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The mediating role of policy in shaping consumer attitudes and purchase behaviour of intelligent connected vehicles in China

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ABSTRACT

This study investigates the role of Chinese policies in promoting intelligent connected vehicles (ICVs) and their influence on consumer purchasing behavior. While various policies have been introduced to boost the market share of electric vehicles (EVs) and reduce carbon emissions in the transportation sector, limited research exists on ICV-specific policies and their impact. Additionally, the relationship between consumer attitudes and ICV purchasing behavior, along with the mediating role of policy, remains underexplored. Using the Theory of Planned Behavior, this research examines how policies mediate the link between consumer attitudes and purchasing behavior in the Chinese ICV market. The findings reveal that policies serve as an effective mediator, significantly influencing the relationship between consumer attitudes and purchasing decisions. Furthermore, a strong correlation between policy development and consumer attitudes was identified, highlighting the critical role of consumer perception in maximizing policy effectiveness. This study provides valuable insights into how targeted policies can enhance consumer adoption of ICVs in China.

Contribution/ Originality: This study uniquely applies the Theory of Planned Behaviour to empirically examine how Chinese policies mediate the link between consumer attitudes and ICV purchasing, an area rarely explored, offering new insights into policy-driven consumer behaviour in China's ICV market.

1. INTRODUCTION

Numerous studies have indicated that carbon emissions from China's transportation sector are projected to rise further, posing significant environmental challenges for both China and the global ecosystem (Li & Yu, 2019; Wang, Song, Xu, Li, & Liu, 2022). As the world continues to grapple with the energy crisis and climate change, developing a low-carbon transportation system, including mass transit and automobiles, has become essential. In this context, new energy vehicles (NEVs) are seen as a pivotal solution for reducing carbon emissions within the automotive industry. These vehicles offer an effective approach to addressing both climate change and the energy crisis.

The transportation sector's role in promoting and adopting electric vehicles (EVs) is critical for reducing carbon emissions. Road vehicles, in particular, account for approximately 75% of CO2 emissions in the transportation sector (Lee, 2017). As a result, electrifying road transportation has become a key strategy for reducing direct CO2 emissions. In line with this, governments worldwide have established transition plans to achieve full electrification of the transportation sector by 2050 (Al-Hanahi, Ahmad, Habibi, & Masoum, 2021).

The intelligent connected vehicles (ICVs) are electric vehicles (EVs) equipped with intelligent connected features (Ullah, Khan, & Shah, 2021). The ICV is based on 5G technology and IoT. The 5G technology can significantly extend IoT beyond the capabilities of current technologies (Li, Zhang, & Wang, 2018). Considering ICVs are a crucial priority in China's growth strategy, robust policy support in the form of incentives has been identified. For example, ICVs benefit individuals in certain cities who can receive license plates without restrictions. This feature can also be a significant advantage in areas with license plate limited quotas. Furthermore, these vehicles frequently obtain exemption from purchase taxes while benefitting from state subsidies, which enhances their affordability and accessibility for consumers. Hence, these policy incentives encourage ICVs to reduce carbon emissions and promote sustainable transportation options in China (Lu, Yao, Jin, & Yang, 2022).

The motivation of Chinese policies has been related to the development of ICVs in the country (Li, Nian, & Jiao, 2022). These policies enable vehicle manufacturing companies to design and develop their ICV products. Government incentives have also facilitated market development (Yuan, Liu, & Zuo, 2015). The Chinese government has made substantial efforts to advance and adopt ICVs (Liu, Sun, Zheng, & Huang, 2021). This government has established measures, such as endorsing and employing ICVs, as a fundamental strategy to address climate change and regional air pollution (Lu et al., 2022).

