

Article

The mechanism of brand crisis influence on consumer purchase intentions in the context of green development

Xue Meng¹, Kanakarn Phanniphong^{2,*}, Wenjin Cheng³¹ Chakrabongse Bhuvanarth International College of Interdisciplinary Studies, Rajamangala University of Technology Tawan-ok, Bangkok 10400, Thailand² Faculty of Business Administration and Information Technology, Rajamangala University of Technology Tawan-ok, Bangkok 10400, Thailand³ Huanghe Business School, Henan University of Economics and Law, Zhengzhou 450000, China* **Corresponding author:** Kanakarn Phanniphong, kanakarn_ph@rmutto.ac.th

CITATION

Meng X, Phanniphong K, Cheng W. (2024). The mechanism of brand crisis influence on consumer purchase intentions in the context of green development. *Journal of Infrastructure, Policy and Development*. 8(9): 6561. <https://doi.org/10.24294/jipd.v8i9.6561>

ARTICLE INFO

Received: 22 May 2024

Accepted: 5 July 2024

Available online: 3 September 2024

COPYRIGHT



Copyright © 2024 by author(s).

Journal of Infrastructure, Policy and Development is published by EnPress Publisher, LLC. This work is licensed under the Creative Commons Attribution (CC BY) license. <https://creativecommons.org/licenses/by/4.0/>

Abstract: The promotion of new energy vehicles (NEVs) in China not only provides a pathway for the country to achieve its “dual carbon” strategic goals but also facilitates the transformation and upgrading of the automotive industry, contributing to social development and economic growth. This study examines the influence mechanism of brand crises on consumer purchase intentions within the NEV sector, an area critical to sustainable infrastructure and green development. Using a framework of “brand crisis—consumer negative emotions/perceived risk—consumer purchase intention,” and data from consumer surveys conducted in Beijing, Shanghai, Zhengzhou, and two other locations, the study employs regression models to analyze the relationship between brand crises and purchase intentions. Mediation effect models are used to explore how brand crises impact consumer purchase intentions through negative emotions and perceived risks. The results indicate that brand crises significantly reduce consumers’ willingness to purchase products from affected brands, posing a threat to the market stability and growth of the NEV sector. Moreover, negative emotions and perceived risks mediate the relationship between brand crises and purchase intentions, highlighting the importance of addressing both emotional and cognitive responses in crisis management strategies. To mitigate the adverse effects of brand crises, companies should adopt measures to improve consumer sentiment and reduce perceived risks, such as proactive communication, transparency, and effective recall procedures. Additionally, factors such as NEV performance, price, and charging infrastructure coverage also play a crucial role in consumer purchase decisions. Therefore, companies must consider these factors when formulating crisis response strategies to swiftly regain consumer trust and promote sustainable market and green development. This study contributes to the broader discourse on infrastructure development and public policy by providing insights into how brand crises in the NEV industry can be managed to support sustainable economic growth and development. By understanding the mechanisms through which brand crises affect consumer behavior, this research offers valuable recommendations for policymakers, industry professionals, and academic researchers focused on the interplay between infrastructure, development, and policy.

Keywords: social development; brand crisis; negative emotion; perceived risk; brand trust; sustainable infrastructure; green development

1. Introduction

1.1. Research background

As the world progresses in industrialization, the increase in carbon dioxide emissions and the surge in greenhouse gases pose a threat to the global environment. In this context, China has actively participated in global environmental and climate

governance. In September 2020, at the 75th United Nations General Assembly, China formally proposed for the first time the goals of achieving a carbon peak by 2030 and carbon neutrality by 2060. On 24 October 2021, the Chinese government issued the “Opinions on Fully, Accurately, and Comprehensively Implementing the New Development Philosophy to Achieve Carbon Peaking and Carbon Neutrality,” outlining specific work plans for reaching these dual carbon goals. Compared to traditional fuel vehicles, new energy vehicles (NEVs) are more environmentally friendly and low-carbon, and their promotion and application are considered a viable decarbonization strategy. As shown in **Figure 1**, from 2019 to 2023, the sales volume and market penetration of NEVs in China have grown rapidly under the dual carbon strategic goals and environmental policy support.

