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Factors Influencing Attitude and Purchased Intention Toward Electric Vehicles of Chinese Consumers in Shenzhen, China

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Abstract

Purpose: This research aims to determine the factors influencing Chinese consumers' attitudes and purchase intentions toward electric vehicles in Shenzhen, China. **Research design, data, and methodology:** This study adopts a quantitative analysis of the electric vehicle flagship stores in three of Shenzhen's most famous shopping plazas to study the factors affecting consumers' attitudes and purchasing intentions toward electric vehicles. The target group of this study is 500 consumers over 18 who have yet to experience purchasing an electric vehicle in Shenzhen, China The sampling method includes judgmental, quota and convenience sampling. The item-objective congruence (IOC) index and Cronbach's Alpha in a pilot study (n=30) were conducted for validity and reliability testing. The Structural Equation Model (SEM) and Confirmatory Factor Analysis (CFA) were used for the data analysis, including model fit, reliability, and validity of the constructs. **Results:** The results show that environmental concerns, subjective norms, stereotypes, and price sensitivity significantly impact Chinese consumers' attitudes toward electric vehicles and purchase intention in Shenzhen. **Conclusions:** Six hypotheses were proven to fulfill research objectives. Therefore, it is recommended that businesses and managers understand consumers' accurate intentions to increase consumers' attitudes and purchase intentions toward electric vehicles.

Keywords : Environmental Concerns, Subjective Norms, Attitude, Purchase Intention, Electric Vehicles

JEL Classification Code: E44, F31, F37, G15

1. Introduction

In recent years, the United States, Japan, and many European countries have taken the development of electric vehicles as the main direction of future road transportation (Hansla et al., 2008; Hawkes et al., 2017), some of the world's car powers have promoted it as a national strategy, especially some countries in the European Union, not only put forward the "ban on the sale of fuel vehicles timetable," but also require all new vehicles to achieve zero emissions by 2025. Norway and the Netherlands, for example, are proposing to ban fuel vehicles by 2025. Germany has clearly proposed to ban the sale of traditional internal combustion engine vehicles after 2030. Other countries, such as the United States and India, disclosed relevant information through official or unofficial channels (Sathiyan et al., 2022). Not only that, but some countries have taken it to the level of specific laws. Many countries have achieved large-scale production of Electric Vehicles, and some auto companies such as BMW, Ford, Honda, and other multinational companies have set goals for reducing carbon emissions and will successively launch new electric models on the market (Higueras-Castillo et al., 2020). In 2020, the pure electric model Model 3 emerged as the best-selling electric model in the world. According to statistics from EV-Volumes, global sales of Electric vehicles reached 3.24 million in 2020, up 43.4 percent year-on-year. By the end of 2020, the global cumulative sales of electric vehicles had reached 11 million, and the market penetration rate had increased from less than 0.1% in 2010 to 4.2% in 2020. In the long run, the global development trend of Electric vehicles is good.

Entering the 21st century, China's top-level electric

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vehicle design and policy measures continue to increase, and electric vehicle development has significantly accelerated. Stimulated by a series of favorable policies, the production and sales of Electric vehicles in China have increased yearly in recent years. According to the industry data released by the China Association of Automobile Manufacturers, 20Electric Vehicles, China's production and sales volumes were only 0.8000, accounting for less than one percent of the national automobile production and sales volume. In 2020, the production and sales volume of Electric vehicles in China were 1.366 million and 1.367 million, respectively, accounting for 5.4% of the national automobile sales volume.