The development of automotive driving technology and the related industry is significantly influenced by ICVs, which are essential in reducing pollution and mitigating the potential fuel crisis (Choi, Shin, & Woo, 2018). This phenomenon is primarily due to the high operational efficiency of ICVs. Certain studies have also investigated the correlation between consumers' approval and government policies involving consumer satisfaction (Chi, Wang, & Xu, 2021; Dandan & Hongcheng, 2022). Although these studies have highlighted that consumers generally favored the tax legislation approach in the industry, they are dissatisfied with several components (subsidies, technical support, and infrastructure). Hence, these areas necessitate immediate attention and improvement (Li, Long, & Chen, 2016).

The Chinese government has established numerous NEV-related policies and subsidies. Subsidy amounts are calculated based on several factors, such as NEV type, battery technology level, and energy type (Lin & Wu, 2018). Typically, the Chinese ICV-related policies have been based on previous studies and are regarded as the primary means of promoting the Chinese ICV market (Li et al., 2022; Lu et al., 2022). These policies also substantially affect the market share of ICVs and consumers' attitudes (Larson, Viáfara, Parsons, & Elias, 2014). Conversely, existing literature has primarily examined the impact of price and political instruments on consumers' intention to purchase ICVs rather than focusing on the ICV feature itself.

The features of ICVs have undergone enhancements in recent years. An increasing number of consumers with acquaintances or relatives who have purchased and used ICVs have also been observed. This phenomenon can influence consumers' attitudes (Deloitte, 2020). Therefore, the correlation between the effect of policies and consumers' purchase intentions in the EV industry should be re-evaluated. The Chinese government has also implemented stringent policies for consumers and original equipment manufacturers (OEMs) to promote the market share of ICVs. This government has selected ICVs as a strategy to address pollution and the growing scarcity of resources.

The method has yielded significant outcomes in recent years, with policy and planning being vital in the industry development of ICVs. These various policies (such as subsidies, tax reductions, and vehicle licenses) function in incentivising consumers to purchase ICVs and improve the market share of ICVs. Nonetheless, various significant challenges regarding technology, industry chain, and social factors are still encountered in this industry (Yuan et al., 2015). The rapid diffusion of the ICV industry in the Chinese market is also contributed to by these policies, which can affect the research and design (R&D) capacity of the OEMs. For example, the subsidy mechanism for ICVs is a promotional tool for consumers, encouraging them to purchase ICVs. Simultaneously, this mechanism incentivizes OEMs to develop and improve ICV-based technology.

Another study by Driscoll, Lyons, Mariuzzo, and Tol (2013) stated that the government required significantly increasing subsidies and "environmental" premium levels to an "incredible level" if the government wanted to promote ICVs. The study revealed that these measures could achieve the objective of the government in establishing a high market penetration rate for all EVs. Hence, providing more information to the relevant government authorities is contingent upon addressing consumers' requirements to inform policy formulation. The government can better understand consumers' attitudes towards ICVs and identify policies that influence consumers' purchasing behavior of ICVs in China. Thus, this study explored and evaluated policies from a different perspective, addressing a research gap and offering an up-to-date analysis.

2. LITERATURE REVIEW

2.1. Theory of Planned Behaviour

The theory of planned behaviour (TPB) states that behavioural intention directly influences behaviour (Ajzen, 1991). Meanwhile, intention measures an individual's willingness to engage in a particular action and directly indicates their behaviour. Various factors, such as attitude, subjective norms, and perceived behavioural control, can influence this measure.

2.2. Attitude

Attitude is a psychological inclination towards favoring or not favoring a particular entity (Eagly & Chaiken, 1993). This inclination is typically used to predict intentions regarding new technology adoption, especially when considering the correlation between prior acceptability and attitude (Payre, Cestac, & Delhomme, 2014). The overall attitudes of consumers towards embracing novel technologies serve as an indicator of subsequent use of these technologies. Additionally, Intelligent Connected Vehicles (ICVs) are classified as high-tech products under new technologies. Therefore, examining attitudes in this study was essential when analyzing consumers' purchasing behavior for ICVs, as attitude could be a significant predictor of the intention to purchase ICVs (Liljamo, Liimatainen, & Pöllänen, 2018).