Changes in Chinese new energy vehicle sales volume and market penetration from 2019 to 2023

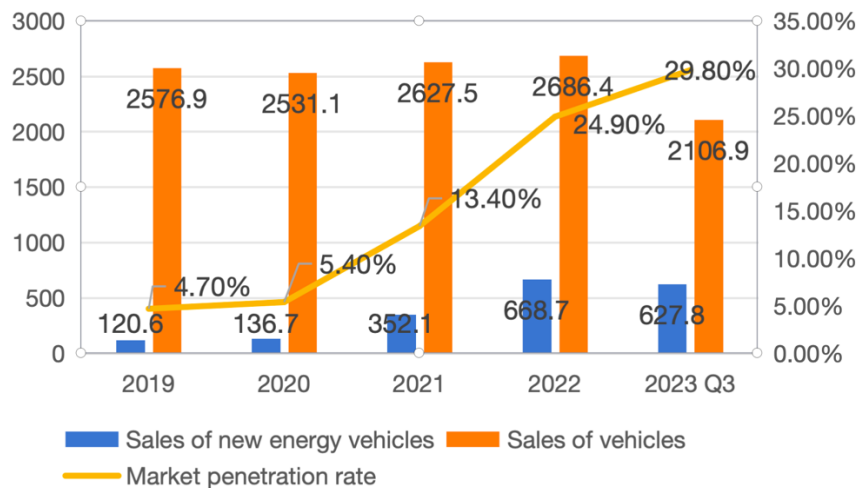


Figure 1. Changes in sales volume and market penetration rate of new energy vehicles in China from 2019 to 2023.

According to statistics from the China Association of Automobile Manufacturers, by the end of 2021, the national stock of NEVs reached 7.84 million units, accounting for 2.60% of the total number of vehicles, an increase of 2.92 million units from 2020, a growth of 59.25%. In 2022, the annual production of NEVs was 7.003 million units, up 90.5% from the previous year. From January to November 2023, NEV sales totaled 7.212 million units. The development of NEVs in China not only optimizes the country’s energy structure but also facilitates the technological transformation and industrial upgrading of the Chinese automobile industry, enhancing its international competitiveness.

However, as the number of NEVs increases, quality and safety issues have become prominent. According to the State Administration for Market Regulation, in 2022, there were 47 NEV recalls in China, involving 1.212 million vehicles, accounting for 27.0% of the total number of recalls for the year, an increase of 31.5% year-over-year. As NEV brands develop, incidents such as product recalls and other negative public opinions are bound to occur, leading to brand crises. Once a brand

crisis occurs, consumers' willingness to purchase is affected to varying degrees (Zhou et al., 2020). The outbreak of NEV brand crisis incidents not only greatly endangers consumers' health but also leads to significant economic losses and reputation decline for companies. At the societal level, it may create a negative perception of all NEV brands, adversely affecting the development and growth of China's NEV industry, which is detrimental to achieving China's dual carbon goals.

Although the frequency of brand crises is increasing and companies are paying more attention to preventing and managing them, there is still a lack of specialized academic research on brand crises. Most existing studies focus on product harm crises (caused by "product defects"), examining their impact on brands (Duan and Yu, 2012; Fang et al., 2010; Yu et al., 2012), with less attention to crises caused by lack of corporate social responsibility or loss of social ethics. Furthermore, there is limited research on brand crises in the NEV field. Additionally, many scholars focus on corporate crisis response and prevention, with insufficient research on how consumer purchase intentions change under brand crises, and the extent to which the severity of a brand crisis affects consumer purchase intentions. Lastly, there has been little research on the intrinsic mechanism by which the severity of a brand crisis affects consumer purchase intentions, typically considering only changes and impacts of consumer negative emotions and perceived risks, rarely integrating both into a logical framework for analysis.

1.2. Research questions

This study, based on the Stimulus-Organism-Response (S-O-R) theory from a consumer's purchasing perspective, examines the effects of brand crises on consumer brand trust, negative emotions, perceived risk, and purchase intentions. It also explores the extent to which the severity of brand crises affects consumer purchase intentions and the internal mechanisms involved, including the mediating roles of negative emotions and perceived risk, and the moderating role of consumer brand trust. This aims to provide new insights for companies to better address the negative impacts of brand crises. The study poses the following questions:

- 1) How do brand crises affect consumer brand trust, negative emotions, perceived risk, and purchase intentions? To what extent do these effects vary with the severity of the crises?
- 2) Do consumer negative emotions and perceived risks play a mediating role in the process by which brand crises affect consumer purchase intentions?
- 3) Does consumer brand trust play a moderating role in the process by which brand crises affect consumer purchase intentions?
- 4) Does consumer brand trust play a moderating role in the process by which brand crises influence consumer negative emotions and perceived risks?

1.3. Significance of the research

This research provides a thorough analysis of the effects and internal mechanisms of brand crises on consumer purchase intentions, with a focus on consumer emotions and cognition, offering strategies to mitigate the negative impacts of brand crises and restore consumer purchase intentions. Its significance is highlighted in several aspects:

1.3.1. Theoretical significance

Firstly, this research examines the impact of brands from a negative perspective, filling a gap in previous research. Secondly, it expands the scope of brand crisis research beyond product harm crises to include a broader range of crises. Lastly, by focusing on the NEV sector, it enriches the theoretical framework of brand crisis studies.