2. Literature Review

2.1 Environmental Concern

Environmental concern and ecological knowledge are potent predictors of green buying intentions (Varah et al., 2021). Past studies in Asia and other Western countries provided strong support that knowledge about ecology and Environmental concerns is profound in predicting green intention (Wang et al., 2017). Environmental concern represents the degree of an individual's emphasis on environmental issues. Related studies noticed an association between environmental concern and environmentally friendly behavioral intention. Environmental concern can indirectly affect environmentally friendly behavioral intention through several variables rather than directly on environmentally friendly behavioral intention (Hasan & Simsekoglu, 2020). For instance, research found that environmental concern indirectly affected customers' intention to adopt hybrid vehicles through attitude and subjective norm; it was found that environmental concern indirectly affects users' intention to use shared bicycles through attitude and subjective norm (Gopi & Ramayah, 2007). The TPB model allows additional variables to improve the predictive explanatory power for behavior intention. Therefore, environmental concern is incorporated into the TPB model to obtain a more comprehensive perspective of the intention to use shared electric bicycles (Paul et al., 2016). Thus, a hypothesis is set:
H1: Environmental concern has a significant influence on attitude.

2.2 Knowledge

Wang et al. (2021) summarizes much literature and report that the index used to measure knowledge by scholars includes the consumer's perception of how much he or she knows (Kim et al., 2015). The amount, type, and organization of what the consumer has stored in his/her memory (Mau & Woisetschläger, 2018). The amount of purchasing and usage experience (Hini et al., 1995). Hyatt (1992) uses an examination score to measure objective knowledge and applies a self-evaluation inventory to measure subjective knowledge. Insley and Nunan (2014) adopt the knowledge definition stated by Brucks (1985) to measure knowledge. The measurement of knowledge aims to measure the understanding and confidence level of notebook attributes and information, and a Likert seven-point scale was used. Knowledge refers to an individual's understanding of external things and attitude towards related issues (Yadav & Pathak, 2016). The higher the level of knowledge reserve, the more profound the understanding of things. Environmental knowledge is a specific form of knowledge; individuals with certain knowledge have a positive attitude toward environmental behavior and are strongly willing to take action. Flamm found that households with higher environmental knowledge purchase energy-efficient cars (Tsai et al., 2015). Some scholars demonstrated that environmental knowledge positively impacts consumers' attitudes toward green products. Ackaah et al. (2022) showed that environmental knowledge affects residents' attitudes toward green product purchase behavior, which in turn affects residents' willingness to purchase green products (Ramayah et al., 2010). Thus, a hypothesis is set:
H2: Knowledge has a significant influence on attitude.

2.3 Subjective Norm

It has been shown that normative social beliefs influence behavior as long as it is public, not when it is private. The person conducting the behavior is no longer under surveillance by others (Greenwald et al., 1998). Not all referents' opinions about behavior are important: only the salient referents will affect the subjective norm. In order to assess a person's subjective norm, the general motivation to comply with relevant referents must be determined since this enables an assessment of referents and their weight of importance on a person's behavior (Ajzen & Fishbein, 1980). Gopi and Ramayah (2007) divided normative beliefs into descriptive and injunctive norms.

Furthermore, a person's injunctive norms concern the beliefs of other referents, such as whether other people in the group approve or disapprove. A descriptive norm is the perception of how it is "normal" or common to behave in a certain situation. The discussion and research conducted by Joshi and Rahman (2015) concerning subjective norms and attitudes are extensive, and debates about whether attitudes or subjective norms predict behavioral intention more strongly. While attitudes normally influence behavioral intentions to a greater extent than subjective norms, it has also been proposed that this may differ since people's

subjective norms can be categorized into attitudinal or normative controlled. Whether a person is classified as normative controlled is determined based on whether the reasons to perform a certain behavior are attitudinal or normative (Liu et al., 2015). Thus, a hypothesis is set:
H3: Subjective norm has a significant influence on attitude.

2.4 Stereotype

Alba (1983) studied perception based on the matching between category specifications and the perceiver's readiness to use those categories. This argument is echoed in the stereotype formation literature: Stereotype formation involves the perception or encoding of new information, but it also involves prior knowledge. The brain is rarely like a blank SLATE on which new stereotypes can be carved, but to continue the analogy, it has many old grooves on its surface that make certain stereotypes more likely to emerge. Sense-making approaches to stereotyping are numerous (McGarty et al., 2002). They include the self-categorization theory (Pagiaslis & Krontalis, 2014), the social judgeability theory (Yzerbyt et al., 1994), and the exemplar model of social judgment (Shalender & Sharma, 2021). This idea, which was first clearly articulated by Allport (1954), became the cornerstone of the cognitive approach to social stereotyping (Axelrod & Hamilton, 1981). The key ideas can be summarized as follows: Individuals have limited capacities to perform cognitive tasks such as processing information.