A study by Curtale, Liao, and Van Der Waerden (2021) reported the acceptance of a car-sharing system in the Netherlands. The study considered personal attitudes as users' environmentally friendly attitudes, demonstrating their significant influence on this intention. Likewise, Qu, Wei, and Zhang (2022) utilized TPB to assess consumers' intention to use e-cash. The study indicated that attitudes played a significant role in shaping this intention. Alternatively, Ajzen (1991) and Davis (1989) incorporated attitude into several prediction models, including TPB and the Technology Acceptance Model (TAM). These studies considered the "attitude toward behavior," which demonstrated a positive correlation with behavioral intention. Therefore, attitude was validated as an effective predictor of behavioral intention.

Certain studies have also demonstrated the impact of attitude on behavioral intention in other high-tech products or intelligent systems to understand consumers' or users' behavior intention. Curtale et al. (2021) discovered that personal attitude was an important factor affecting behavioral intention in the electric bicycle sharing system. This finding indicated that consumers' attitudes towards novel technologies could effectively reflect the applicability of new technologies. Therefore, consumers with a favorable disposition towards the intelligent connected features of ICVs could be among the early buyers of this emerging technology (Liljamo et al., 2018). Similarly, Patil, Tamilmani, Rana, and Raghavan (2020) highlighted a positive correlation between intention and mobile payment systems. Considering that these studies suggest that purchase factors can impact purchase intention, the first hypothesis (H1) is proposed as follows:

H_1: There is a positive relationship between consumers' attitudes and the purchase behavior of ICVs.

Specific studies analyzed the correlation between consumers' attitudes and government policies and obtained findings from the consumer perspective (Chi et al., 2021; Dandan & Hongcheng, 2022). Consumers generally

express higher levels of satisfaction with the industry's management of tax policy. On the contrary, consumers are dissatisfied with subsidies, technical support, and infrastructure. This observation suggests that subsidy, technical support, and infrastructure-related policies require urgent improvements (Li et al., 2016). Hence, the Chinese government has initiated various policies and subsidies regarding ICV purchases. The subsidy amount then varies based on NEV type, including battery technology level and energy type (Lin & Wu, 2018). Conversely, consumers may exhibit varying attitudes towards different ICV-based products, necessitating a comprehensive examination of the correlation between consumer attitudes and policy for ICVs. Hence, the second hypothesis (H2) is proposed as follows:

H_2: There is a positive relationship between consumers' attitudes and policy.

2.3. Policies

The government has introduced various policies to support the development of NEVs. These policies include suggestions to enhance the ownership of ICVs in specific situations and provide financial assistance for purchasing ICVs. Therefore, the purchase subsidy policy for ICVs significantly impacts customers' purchasing behavior in the consumer market of ICVs, which requires consideration (Zhang, Bai, & Zhong, 2018). Previous studies have also primarily examined the impact of increasing or decreasing subsidy policies on consumers' purchasing behavior.

Currently, numerous financial supports such as tax exemptions and subsidies significantly reduce the responsibility for acquiring ICVs while contributing to the market growth of ICVs in many countries. Hence, government financial incentives are essential for promoting the adoption of EVs throughout the initial stages of market development (Dutta & Hwang, 2021). The impact of various policies on consumers' desire to acquire ICVs has been extensively investigated. Multiple studies demonstrated that restriction, subsidy, and substitutional incentive-related policies could significantly impact consumers' EV purchase intentions (Lu et al., 2022). These studies examined government subsidy policies, specifically focusing on the impact of government policy on consumers' adoption of intelligent connected vehicles. Nonetheless, insufficient data on the regulatory effects of government policy in this area was observed.