1.3.2. Practical significance

Firstly, maintaining consumer purchase intentions is foundational for the stable development of companies, and managing brand crises provides new insights for enhancing marketing effectiveness. Secondly, discussing the impact of brand crises of varying severity on consumer purchase intentions and behaviors offers important guidance for corporate operations. Lastly, by improving consumer brand trust, negative emotions, and perceived risks, this study supports the development of NEV companies, promotes energy conservation and emissions reduction, and contributes significantly to China's dual carbon strategy.

In summary, this research not only broadens the theoretical perspective on brand crisis studies but also provides valuable insights for corporate practices, promoting the development of China's automotive industry and the implementation of the dual carbon strategy.

1.4. Research innovation

This study demonstrates innovation in several areas:

1) Focus on the NEV Industry: This study explores the impact of brand crises in the NEV sector on consumer purchase intentions. Considering the novelty of the industry and the limited previous research in this area, the innovation lies in broadening the perspective on brand crises and consumer purchase intentions, offering new theoretical insights.

2) In-depth Exploration of Internal Mechanisms: The study delves into the internal mechanisms of how brand crises in NEVs affect consumer purchase intentions under different crisis severities. By integrating consumer brand trust, negative emotions, and perceived risks into a single framework and exploring their mediating and moderating roles, it provides a deeper understanding of the impact mechanisms of brand crises.

3) Theoretical Application Innovation: The study uses the Stimulus-Organism-Response theory as its theoretical foundation and framework, constructing a research model. Although widely applied in the service industry, this theory has been less utilized in the context of the NEV sector. Applying this theory not only provides a fresh perspective on consumer behavior studies in this field but also expands its application scope. Overall, this research showcases innovation in the study of brand crises in the NEV sector, providing new ideas and frameworks for theoretical research and practical reference for companies in managing brand crises.

2. Literature review

2.1. The impact of brand crisis and its severity on consumer purchase

intentions

Dunn and Dahl (2012), based on attribution theory, argue that a brand crisis impacts consumers' willingness to purchase from the brand, and the severity of the crisis heavily influences stakeholders' attribution of responsibility. The more severe the perceived crisis, the less likely consumers are to forgive the brand. Zhou et al. (2020) suggest that in the context of increasingly complex and frequent brand crises, exploring the impact of brand crisis severity on consumer purchase intentions and mechanisms is of great significance. Similarly, in the automotive sector, Liu et al. (2020) found that the higher the severity of a vehicle recall crisis, the stronger the negative consumer reaction. Compared to moral brand crises, consumers pay more attention to functional brand crises, and the more severe these are, the weaker the consumer purchase intentions become (Zhao, 2023). Thus, as the severity of brand crises in new energy vehicles increases, consumer purchase intentions are likely to diverge further. According to the Stimulus-Organism-Response (S-O-R) model, external stimuli cause changes in consumer cognition and emotions, leading to behaviors such as usage and purchasing (Li et al., 2020; Zhang et al., 2021). In situations of brand crises, consumers form cognitions and emotions based on the crisis information they receive and process, integrating and processing information such as existing brand images stored in memory, leading to changes in cognitive evaluations, emotional responses, and ultimately affecting purchase intentions. Perceived risk, stemming from information reception and judgment, and negative emotional responses, are primary influences in this process.

2.2. The mediating role of negative emotions

She (2012), based on grounded theory, notes that negative events stimulate four types of negative emotional responses in consumers: anger, disappointment, numbness, and skepticism. The more severe the brand crisis, the stronger the anger and disappointment felt by consumers. In the automotive industry, severe product harm events elicit more pronounced negative emotions compared to less severe ones (She et al., 2013). Swanson and Hsu (2011), through empirical research on the influence of negative emotions on brand switching behavior, found that consumers in high negative emotional states tend to switch brands, indicating a reduced purchase intention towards the original brand. Reducing consumer negative emotions helps improve attitudes toward crisis products and purchase intentions (Cui et al., 2015). She et al. (2013), in studying automotive product harm crises, found that negative emotions lead to unfavorable consumer behaviors, reducing their willingness to purchase vehicles. Sherman et al. (1997) demonstrated through empirical research that consumer emotions play a mediating role in the shopping environment, influencing purchase decision-making processes. Yu et al. (2012) differentiated brand crisis severity into minor and severe, exploring the mediating role of negative emotions in the impact of brand crisis severity on consumer purchase intentions. Their empirical results indicated that the more severe the crisis, the stronger the consumer's negative emotions and the more likely they are to resist, leading to lower purchase intentions. Thus, following a new energy vehicle brand crisis, consumers may also develop low-intensity negative emotions such as disappointment and understanding, which

negatively impact their purchase intentions (She et al., 2013).

2.3. The mediating role of perceived risk

Following a brand crisis, consumers perceive potential physical and financial risks associated with purchasing the product (Ye, 2019). Based on the rational economic agent assumption, consumers make purchasing decisions to minimize perceived risks, influencing their purchase intentions (Qiao and Song, 2020). She et al. (2013), in studying corporate response strategies under automobile product quality defects, found that compared to less severe product harm events, consumers have a worse cognitive evaluation of more severe events. The majority of perceived risks come from consumers' cognitive evaluations; thus, the worse the evaluation, the greater the perceived risk.