Nevertheless, they exist in a complex, multifaceted world that places enormous demands on their limited capacity. This complexity is certainly true of the social environment, and the resulting overload of human information processing capacity leads people to take shortcuts and adopt biased and erroneous perceptions of the world. Stereotypes are simply one example of the biases that can develop. Thus, a hypothesis is set:
H4: Stereotype has a significant influence on attitude.

2.5 Price Sensitivity

Prestige sensitivity is like perceptions of the price cue based on what it signals to the purchaser about product quality. These are perceptions of the price cue due to inferences about what it signals to other people about the purchaser. For example, to the degree a consumer purchases an expensive wine not because of quality perceptions per se but because of his or her perception that others will perceive the high price as reflective of the internal traits of the purchaser, a correspondent inference attribution (Mishra & Malhotra, 2019). The positive perception of the price cue is based on perceptions of what it signals to others in a social sense (Hini et al., 1995). Therefore, we define prestige sensitivity as favorable perceptions of the price cue based on feelings of prominence and status that higher prices signal to other people about the purchaser (Jaiswal & Kant, 2018). Anderson (1996) proposed that customers with greater sensitivity to products generate greater satisfaction. Price sensitivity has significantly impacted consumers' evaluation of product alternatives and their final buying decisions (De Medeiros et al.). Moreover, the factor of price sensitivity has a significant influence on consumers with regards to undertaking price judgments concerning the brand and competing brands, choosing among brands and formats (Niedrich et al., 2009), evaluating the attractiveness of advertised promotions (e.g., in flyers, advertisings, and stores), and improving or reducing price search and comparison behaviors (Jiang, 2016). Understanding price sensitivity is crucial not only for academics interested in identifying the sources of influence for price sensitivity but also for retail managers whose pricing strategies may rely on the level of consumers' price sensitivity. Thus, a hypothesis is set:
H5: Price sensitivity has a significant influence on purchase intention.

2.6 Perceived Behavioral Control

Kumar and Alok (2020) mentioned that perceived behavioral control drawing an analogy to the expectancy-value model of attitude(see attitude toward the behavior), it is assumed that perceived behavioral control is determined by the total set of accessible control beliefs, i.e., beliefs about the presence of factors that may facilitate or impede the performance of the behavior. Li et al. (2013) investigated perceived behavioral control, which strongly impacts the decision-making to buy fuel motorcycles in Vietnam and affects the intention to use bicycles in India and the intention to use the BRT in Thailand. However, perceived behavioral control has not affected the intention to use the metro in Ho Chi Minh City. Perceived behavioral control is another factor that helps individuals search for appropriate information. It is similar to helping conditions of a unified theory of acceptance and use of technology (UTAUT) and expressing individual thinking if he/she has the required capabilities, resources, and a sense of controlling the decision to perform (Graham-Rowe et al., 2012). Perceived behavioral control is important in determining intention (Foley et al., 2020). Ajzen (1998) believed that when an individual thinks he can perform a specific behavior or has more resources or opportunities related to executing the behavior, he will have a higher level of perceived behavioral control and a stronger behavioral intention to perform the specific behavior. Franssonn and Garling (1999) believed that perceived control is the driving force of behavior, and customers' perceived control in the process of service contact will

significantly impact customers' service experience. Later, some scholars conducted a more in-depth study on the influence of perceived control on behavioral intention and found a more complex relationship between them. Notani (1998) pointed out that meta-analysis found that when students' samples were used and familiar behaviors were adopted, perceived control was more predictive of behavioral intention. Greenwald et al. (1998) found that perceived control's role depends on behavior attributes (utilitarianism or hedonism). Only in the case of utilitarian behavior does perceived control play a moderating role in the relationship between attitude and behavioral intention. Thus, a hypothesis is set:

H6: Perceived behavioral control has a significant influence on purchase intention.