The correlation between the ICV-related policies of each government and consumer purchase behavior necessitates assessments to obtain comprehensive results (Li et al., 2022). Li et al. (2022) examined the ICV-related policies of the Chinese government. The study defined these government ICV-related policies as license plate restrictions on fuel vehicles, purchase subsidies, government R&D subsidies, and charging pile construction subsidies. These ICV-related policies were either tangible (purchase incentives) or intangible (privilege to purchase ICVs without license plate restrictions) (Hao, Lin, Wang, Ou, & Ouyang, 2020). Meanwhile, the fuel vehicle (FV) license plate restriction refers to the policy of the government imposing certain regulations on fuel vehicle license plates. These requirements include a lengthy waiting period for new FV license plate registration and restrictions on the time and location for FV license plate vehicle passes (Ma, Fan, & Feng, 2017).

Given that government financial subsidies for ICV-related purchases are a tangible policy, they can impact the consumer's initial purchase cost. This initial purchase cost also generates the most significant impact on the total cost of ownership (Hao et al., 2020). The tangible financial subsidies often influence the consumer's ICV purchase cost through flat tax exemptions or one-time subsidies (Lévay, Drossinos, & Thiel, 2017). Another study by Li et al. (2022) revealed that license plate limitation regulation could substantially impact ICV sales. Hence, tangible and intangible factors require consideration when investigating the policy's impact on consumers' ICV purchase intentions.

The Chinese ICV market highlights that license plate control and financial subsidies are the most effective incentive policies (Ouyang, Ou, Zhang, & Dong, 2020). Specifically, the government provides R&D subsidies to ICV-based companies to compensate for their earlier R&D investments. Nonetheless, Li et al. (2022) discovered this strategy was ineffective in diffusing ICVs in the Chinese market. The government subsidy policies for constructing

EV charging stations also indicated that financial support must be given to encourage more charging piles and enhance convenience for EV buyers. Thus, this policy was determined to significantly impact the market share of ICVs. This outcome incentivized the installation of charging infrastructure, substantially increasing ICV sales (Li et al., 2022).

The introduction of charging infrastructure (such as charging piles) is expected to boost ICV sales by providing convenient charging options for consumers. A study by Chi et al. (2021) documented a positive correlation between consumers' sentiment towards the license plate restriction policy involving the state of the charging pile facility. Hence, the impact of the subsidy policy on consumers' purchase intention regarding the construction of charging piles must be evaluated. This study considered the construction policy of the charging piles. Despite that this policy was only tailored for firms, consumers' ICV usage conditions could be impacted. This study also employed policies concerning consumers' privacy and data collection, analyzing their influence on consumers' purchase intention. Meanwhile, previous studies only investigated policies influencing consumers' purchase intention (Krishnan & Koshy, 2021; Liu et al., 2021). This policy significantly affected the market usage rate of emerging industries or new smart products, including the intention to adopt ICVs.

Various government supporting policies, such as those targeting consumers or manufacturers, influence distinct interest groups. This process can even impact new products directly. Government policy has been certified to facilitate the diffusion of innovation (Caiazza, 2016). For example, license plate limitation policies incentivize consumers to buy intelligent connected vehicles (ICVs), while policies supporting charging infrastructure and addressing immature technology facilitate the manufacturing of ICVs. Consequently, these policies can significantly impact the diffusion of ICVs. A study by Li et al. (2022) illustrated that these policies could affect society, consumers, ICVs, and facilitating instruments within the country. However, some impacts are not specific to purchase behavior, highlighting the need to understand the correlation between policy and consumers' purchase behavior of ICVs separately. Therefore, the third hypothesis (H3) is proposed accordingly.

H_3: There is a positive relationship between policy and consumers' purchase behavior of ICVs.

Considering the technological development in the ICV industry, an increase in data interchange can be observed when consumers use ICVs. The intelligent connected feature requires storing user data in the cloud and analyzing it using the system. Therefore, the consumer's concern regarding the system and product can influence the purchase intention and the diffusion of ICVs (Jing, Xu, Chen, Shi, & Zhan, 2020). Given this situation, the Chinese government implemented a new policy in November 2021 to protect consumers' data and privacy: "Personal Information Protection Law of the People's Republic of China" (Xiao & Ruby, 2021). This policy has been regarded as the most stringent legislation for safeguarding data globally.