Hu et al. (2015), using structural equation modeling, found perceived risk to be a key determinant of attitudes towards the use of small electric vehicles, which in turn positively affects usage intentions. Wang and Li (2013) noted that perceived risks vary among consumers with different demographic characteristics, and perceived risks have a negative impact on their willingness to purchase new energy vehicles (Wen, 2018). Chen et al. (2019), based on the perceived benefit-risk framework, studied the impact of perceived risks on consumer purchase intentions for new energy vehicles, finding a significant negative impact driven mainly by financial risks. Thus, perceived risk plays a mediating role in the impact path of brand crisis severity on consumer purchase intentions. The higher the severity of the brand crisis, the higher the perceived risks, negatively affecting consumer purchase intentions.

Through a review of related scholarly research, it is evident that as societal economic development accelerates and market environments and consumer psychologies continually evolve, brand crises occur more frequently, and their causes become increasingly complex. The severity of brand crises deepens as public opinion develops. Consumers, when choosing products, will surely gather relevant information and be sensitive to negative information about brands. The occurrence of a brand crisis transmits negative information to consumers, reducing their willingness to purchase the brand's products. The deeper the brand crisis severity, the lower the consumer purchase intentions. The process by which a brand crisis affects consumer purchase intentions is inevitably influenced by consumer emotions (negative emotions) and cognition (risk perception). Hence, the internal logic of how brand crises impact consumer purchase intentions for new energy vehicles through negative emotions and perceived risks can be summarized in **Figure 2**:

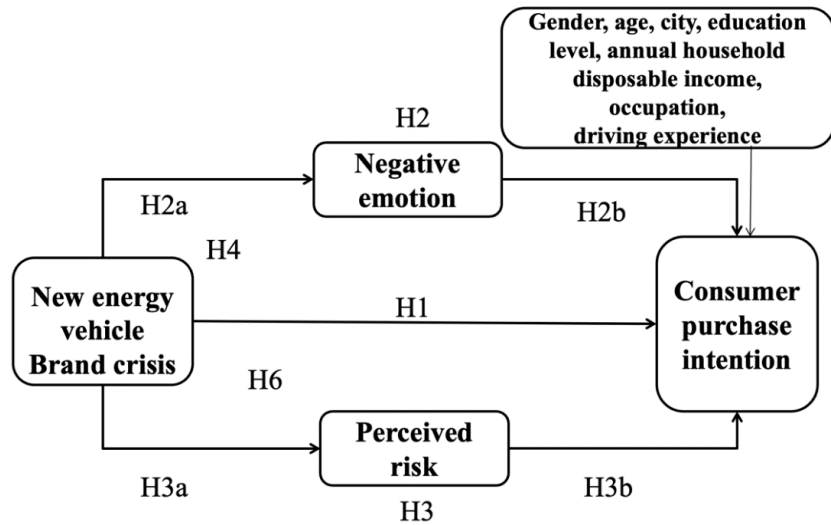


Figure 2. Conceptual framework.

Based on the aforementioned analysis, the researchers propose the following theoretical hypotheses:

H1: Brand crises have a negative impact on consumer purchase intentions. After a crisis in new energy vehicle brands, consumers' willingness to purchase will decrease.

H1a: In scenarios of new energy vehicle brand crises, the deeper the severity of the brand crisis, the lower the consumer purchase intentions.

H2: In scenarios of new energy vehicle brand crises, negative emotions mediate the impact of brand crises on consumer purchase intentions.

H2a: Brand crises positively influence consumer negative emotions; in scenarios of new energy vehicle brand crises, the deeper the severity of the crisis, the higher the level of negative emotions.

H2b: In scenarios of new energy vehicle brand crises, consumer negative emotions negatively affect consumer purchase intentions; the deeper the negative emotions, the lower the consumer purchase intentions.

H3: In scenarios of new energy vehicle brand crises, perceived risk mediates the impact of brand crises on consumer purchase intentions.

H3a: Brand crises positively influence consumer perceived risk; in scenarios of new energy vehicle brand crises, the deeper the severity of the crisis, the higher the perceived risk.

H3b: In scenarios of new energy vehicle brand crises, consumer perceived risk negatively affects consumer purchase intentions; the higher the perceived risk, the lower the consumer purchase intentions.