2.7 Attitude

Older customers have a lower propensity for negative attitudes, and they are more likely to resist change toward using mobile banking (Brouwer et al., 2009). Caruana et al. (2016) conceptualized attitude as a user's favorable or unfavorable feelings towards a particular behavior. Moreover, attitudes develop over time as people acquire experience with the payment system (Liébana-Cabanillas et al., 2014). Chung and Holdsworth (2012) stated that a favorable attitude is the individual's interest in the innovation and actively seeking information about it. Lee (2009) mentioned that a favorable or unfavorable attitude directly influences behavior and belief regarding the outcome. Grewal et al. (2000) stated that consumer attitudes and preferences when purchasing a particular product are based on consumer attitude and desire to perform a behavior. Attitude towards a certain behavior is based on the expectations and beliefs of the consequences of a particular behavior (Chen, 2007). Studies have concluded that consumer attitude can be measured using the theory of planned behavior (TPB) (Aertsens et al., 2009). "Theory of planned behavior (TPB) is one of the most widely applied expectancy-value models used to predict and explain human behavior in the area of food choice" (Hosany & Martin, 2012). This theory makes it possible to explain consumer food choice behavior convincingly and organic food consumption (Aertsens et al., 2009). Moreover, attitude is a function of behavior intention formed by behavior and subjective norms (Fauzi et al., 2021). Zhang et al. (2020) surveyed Chinese consumers' purchase of luxury goods, and the results showed that consumers' attitudes toward luxury goods greatly influenced their consumption behaviors. Thus, a hypothesis is set:

H7: Attitude has a significant influence on purchase intention.

2.8 Purchase Intention

Purchase intention is an important index to forecast consumer behavior, defined as a consumer's subjective tendency toward a particular product. Purchase intention is the predictor of future purchase decisions, as mentioned by Warshaw (1980). Purchase intention is defined as a consumer's demand for a product shortly, the potential for their likely requirement to purchase, or their preparedness to dedicate to the purchase of a particular product (Wang et al., 2019). Purchase intention refers to a consumer tendency to purchase the product in the future and resist switching to other brands (Wu et al., 2011). Purchase intentions are personal action tendencies relating to the product (Bagozzi & Burnkrant, 1979). Jayaraman et al. (2018) clarified that after a deep consideration of a product, consumers intend to purchase a certain product to reach a satisfactory level. Purchase intention normally is undecided. Purchase intention evaluates the length of time to purchase the product. For example, if consumers intend to purchase the product now, it means strong purchase intention. Contrastingly, if consumers are willing to buy the product half a year later, it means weaker purchase intention (Junquera et al., 2016). According to Engel et al. (1995), a consumer's purchase behavior is a continuous procedure; the consumer uses internal and external information to make a final decision. Firstly, consumers purchase products mainly depending on experience and external information. After a certain amount of information has been collected, consumers tend to evaluate through comparison and judgment of the preferences of each product in the choice set. Finally, customers make the purchase decision to buy the most preferred product. Mitchell et al. (2017) pointed out that a person will make a purchase decision after passing the purchase intention step. Mulcahy et al. (2015) indicated that purchase intention is a behavior of consumers, mainly reflected in the services that consumers participate in discovering, purchasing, using, and evaluating products or services and meeting their needs in the above order. Purchase intention indicates the possibility that consumers have plans or intend to buy a product or a service in the future (Wu et al., 2011). The research shows that the increase in purchase intention will increase the purchase opportunity, which means that consumers with positive purchase intention will create positive brand participation to promote purchase.

3. Research Methods and Materials

3.1 Research Framework

The conceptual framework is developed from studying previous research frameworks. It is adapted from three theoretical models. Firstly, Ajzen (1991) studied the Theory of Planned Behavior. Secondly, the study of Dash (2021) verified that product knowledge and environmental problems have greatly affected consumers' attitudes towards electric vehicles. The third research was explored by Bennett and Vijaygopal (2018), which investigated consumer attitudes towards electric vehicles. Effects of product user stereotypes, and self-image congruence. The conceptual framework of this study is proposed in Figure 1.

