev. 154, 111760.

[40] Qian, L., & Yin, J. (2017). Linking Chinese cultural values and the adoption of electric vehicles: The mediating role of ethical evaluation. Transportation Research Part D: Transport and Environment, 56, 175-188.

[41] Salari, N.(2022). Electric vehicles adoption behaviour: synthesising the technology readiness index with environmentalism values and instrumental attributes. Transport. Res. Pol. Pract. 164, 60–81. T.T. Le et al.

[42] Sandman, N., Sahari, E., & Koponen, A. (2024). But can it drive to Lapland? A comparison of electric vehicle owners with the general population for identification of attitudes, concerns and barriers related to electric vehicle adoption in Finland. PLOS Climate, 3(10), e0000346.

[43] Sekaran, U. (2003). Research method for business: A skill building approach (4th ed.). Danvers, MA: John Wiley & Sons.

ISSN: 2692-7608 DOI: 10.6981/FEM.202505_6(5).0011

[44] Sekaran, U., & Bougie, R. (2016). Research methods for business: A skill building approach (7th ed.). John Wiley & Sons.

[45] Shalender, K., & Sharma, N. (2021). Using extended theory of planned behaviour (TPB) to predict adoption intention of electric vehicles in India. Environment, Development and Sustainability, 23(1), 665-681.

[46] Shang, W. L., Zhang, J., Wang, K., Yang, H., & Ochieng, W. (2024). Can financial subsidy increase electric vehicle (EV) penetration---evidence from a quasi-natural experiment. Renewable and Sustainable Energy Reviews, 190, 114021.

[47] Sreen, N., Purbey, S., & Sadarangani, P. (2018). Impact of culture, behavior and gender on green purchase intention. Journal of retailing and consumer services, 41, 177-189.

[48] Vafaei-Zadeh, A., Wong, T. K., Hanifah, H., Teoh, A. P., & Nawaser, K. (2022). Modelling electric vehicle purchase intention among generation Y consumers in Malaysia. Research in Transportation Business & Management, 43, 100784.

[49] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425-478.

[50] Wang, C.L., Lin, X.,(2009). Migration of Chinese consumption values: traditions, modernization, and cultural renaissance. J. Bus. Ethics 88 (S3), 399–409.

[51] Wang, S., Wang, J., Li, J., Wang, J., & Liang, L. (2018). Policy implications for promoting the adoption of electric vehicles: do consumer's knowledge, perceived risk and financial incentive policy matter?. Transportation Research Part A: Policy and Practice, 117, 58-69.

[52] Yang, D. X., Qiu, L. S., Yan, J. J., Chen, Z. Y., & Jiang, M. (2019). The government regulation and market behavior of the new energy automotive industry. Journal of cleaner production, 210, 1281-1288.

[53] Yang, Koxin, Zhang Q, Yu Lok-An, & Pan Medal. (2023). A study of electric vehicles purchase intention and promotion policies based on consumer values and limited rationality. Management Review, 35(1), 146.

[54] Yue, W., Liu, Y., Tong, Y., & Song, Z. (2021). Role of government subsidies in the new energy vehicle charging infrastructure industry: A three-party game perspective. Chinese Journal of Population, Resources and Environment, 19(2), 143-150.

[55] Zhang, B., Chen, H., Du, Z., & Wang, Z. (2020). Does license plate rule induce low-vehiclebon choices in residents'daily travels: Motivation and impacts. Renewable and Sustainable Energy Reviews, 124, 109780.

[56] Zhang, L., Tong, H., Liang, Y., & Qin, Q. (2023). Consumer purchase intention of new energy vehicles with an extended technology acceptance model: The role of attitudinal ambivalence. Transportation Research Part A: Policy and Practice, 174, 103742.

[57] Zhang, T., Tao, D., Qu, X., Zhang, X., Lin, R., & Zhang, W. (2019). The roles of initial trust and perceived risk in public's acceptance of automated vehicles. Transportation research part C: emerging technologies, 98, 207-220.

[58] Zhang, W.,(2020). Consumption, taste, and the economic transition in modern China. Consum. Mark. Cult. 23 (1), 1–20.

[59] Zhao, H., Bai, R., Liu, R., & Wang, H. (2022). Exploring purchase intentions of new energy vehicles: Do "mianzi" and green peer influence matter?. Frontiers in Psychology, 13, 951132.

[60] Zhao, K. (2021). Sample representation in the social sciences. Synthese, 198(10), 9097-9115.

[61] Zheng, X., Menezes, F., Zheng, X., & Wu, C. (2022). An empirical assessment of the impact of subsidies on EV adoption in China: A difference-in-differences approach. Transportation Research Part A: Policy and Practice, 162, 121-136.

[62] Zhu, L., Wang, J., Farnoosh, A., & Pan, X. (2022). A game-theory analysis of electric vehicle adoption in Beijing under license plate control policy. Energy, 244, 122628.

[63] Zong, Z., Liu, X., & Gao, H. (2023). Exploring the mechanism of consumer purchase intention in a traditional culture based on the theory of planned behavior. Frontiers in Psychology, 14, 1110191.

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Appendix 1 Questionnaire Items

A. Items Purchasing Behavior

1. My decision to purchase an electric vehicle is a pleasant experience
2. I believe that purchasing an electric vehicle purchase is a right choice
3. When purchasing a vehicle, an electric vehicle is my priority
4. Whenever there is a chance, I will persuade my acquaintances to use electric vehicle
5. I believe that electric vehicle using is a proenvironmental and prosocial behavior

B. Items Incentive Policy

1. Perceptions of financial incentive policies for adopting electric vehicles, a government direct subsidy policy is attractive to me
2. For buying electric vehicles, toll road exemptions are valuable to me
3. For buying electric vehicles, exemption from sales tax is helpful to me
4. For buying electric vehicles, exemption from VAT is useful to me
5. I am aware about the incentive provided by the Government to purchase electric vehicle
6. The incentive policy provided by the government to purchase e-vehicle is attractive for me

C. Items Subjective norms

1. Most of my friends think that buying green products is the right thing to do
2. The majority of my colleagues think that buying green products is the right thing to do
3. My family members think that buying green products is the right thing to do
4. Compared with the traditional automobiles, the brands of energy vehicles are more well-known
5. Purchasing electric vehicle can help to show my social responsibility of environmental protection to others
6. Purchasing electric vehicle bring me much more social approval
7. Purchasing electric vehicle can improve people's impression of me