Safety and trust are crucial in adopting ICVs widely (Maeng, Kim, & Cho, 2021). Thus, this study incorporated the data and consumer privacy policies to examine their correlations with consumers' purchase intentions of ICVs. Considering the advancements in EV technology and the growing awareness among consumers about ICVs, the impact of policies on promoting the overall product was investigated. This process is fundamental as EV-related government policies have significantly changed recently. Given that intelligent connected technology continues to advance, policies also constantly regulate product manufacturing safety and consumer privacy protection. Therefore, ICVs necessitate thorough data collection and analysis. Product specification-based policies can influence consumers' attitudes towards ICVs and purchasing behavior. The fourth hypothesis (H4) is proposed as follows:

H_4: The policy mediates the relationship between attitude and purchasing behaviour.

3. RESEARCH METHODOLOGY

This study selected primary data for analysis. Consumer data was collected more accurately for research and analysis by directly administering questionnaires to ICV-based consumers. Considering that primary data offered a higher credibility level, choosing primary data was a judicious decision for this study. This data type was original

and untouched by previous studies or outdated sources due to its higher authority and relevance levels (Saunders, Lewis, & Thornhill, 2009). The survey method is commonly employed in business and management studies, which frequently encompasses exploratory research and follows a deductive approach (Saunders et al., 2009). Thus, this study utilized the questionnaire method for data collection. This process involved asking respondents the same predefined questions to collect data in addressing the research questions (Creswell & Creswell, 2018).

The sampling frame is a comprehensive list of elements from which the sample is drawn, providing the target population's operational definition (Hair, 2015). In this study, the sampling frame comprises consumers residing in Chinese cities who have already purchased intelligent connected vehicles (ICVs). Chinese cities exhibit unbalanced development and complex standards due to regional industrial variations, resulting in diverse cultural and economic levels among citizens in different cities.

Given the unique characteristics of ICVs, their usage is more commonly observed in urban traffic environments, where certain features are more frequently utilized. Additionally, due to traffic and environmental considerations, policies regulating the use of ICVs are more stringent in major cities. Consequently, this study's sampling frame focuses exclusively on collecting data from consumers living in Chinese cities.

This study employs PLS-SEM; however, the acceptability of small sample sizes in PLS-SEM is influenced by the nature of the population (Rigdon, 2016).

While larger sample sizes tend to produce more valid results, achieving an infinite sample size in any study is impractical. Therefore, various methods can be employed to determine an appropriate sample size that maintains the error within an acceptable range.

One common guideline is that the sample size should be at least 10 times the number of independent constructs in the most complex regression within the PLS path model (Barclay, Higgins, & Thompson, 1995). Although this rule offers a rough guideline, it is crucial to also consider the estimated statistical power when determining the minimum sample size requirement (Hair Jr et al., 2021). This ensures that the sample size is sufficient to detect the expected effects and maintain the validity of the study's findings.

The inverse square root method is an easy-to-use and readily implemented approach that tends to be conservative. This method often results in a slightly overestimated sample size, ensuring that an effect is significant at a given power level (Hair Jr et al., 2021).

One of the primary advantages of the inverse square root method is that it considers the probability that the ratio of the path coefficient to its standard error will exceed the critical value of the test statistic for a particular significance level. This method's result relies solely on one path coefficient, independent of the size of the most complex regression in the (formative) model or the overall model size (Kock & Hadaya, 2018). Consequently, the sample size determined by this method tends to be more objective and can be more effectively applied in PLS-SEM analysis.

In this study, the inverse square root method determined that a sample size of 275 was necessary. Data collection took place over nearly two months, from October 17, 2023, to December 16, 2023. During this period, the questionnaire was sent to 1,192 potential participants, and 501 responses were received, resulting in a response rate of 42%.

3.1. Measurement Items

This study used a combination of items, which were adapted from previous studies and novel items specifically designed for the situation being investigated (Curtale et al., 2021; Li, Zhou, Yu, & Liu, 2020; Mikalef et al., 2022; Venkatesh, Thong, & Xu, 2012; Walter & Abendroth, 2020; Wan, Cheung, & Shen, 2012). The measurement items of constructs could refer to Table 1.