3. Research methodology

3.1. Research methods

Quantitative research is a widely used method in social surveys, often employing questionnaires as a primary tool. A questionnaire survey method involves the researcher using a structured instrument to pose questions for statistical analysis and

data collection. This study utilizes online social questionnaire surveys to gather data, primarily using the online platform “Questionnaire Star” to distribute surveys on the internet. The primary cities for the survey include Beijing, Shanghai, Guangzhou, Hangzhou, and Zhengzhou. A total of 650 questionnaires were distributed, with 580 valid responses collected. To ensure the reliability and validity of the survey data, the questionnaire was pre-tested with a small sample before full distribution. The pre-test aimed to identify any ambiguities or issues in the questions and to refine the survey instrument. Feedback from the pre-test participants was incorporated into the final version of the questionnaire.

3.2. Research design

Given the focus of this study on the impact of brand crisis severity on consumer purchase intentions within the new energy vehicle (NEV) sector, and the scarcity of existing research on this topic, it was necessary to gather primary data through empirical testing. The survey questionnaire consists of three main parts:

1) Introduction and Purpose of the Research: Before participants fill out the questionnaire, detailed explanations are provided regarding the goals, significance, precautions, and confidentiality measures of the survey. As the questionnaire involves personal privacy information, special emphasis is placed on protecting the respondents’ rights. Participants are informed that the survey is solely for academic research, and their anonymity is maintained. This introduction aims to alleviate any concerns respondents might have and encourage honest and accurate responses.

2) Individual Characteristics: This section includes demographic and background information about the respondents, such as gender, age, city of residence, education level, type of occupation, economic income, and driving experience. These variables help to contextualize the responses and allow for more nuanced analysis.

3) Measurement of Variables in the Theoretical Framework: This section includes questions designed to measure key variables, Consumer Purchase Intention: Assessed using a Likert scale ranging from 1 (very unlikely) to 5 (very likely). Severity of Corporate Brand Crises: Measured based on respondents’ perceptions of recent brand crises in the NEV sector. Consumer Negative Emotions: Evaluated through questions about feelings of anger, disappointment, numbness, and skepticism in response to brand crises. Perceived Risk: Assessed by asking respondents to rate their perceived physical and financial risks associated with purchasing NEVs following a brand crisis. Consumer Brand Trust: Measured by gauging the level of trust respondents have in NEV brands before and after the brand crisis incidents.

3.3. Data collection and sampling

The sampling method employed in this study is non-probability sampling, specifically convenience sampling, due to the ease of accessing respondents through online platforms. The target population includes NEV consumers and potential consumers in major Chinese cities. The online distribution of the survey allows for a diverse and geographically dispersed sample, enhancing the generalizability of the findings. The survey was conducted over a period of one month, and reminders were sent to potential respondents to maximize response rates. Data cleaning procedures

were employed to ensure the validity of the responses, including checking for incomplete questionnaires and inconsistent answers.

3.4. Data analysis techniques

The collected data were analyzed using SPSS and AMOS software. The following statistical techniques were applied, Descriptive Statistics: To summarize the demographic characteristics of the respondents and provide an overview of the key variables. Reliability and Validity Tests: Cronbach’s Alpha: To assess the internal consistency of the questionnaire items. Kaiser-Meyer-Olkin (KMO) Measure and Bartlett’s Test of Sphericity: To evaluate the adequacy of the sample for factor analysis (Zeng et al., 2024). Regression Analysis: Simple and Multiple Regression: To examine the direct effects of brand crises on consumer purchase intentions. Mediation Analysis: To test the mediating roles of negative emotions and perceived risk in the relationship between brand crisis severity and consumer purchase intentions. Moderation Analysis: To explore the moderating role of consumer brand trust in the relationship between brand crises and purchase intentions.

4. Data analysis

4.1. Descriptive statistics

This study includes four variables: the dependent variable is consumer purchase intention, and the independent variable is the severity of the corporate brand crisis, with consumer negative emotions and perceived risk serving as mediating variables. Data collection was conducted via questionnaire surveys, and to ensure the reliability and validity of the measurement tools, all scales were sourced from existing literature and modified appropriately according to the research purpose and subjects. All scales used a Likert five-point scale for evaluation. Detailed explanations of the variables and their descriptive statistics are presented in **Table 1**:

Table 1. Definitions, assignments, and descriptive statistics of variables.

Type	Variable	Mean	Standard Deviation	Minimum	Maximum
Dependent Variable	Consumer Purchase Intention	6.93×10^7	0.747	-1.429	2.154
Independent Variable	Brand Crisis	-7.41×10^{10}	0.519	-1.757	1.158
Mediating Variables	Negative Emotions	1.26×10^9	0.672	-1.620	1.203
	Perceived Risk	11.01	2.886	3	15
Control Variables	Gender	0.533	0.499	0	1
	Age	3.012	0.798	1	6
	City	3.167	1.418	1	5
	Education Level	2.991	0.834	1	4
	Household Disposable Income	2.521	1.292	1	5
	Occupation	2.803	0.965	1	4
	Driving Experience	2.526	1.189	1	4

4.2. Reliability and validity testing

The reliability and validity of the measurement data for brand crisis, negative emotions, and consumer purchase intention were tested, with results presented in **Table 2**. The Kaiser-Meyer-Olkin (KMO) and Bartlett’s test of sphericity were used to test the adequacy of the questionnaire data. The KMO values indicate good correlations between the items, while the significant p-value of Bartlett’s test of sphericity confirms that the factor analysis is valid. The Cronbach’s alpha coefficient is used for reliability analysis, with alpha values greater than 0.7 indicating good measurement reliability for the variables.