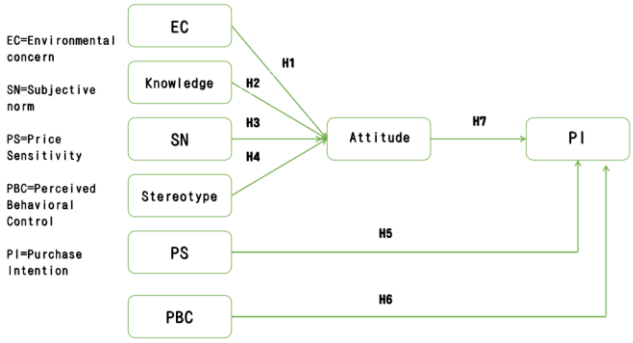

Figure 1: Conceptual Framework

H1: Environmental concern has a significant influence on attitude.
H2: Knowledge has a significant influence on attitude.
H3: Subjective norm has a significant influence on attitude.
H4: Stereotype has a significant influence on attitude.
H5: Price sensitivity has a significant influence on purchase intention.
H6: Perceived behavioral control has a significant influence on purchase intention.
H7: Attitude has a significant influence on purchase intention.

3.2 Research Methodology

This study adopts quantitative analysis. The researchers collected the raw data in the most crowded areas, three shopping malls, and plazas in Shenzhen, China. The descriptive research method is another method used in this study. Cooper and Schindler (2014) pointed out that descriptive research is mainly carried out through statistical methods represented by various data, such as mean and percentage, to reveal better the relationship between the total number of single factors. The researcher also applied the format of questionnaires with the Likert scale. The response categories in the Likert scales have a rank order, but the intervals between values cannot be presumed equal. Pilot testing was conducted for an expert rating of the item-objective congruence (IOC) index and 30 respondents. Cronbach's Alpha approach was used for validity and reliability testing. The Item-Objective Congruence Index (IOC) has been meticulously refined to faithfully capture the intended construct of each item, thus bolstering the validity of the assessment. Following a pilot test with 50 participants, the obtained Cronbach's Alpha score surpassed 0.7, affirming the robust measurement of the targeted construct and consolidating the reliability of the test outcomes. These findings align closely with the principles outlined by Nunnally and Bernstein (1994). 500 accepted responses were collected and analyzed using statistical software. Confirmatory Factor Analysis (CFA) was used to test convergence accuracy and validation. The structural Equation Model (SEM) was used to examine the effect of variables.

3.3 Population and Sample Size

The target group of this study is consumers over 18 who have yet to experience purchasing an electric vehicle in Shenzhen, China. Hair et al. (2010) described that most sample sizes could rely on previous research for a valid population. Thus, the researcher selected three previous studies to define the sample size and applied them.

The first previous study was "Determinants of EVs Adoption: A Study on Green Behavior of Consumers" by Dash (2021), which was based on a sample size of 403 participants for analyzing the questionnaires. The second previous research study, "Consumer Attitudes Towards Electric Vehicles Effects of Product User Stereotypes and Self-image Congruence," was conducted by Bennett and Vijaygopal (2018), and it required 500 respondents to collect the data. Finally, the last previous research, "Predicting consumer purchase intention toward hybrid vehicles: testing the moderating role of price sensitivity," was conducted by Bhutto et al. (2022) by applying 403 respondents to analyze the survey questionnaires.

Based on previous research, to get an acceptable sample size to be successful in reliability, the researcher decided to collect 500 respondents as a sample size in this study in order to get a reliable result.