Table 1. Measurement items of constructs.

Constructs	Items	Origin	Sources
Attitude	I hold a favorable view of the intelligent connected vehicle compared to traditional vehicles.	Adapt	Curtale et al. (2021) and Walter and Abendroth (2020)
	I prefer to use innovative technology products.	Adapt	
	I am confident that the public will accept this technology.	Adapt	
	I believe that the intelligent connected vehicle could enhance my driving and travel experience.	Adapt	
	I would like to integrate my intelligent connected vehicle well into my other smart devices.	Adapt	
	I think the intelligent connected vehicle's intelligent system is a good solution to traffic accidents and traffic jams.	Adapt	
Policy	There are sufficient government initiatives available to encourage my adoption of electric vehicles (EVs).	Adapt	Mikalef et al. (2022)
	The government provides us with official policy benefits, such as avoiding the fuel vehicle license plate restriction.	Adapt	
	There is sufficient motivation from top government officials and policymakers to ensure the successful implementation of intelligent connected vehicles.	Adapt	
	Sufficient financial resources from top government officials and policymakers ensure the successful implementation of intelligent connected vehicles.	Adapt	
	The government issues official policies to support the expansion of charging infrastructure.	Adapt	
	Government provides us official policies on data security and protection in municipalities.	Adapt	
Purchase behavior	Compared to the other vehicle, I have chosen to purchase an intelligent connected vehicle.	Adapt	Venkatesh et al. (2012)
	I like the idea of purchasing this intelligent connected vehicle.	Adapt	
	Purchasing this intelligent connected vehicle is a good decision.	Adapt	Li et al. (2020) and Wan et al. (2012)
	I believe purchasing an intelligent connected vehicle is a wise choice.	Adapt	

4. RESULTS AND DISCUSSION

4.1. Indicator Reliability

This study employed factor and outer loadings of more than 0.708, following the methodology reported by Hair Jr et al. (2021). Table 2 shows that each construct has an outer loading exceeding 0.708, which are all maintained.

4.2. Internal Consistency and Convergent Validity

Table 2 indicates that the composite reliability (CR) and Cronbach's alpha of each construct are more than 0.708, which exceeds the minimum acceptance value of 0.708. This outcome implies that the indicators exhibit sufficient internal consistency (Gefen, 2000). Alternatively, the average variance extracted (AVE) was used to measure the convergent validity of a construct. Hair Jr et al. (2021) suggested that the minimum acceptance value of AVE should be 0.5. Consequently, this study demonstrated that the AVE for each construct was more than 0.6, indicating that the constructs could explain more than 50% of the variance of the indicators used to establish them.

Table 2. Statistics summary of the reliability and validity of constructs.

Constructs	Outer loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Attitude		0.848	0.852	0.892	0.622
AT1	0.817				
AT2	0.758				
AT3	0.774				
AT4	0.794				
AT5	0.799				
Policy		0.897	0.899	0.921	0.661
PL1	0.83				
PL2	0.78				
PL3	0.824				
PL4	0.808				
PL5	0.832				
PL6	0.803				
Purchasing behaviour		0.866	0.866	0.909	0.713
PB1	0.836				
PB2	0.844				
PB3	0.831				
PB4	0.866				

4.3. Discriminant Validity

A study by Fornell and Larcker (1981) proposed that reflective constructs could possess sufficient discriminant validity if the AVEs of the reflective constructs were greater than the correlations between the AVEs of all reflective constructs. Table 3 denotes that these reflective constructs generate sufficient discriminant validity.

Table 3. Summary of the criterion.

Constructs	AT	PB	PL
AT	0.789		
PB	0.685	0.844	
PL	0.521	0.534	0.813

Source: Fornell and Larcker (1981).