Table 2. Reliability and validity testing of brand crisis variable data.

Test Name	Brand Crisis Results	Negative Emotions Results	Consumer Purchase Intention Results
Kaiser-Meyer-Olkin Measure	0.6730	0.8160	0.8250
Bartlett’s Test of Sphericity Significance	0.0000	0.0000	0.0000
Cronbach’s Alpha	0.7100	0.8990	0.8740

4.3. Results and interpretation

4.3.1. Total effect testing of brand crisis on consumer purchase intention

Using advanced statistical software, a basic regression model was employed to empirically test the relationship between brand crisis and consumer purchase intention. The empirical results are shown in **Table 3**:

Table 3. Empirical testing results of brand crisis impact on consumer purchase intention.

Type	Variable	Regression Coefficient	Standard Error
Core Explanatory Variable	Brand Crisis	-0.3281***	0.0576
Control Variables	Gender	0.1096*	0.0617
	Age	0.0112	0.0429
	City	-0.0757***	0.0212
	Education Level	-0.1199***	0.0398
	Household Disposable Income	-0.0540**	0.0250
	Occupation	-0.0138	0.0332
	Driving Experience	-0.0030	0.0312
	Constant Term	0.6886***	0.2205
Pseudo R ²	0.1140		

Note: “***”, “**” and “*” indicate significance levels of 1%, 5%, and 10% respectively.

The empirical results indicate that the regression coefficient between brand crisis and consumer purchase intention is negative, suggesting a negative correlation between brand crisis and consumer purchase intention, significant at the 1% level. This supports research hypotheses H1 and H1a, indicating that a brand crisis leads to a reduction in consumer purchase intention for the brand, with more severe crises resulting in even lower purchase intentions. Additionally, the regression results show a significant positive effect of gender on purchase intentions, suggesting that males

have a higher purchase intention for new energy vehicles than females. The variable of city also shows significant differences in purchase intentions, with consumers in Beijing and Shanghai having higher intentions compared to those in Zhengzhou. Education level has a significant negative impact at the 1% level, indicating that higher education levels correspond to lower purchase intentions for new energy vehicles. Household disposable income has a significant negative impact at the 5% level, possibly because new energy vehicles come in various types, with smaller, lower-cost models and lower daily charging costs, thus making them more accessible to households with lower disposable incomes.

4.3.2. Testing the mediating effect of negative emotions

Following the mediation effect model proposed by Wen et al. (2004), advanced statistical software was used to empirically test the mediating role of negative emotions in the impact of brand crises on consumer purchase intentions for new energy vehicles. The regression analysis results are displayed in **Table 4**:

Table 4. Empirical testing results of the mediating effect of negative emotions.

Type	Variable	Model 1. Consumer Purchase Intention	Model 2. Negative Emotions	Model 3. Consumer Purchase Intention
Mediating Variable	Negative Emotions			-0.3902*** (0.0462)
Core Explanatory Variable	Brand Crisis	-0.3281*** (0.0576)	0.5640*** (0.0492)	-0.1080* (0.0603)
Control Variables	Gender	0.1096* (0.0617)	0.0321 (0.0527)	0.1221** (0.0582)
	Age	0.0112 (0.0429)	0.0201 (0.0366)	0.0191 (0.0404)
	City	-0.0757*** (0.0212)	0.0210 (0.0182)	-0.0675*** (0.0201)
	Education Level	-0.1199*** (0.0398)	0.0078 (0.0340)	-0.1169*** (0.0375)
	Household Disposable Income	-0.0540** (0.0250)	0.0618*** (0.0214)	-0.0299 (0.0238)
	Occupation	-0.0138 (0.0332)	0.0275 (0.0284)	-0.0030 (0.0313)
	Driving Experience	-0.0030 (0.0312)	-0.0376 (0.0267)	-0.0177 (0.0295)
	Constant Term	0.6886*** (0.2205)	-0.3052 (0.1885)	0.5695*** (0.2085)
Pseudo R ²		0.1140	0.1989	0.2112

From **Table 4**, both models 1 and 2 show significant coefficients for the independent variable, brand crisis, indicating that the onset of a brand crisis significantly impacts consumer negative emotions and their purchase intentions for new energy vehicles, thus validating hypothesis H2a. As the severity of the brand crisis increases, so does the intensity of consumer negative emotions, leading to lower purchase intentions. Model 3 results demonstrate that negative emotions significantly negatively impact consumer purchase intentions at a 1% significance level, supporting

hypothesis H2b. The stronger the negative emotions towards a brand, the less likely consumers are to purchase from that brand. Comparison of Models 1 and 3 in **Table 4** indicates that introducing negative emotions as a mediating variable decreases the significance of the brand crisis from 1% to 10%, suggesting that negative emotions partially mediate the impact of brand crises on consumer purchase intentions. Bootstrap tests confirm the significant mediating effect of negative emotions.