3.4 Sampling Technique

The sampling method includes purposive sampling, quota sampling, and convenience sampling. The researchers will select three shopping plazas in Shenzhen, China, where Electric Vehicle's flagship stores are located, for a judgment sampling program to collect questionnaires. The researchers

used the traffic flow of Shenzhen's three most famous shopping malls as a baseline to get a sampling ratio for each location. Based on the sampling ratio, the researchers eventually devised a sample of the number of people in the electric vehicle flagship stores in Shenzhen's three shopping malls. So, for the EV flagship stores in three shopping malls in Shenzhen, the researchers collected data from about 500 respondents. (see Table 1) as follows:

Table 1: Sample Units and Sample Size

Name of electric vehicle flagship store	Population Size	Proportional Sample
Electric vehicle flagship store of Shenzhen Dongmen Shopping Plaza	185,000	187
Electric vehicle flagship store of Shenzhen COCO Park	163,000	164
Electric vehicle flagship store of Shenzhen Huaqiang North Shopping Plaza	148,000	149
Total	**496,000**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

The profile of the demographic targets 500 participants, which is concluded in Table 2. Male respondents represent 56.6%, and female respondents account for 43.4%. For the age group, the biggest segment in this research was 29-39 years old, representing 39.0% of respondents, 27.8% of 40-50 years old, 19.2% of more than 50 years old, and 14 % of 18-28 years old. According to the income, 10,001CNY-20,000CNY for 54%, 5,001CNY-10,000CNY for 25.6%, 20,001CNY or more for 13.8%, and 5,000CNY or less for 6.6%. In terms of the educational background of respondents, the major group had a bachelor's degree, 53.4%. In contrast, a master's degree accounted for 31.4%, a doctorate degree 8.6%, and a high school level 6.6%, respectively. Regarding the Employment category, the self-employed are 33%, management is 20%, other is 15%, Employee is 13.2%, the government is 10.4%, and student is 8.4%.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	283	56.6%
	Female	217	43.4%
Age	18-28years old	70	14%
	29-39years old	195	39%
	40-50 years old	139	27.8%
	More than 50	96	19.2%
Income	5,000CNY or less	33	6.6%
	5,001-10,000CNY	128	25.6%
	10,001-20,000CNY	270	54%
	20,001CNY or more	69	13.8%
Education	High School Level	33	6.6%
	Bachelor Degree	267	53.4%
	Master Degree	157	31.4%
	Doctor Degree	43	8.6%
Employment category	Student	42	8.4%
	Employee	66	13.2%
	Management	100	20%
	Government	52	10.4%
	Self-employed	165	33%
	Other	75	15%

4.2 Confirmatory Factor Analysis (CFA)

In this study, Confirmatory Factor Analysis (CFA) was used to assess the validity of the measures. Results indicated that all items within each variable had significant factor loadings, demonstrating discriminant validity. The goodness of fit was evaluated based on the significance of factor loadings and acceptable values (Hair et al., 2010). Factor loadings were considered acceptable if they exceeded 0.30 and had a p-value below 0.05 (Vongurai, 2022). The construct reliability was greater than the recommended cutoff value of 0.7. The average variance extracted exceeded the recommended cutoff value 0.5 (Fornell & Larcker, 1981), as shown in Table 3. All estimates were found to be significant.

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
Environmental Concern (EC)	McCright et al. (2014)	4	0.870	0.781-0.805	0.871	0.628
Knowledge (KNO)	Kim and Choi (2005)	4	0.880	0.774-0.837	0.881	0.649
Subjective Norm (SN)	Ajzen (2012)	4	0.888	0.790-0.834	0.889	0.667
Stereotype (ST)	Fiske et al. (1999)	4	0.857	0.761-0.790	0.858	0.602
Price Sensitivity (PS)	Mishra and Malhotra (2019)	4	0.873	0.791-0.808	0.874	0.633
Perceived Behavioral Control (PBC)	Francis et al. (2004)	4	0.872	0.773-0.814	0.873	0.631
Attitude (ATT)	Ajzen and Fishbein (1980)	4	0.890	0.809-0.829	0.890	0.670
Purchase Intention (PI)	Wu et al. (2011)	4	0.897	0.805-0.845	0.897	0.685

The square root of the average variance extracted indicated that all relationships exceeded any interrelated coefficients for the variables presented in Table 4. Moreover, in confirmatory factor analysis (CFA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA) are utilized as indicators of model fit.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	1.147
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.942
AGFI	≥0.80 (Sica & Ghisi, 2007)	0.930
NFI	≥ 0.80 (Wu & Wang, 2006)	0.922
CFI	≥0.80 (Bentler, 1990)	0.989
TLI	≥0.80 (Sharma et al., 2005)	0.988
RMSEA	< 0.08 (Pedroso et al., 2016)	0.017
Model Summary		**Acceptable Model Fit**

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

The convergent and discriminant validity level surpassed the acceptable threshold, as demonstrated in Table 5. Therefore, both convergent validity and discriminant validity were achieved.