Table 4 summarizes that the value of each construct does not exceed 0.85 and 0.9. This observation suggests that all constructs demonstrate sufficient discriminant validity (Henseler, Ringle, & Sarstedt, 2015).

Table 4. Summary of the HTMT criterion.

Constructs	AT	PB	PL
AT			
PB	0.794		
PL	0.593	0.603	

4.4. Assessment of Path Coefficients

Table 5 tabulates the *t*-values for three hypotheses. The *t*-values between these three hypotheses were 11.874, 10.29, and 4.877. Likewise, the *p*-values were 0, indicating that these hypotheses were all supported.

Table 5. Summary assessment of path coefficients on direct correlations ($n = 319$).

Correlation	Path coefficient	Standard deviation	*t*-value	*p*-value	2.50%	97.50%
AT → PB	0.558	0.047	11.874	0	0.452	0.641
AT → PL	0.521	0.051	10.290	0	0.414	0.613
PL → PB	0.243	0.050	04.877	0	0.145	0.342

4.5. Assessment of R^2

Generally, the rule of the coefficients of determination (R^2) values states that the values are divided into three categories: 0.26, 0.13, and 0.02, corresponding to substantial, moderate, and weak explanatory powers, respectively (Cohen, 1988). According to Table 6, the coefficients of determination for purchase behavior and policy are more than 0.26, indicating substantial explanatory power.

Table 6. Summary of R^2.

Construct	R^2	Explanatory power
Purchase behaviour	0.512	Substantial
Policy	0.272	Substantial

4.6. Mediation Analysis

The purpose of mediated models is to examine the indirect correlations between predictor variables and outcome variables using mediation variables. Hence, a mediated model is constructed to investigate and address the hypothesis of the study.

Table 7 highlights that the *t*- and *p*-values for H4 are 4.239 and 0, respectively. This study provides evidence for the mediating policy effect in the correlation between attitudes and purchasing behavior, specifically demonstrating partial mediation. Consequently, H4 is supported.

Table 7. Result summary of the mediation analysis.

Exogenous variable (*x*) > Mediator > Endogenous variable (*y*)	Path coefficient	*t*-value	*p*-value	2.50%	97.50%	Mediation type
AT -> PL -> PB	0.127	4.239	0	0.073	0.192	Partial

5. THEORETICAL AND PRACTICAL IMPLICATIONS

This study extended the TBP model for ICVs while theoretically exploring the mediating effect of policies on attitudes and purchase behavior. When developing ICV-related policies, governments and relevant institutions should thoroughly analyze consumer attitudes. This study revealed that policies could mediate the correlation between attitudes and purchasing behavior. The government and relevant departments effectively promoted ICV-based products to facilitate intelligent transportation and accomplish energy conservation and emission reduction objectives. These processes aided the government in attaining its goals of safeguarding the environment and promoting sustainable development. Hence, the government and relevant decision-making departments should consider changes in the market and consumers' attitudes involving policy formulation. These institutions should also prioritize consumer purchasing factors when promoting ICV-related development policies.

Given that the ICV process transitions from its initial promotional phase to a more mature stage, government agencies should ensure the policy is updated and effective. Overall, this study demonstrated important references for potential ICV consumers, including Chinese consumers who have already purchased ICVs. These prospective customers could make purchasing decisions based on the recommendations of this study regarding different influencing factors before deciding to purchase ICV products.

6. LIMITATION AND RECOMMENDATION FOR FUTURE STUDIES

This study presented a narrow scope limitation, focusing only on Chinese policies and consumers using one research method. Therefore, several recommendations for future studies are given based on this constraint. Further studies should explore other research methodologies, such as on-site interviews with ICV consumers. This approach can enable researchers to obtain more comprehensive information. Meanwhile, the questionnaires should employ unstructured questions to give respondents greater flexibility. This process can enhance the inclusion of open-

ended questions in the questionnaire response settings to gather more individualised responses and broaden the scope of the study. Likewise, future studies should examine the behaviours of consumers and policies in other countries due to the different outcomes resulting from different national policies.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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