4.3.3. Testing the mediating effect of perceived risk

Following the mediation effect model by Wen et al. (2004), advanced statistical software was used to test the mediating effect of perceived risk in the impact of brand crises on consumer purchase intentions. The regression testing results are shown in **Table 5**:

Table 5. Empirical testing results of the mediating effect of perceived risk.

Type	Variable	Model 1. Consumer Purchase Intention	Model 2. Perceived Risk	Model 3. Consumer Purchase Intention
Mediating Variable	Perceived Risk			-0.0328*** (0.0118)
Core Explanatory Variable	Brand Crisis	-0.3281*** (0.0576)	2.6645*** (0.2033)	-0.2406*** (0.0653)
Control Variables	Gender	0.1096* (0.0617)	-0.1713 (0.2177)	0.1039* (0.0614)
	Age	0.0112 (0.0429)	0.0651 (0.1512)	0.0133 (0.0426)
	City	-0.0757*** (0.0212)	0.1385* (0.0749)	-0.0711*** (0.0212)
	Education Level	-0.1199*** (0.0398)	0.3258** (0.1404)	-0.1093*** (0.0397)
	Household Disposable Income	-0.0540** (0.0250)	0.1769** (0.0884)	-0.0482* (0.0250)
	Occupation	-0.0138 (0.0332)	0.0349 (0.1171)	-0.0126 (0.0330)
	Driving Experience	-0.0030 (0.0312)	-0.3308*** (0.1102)	-0.0139 (0.0313)
	Constant Term	0.6886*** (0.2205)	9.7807*** (0.7780)	1.0095*** (0.2476)
Pseudo R ²		0.1140	0.2609	0.1243

Model 2 analysis reveals that brand crises have a significantly positive effect on consumer perceived risk, indicating that the outbreak of a brand crisis leads consumers to anticipate potential financial, psychological, or even life-threatening losses from purchasing the brand's products. The more severe the brand crisis, the greater and more severe the potential losses, thus deepening the perceived risks. Thus, hypothesis H3a is supported. Model 3 results show that perceived risk has a negative impact on consumer purchase intentions, significant at a 1% level, confirming hypothesis H3b. The more significant the perceived risks, the more likely consumers are, based on their risk-averse nature and rational economic behavior, to reject purchasing the brand's new energy vehicles. By comparing the empirical regression results of Models 1 and

3 in **Table 5**, the inclusion of perceived risk as a mediating variable reduces the absolute value of the brand crisis coefficient from 0.3281 to 0.2406, indicating that perceived risk partially mediates the impact of brand crises on consumer purchase intentions. Bootstrap tests verify the significant mediating effect of perceived risk, thus validating hypothesis H3.

5. Discussion and conclusion

5.1. Discussion

This study empirically examines how brand crises influence consumer purchase intentions for new energy vehicles (NEVs) through negative emotions and perceived risks. Based on the research findings, the following points are discussed:

5.1.1. Improving consumer negative emotions

Brands should actively respond to and reasonably intervene in crisis events to mitigate negative emotions, particularly anger, thereby enhancing purchase intentions. On one hand, providing positive explanations for brand crises, alleviating bad moods such as anger, actively accepting responsibility, and using press conferences, statements, and open letters to sincerely apologize to consumers can weaken their negative emotions. On the other hand, brands should implement practical measures such as product recalls and providing material compensation to earn consumer forgiveness and rebuild trust and loyalty towards the brand.

5.1.2. Reducing consumer perceived risk

Before a crisis, governments should actively support the research and promotion of NEVs. Establishing special funds for NEV research or special loan projects with favorable rates can reduce the financial pressure on enterprises. Using media and the internet to promote and enhance consumer trust in NEVs is also crucial. After a brand crisis, brands should strengthen communication with consumers, convey a responsible corporate image, and demonstrate their ability to manage the crisis, thereby reducing consumer perceived risk. Governments could issue statements showing their concern for the crisis, indicating their stance, and helping consumers maintain an optimistic outlook on the resolution of the crisis.

5.1.3. Establishing a comprehensive crisis response mechanism

Companies should set up a crisis management department or hire an external third-party agency specifically responsible for handling crises, ensuring that the company can respond promptly when a brand crisis occurs. Additionally, companies should tailor their crisis response strategies (including communication and actual after-sales compensation strategies) to different types of brand crises. Selecting an appropriate crisis response strategy can reduce the degree of negative consumer reactions.