Table 5: Discriminant Validity

	EC	KNO	SN	ST	PS	PBC	ATT	PI
EC	**0.698**							
KNO	0.26	**0.728**						
SN	0.267	0.398	**0.769**					
ST	0.38	0.349	0.312	**0.727**				
PS	0.268	0.345	0.31	0.436	**0.714**			
PBC	0.226	0.31	0.399	0.42	0.349	**0.715**		
ATT	0.323	0.265	0.39	0.364	0.278	0.365	**0.733**	
PI	0.354	0.415	0.365	0.377	0.428	0.345	0.377	**0.731**

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

4.3 Structural Equation Model (SEM)

Hair et al. (2010) state that Structural Equation Modeling (SEM) validates the causal relationship among variables in a proposed model and encompasses measurement inaccuracy in the structure coefficient. The goodness of fit indices for the Structural Equation Model (SEM) is measured as demonstrated in Table 6. The model fit measurement should not be over 3 for the Chi-square/degrees-of-freedom (CMIN/DF) ratio, and GFI and CFI should be higher than 0.8, as Greenspoon and Saklofske (1998) recommended. The calculation in SEMs and adjusting the model by using SPSS AMOS version 25, the results of the fit index were presented as a good fit, which are CMIN/DF = 2.069, GFI =0.877, AGFI = 0.858, NFI = 0.852, CFI = 0.917, TLI =0.910 and RMSEA = 0.046, according to the acceptable values are mentioned in Table 6.

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	2.069
GFI	> 0.85 (Sica & Ghisi, 2007)	0.877
AGFI	≥0.80 (Sica & Ghisi, 2007)	0.858
NFI	≥ 0.80 (Wu & Wang, 2006)	0.852
CFI	≥0.80 (Bentler, 1990)	0.917
TLI	≥0.80 (Sharma et al., 2005)	0.910
RMSEA	< 0.08 (Pedroso et al., 2016)	0.046
Model Summary		**Acceptable Model Fit**

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

Research hypothesis testing and results were determined by standardized path coefficient (β) and t-value of the SEM. In Table 6, most of the hypotheses were significant at a p-value less than 0.5, except H2 of the relationship between knowledge and attitude.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: EC→ATT	0.194	3.595*	Supported
H2: KNO→ATT	0.090	1.746	Unsupported
H3: SN→ATT	0.291	5.479*	Supported
H4: ST→ATT	0.227	4.233*	Supported
H5: PS→PI	0.321	5.779*	Supported
H6: PBC→PI	0.172	3.273*	Supported
H7: ATT→PI	0.285	5.234*	Supported

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

The result from Table 7 can be refined that:

The result of H1 supported the hypothesis of a significant relationship between Environmental concern and Attitude, as described by the standard coefficient value of 0.194.

Based on the results of H2, the statistical findings of this study do not support the hypothesis that knowledge has a significant impact on Attitude, with the standard coefficient value being 0.090.

H3, the analysis's outcome, supported the hypothesis of the significant influence of subjective norms on Attitude, representing the standard coefficient value of 0.291.

H4 has proven that stereotype is one of the key drivers of Attitude, revealing the standard coefficient value of 0.227 in the structural pathway. According to Bennett and Vijaygopal (2018), stereotype influence significantly affects consumer attitudes.

With a standardized path coefficient value of 0.321, H5 confirmed that price sensitivity is one of the most important determinants of purchase intention. Price sensitivity has a significant impact on consumers' purchase intention. (Bhutto et al., 2022)

H6 showed that perceived behavioral control significantly influenced purchase intention, as indicated by the common coefficient value of 0.172. Therefore, consumers' perceived behavioral control affects purchase intention. (Noor et al., 2020)

H7, the analysis's outcome, supported the hypothesis of the significant influence of Attitude on purchase intention, representing the standard coefficient value of 0.285. According to Yang et al. (2017), the study indicates a positive relationship between attitude and purchase intention

5. Conclusion and Recommendation

5.1 Conclusion

This study examines the factors influencing consumers' attitudes and purchase intentions toward electric vehicles in Shenzhen, China. These hypotheses are proposed as a conceptual framework to study how environmental concerns, knowledge, subjective norms, stereotypes, price sensitivity, and perceived behavioral control significantly influence consumer attitudes and purchase intentions. The questionnaire was conducted in three shopping malls with the largest flow of people and the most developed commerce in Shenzhen, China. Confirmatory Factor Analysis (CFA) was carried out to measure and test the validity and reliability of the conceptual model. Hence, the influential factors that impact t attitude and purchase intention were analyzed by applying the Structural Equation Model (SEM).

The research described the findings as follows. Price sensitivity has the most significant impact on purchase intention. Anderson (1996) proposed that customers with a greater sensitivity to products generate greater satisfaction. Secondly, subjective norm versus attitude is the second level of the score. The discussion and research conducted by Joshi and Rahman (2015) concerning subjective norms and attitudes are extensive, and debates about whether attitudes or subjective norms predict behavioral intention more strongly. Third, attitude has been shown to significantly impact purchase intention towards purchasing electric vehicles. Fourth, stereotypes are thought to have a significant impact on attitudes. Fiske et al. (1999) indicated that stereotype is prejudice and will impact attitudes. Fifth, environmental concern significantly affects attitude; environmental problems are defined as the self-evaluation of facts by themselves and others and their attitude and behavior toward the environment (Franssonn & Garling, 1999). Last, perceived behavioral control also affects attitudes. Kumar and Alok (2020) mentioned that perceived behavioral control drawing an analogy to the expectancy-value model of attitude (see attitude toward the behavior), it is assumed that perceived behavioral control is determined by the total set of accessible control beliefs, i.e., beliefs about the presence of factors that may facilitatory impede performance of the behavior. In summary, this study aims to examine the factors that influence Chinese consumers' attitudes and purchase intentions toward electric vehicles in the Shenzhen area, using the top 3 shopping plazas in Shenzhen, China.

5.2 Recommendation

Researchers found that environmental concerns, Subjective norms, stereotypes, and price sensitivity affect consumer attitudes and purchase intentions in Shenzhen, China. Therefore, it is recommended that managers should take consumers' needs for these aspects into consideration when positioning and selling products to achieve revenue generation. Regarding literature and practical significance, management and relevant sales personnel must start with consumers' attitudes and purchasing intentions, strengthen the publicity and education of consumers' environmental awareness, let everyone understand the current global climate environment, and stimulate consumers' desire to protect the environment. At the same time, consumers can subjectively feel that the environmental protection of electric vehicles is beneficial to the development of society and is also a manifestation of technology changing the world. In addition, test drive experience services can be launched to allow consumers to experience electric vehicles' driving feeling and convenience immersivity, thereby changing some consumers' stereotypes. In terms of pricing, try to introduce as many car purchase subsidies as possible, such as giving points to old customers who recommend new customers to buy electric cars, and the points can be exchanged for free charging miles or peripheral products. All in all, the research results are helpful for companies to understand consumers' intentions and adjust business strategies promptly.

5.3 Limitation and Further Study

The limitation of this study is that the selection of research subjects needs to be more comprehensive. The researchers selected only 500 consumers from the top three shopping malls in Shenzhen, China, as the measurement unit. This data cannot represent all Chinese consumers' attitudes and purchase intentions. Further research could be done to study the demographic data of other cities and other factors that influence consumer attitudes and purchase intentions, such as after-sales service, convenience, routine maintenance, etc. In addition, future research can also be expanded to the update and iteration of electric vehicles, the improvement of charging services, car purchase subsidies, etc.

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