5.1.4. Enhancing consumer education and awareness

Educating consumers about the safety features, benefits, and advancements in NEV technology can build consumer confidence and trust. Brands can organize workshops, webinars, and information sessions to inform consumers about the proactive measures taken to ensure vehicle safety and reliability, thus mitigating the

impact of any potential brand crises.

5.1.5. Leveraging social media and digital platforms

Utilizing social media and digital platforms to communicate transparently with consumers during a crisis can help manage negative emotions and perceived risks. Real-time updates, interactive Q&A sessions, and transparent communication can reassure consumers and demonstrate the brand's commitment to resolving the crisis.

5.2. Conclusion

Based on online survey data from consumers in five of the top ten cities with the highest ownership of new energy vehicles, including Beijing and Zhengzhou, this study employs basic regression and mediation effect models to empirically examine whether brand crises influence consumer purchase intentions for new energy vehicles through negative emotions and perceived risks. The findings indicate that in the NEV industry, brand crises significantly negatively affect consumer purchase intentions, with deeper crisis severity leading to greater reductions in purchase willingness. Through theoretical analysis and empirical testing of the mediating effects in the process of brand crises impacting consumer purchase intentions, it was found that consumer emotions and cognitions play partial mediating roles. Consumer emotions are mainly manifested as negative emotions such as disappointment and anger, while cognition is primarily about the risks perceived in the context of a brand crisis. After a NEV brand crisis, consumers develop negative emotions towards the brand, perceive purchasing the brand's vehicles as potentially inconvenient or even harmful to their personal safety, property, and daily commute, naturally leading to reduced purchases and lowered purchase intentions. This study contributes to both academic research and practical strategies for managing brand crises in the NEV industry. By understanding the mechanisms through which brand crises affect consumer behavior, companies can develop more effective crisis management and communication strategies to mitigate the negative impacts and maintain consumer trust and loyalty. This, in turn, supports the sustainable development and market growth of the NEV industry, aligning with broader environmental and policy goals.

Author contributions: Conceptualization, XM and KP; methodology, XM; software, XM; validation, XM, KP and WC; formal analysis, XM; investigation, XM; resources, XM; data curation, XM; writing—original draft preparation, XM and KP; writing—review and editing, XM and KP; visualization, XM; supervision, KP and WC; project administration, KP; funding acquisition, XM. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

- Chen, K., Gu, R., & Hu, J. (2019). Research on new energy vehicle purchase intentions based on the perceived benefit-perceived risk framework. *Journal of Nanjing University of Technology (Social Science Edition)*, 18(2), 61-70,112.
- Cui, P., Yang, Y., & Li, W. (2015). Research on the effect of CSR strategies in repairing brand trust after product harm crises—The role of moderating and mediating variables. *Journal of Central University of Finance and Economics*, (2), 69-74.
- Duan, G., & Yu, W. (2012). Research on the impact of negligent and deliberate product harm crises on brand portfolio purchase

- intentions—The mediating role of consumer negative emotions. *Modern Management*, (2), 29-31.
- Dunn, L., & Dahl, D. W. (2012). Self-Threat and Product Failure: How Internal Attributions of Blame Affect Consumer Complaining Behavior. *Journal of Marketing Research*, 49(5), 670-681. <https://doi.org/10.1509/jmr.11.0169>
- Fang, Z., Jiang, M., Yang, Y., et al. (2010). Research on the impact of product harm crisis response strategies on brand equity—The moderating role of corporate reputation and crisis type. *Management World*, (12), 105-118.
- Hu, L., Tang, Y., & Mao, Y. (2015). Factors affecting the usage of small electric vehicles based on the technology acceptance model. *Research on Science and Technology Management*, 35(5), 122-125,130.
- Li, Q., Li, X., & Wei, X. (2020). Consumer community group buying research integrating SOR and commitment-trust theory. *Journal of Xi'an Jiaotong University (Social Science Edition)*, (2), 25-35.
- Liu, Y., Shankar, V., & Yun, W. (2020). Crisis management strategies and the long-term effects of product recalls on firm value. *Research on Economics and Management*, (3).
- Qiao, J., & Song, Z. (2020). Research on the impact of brand crises on customer purchase intentions—An empirical analysis based on perceived risk and brand trust. *China Advertising*, (1), 73-75.
- She, Q. (2012). Psychological mechanisms of consumer brand boycotts. Huazhong University of Science and Technology.
- She, S., Wang, Z., & Huang, H., et al. (2013). Empirical research on the communication strategies of automotive product harm crises from an emotional perspective. Presented at the 8th (2013) Annual Conference of Chinese Academy of Management—Management and Decision Science Session.
- Swanson, S. R., & Hsu, M. K. (2011). The effect of recovery locus attributions and service failure severity on word-of-mouth and repurchase behaviors in the hospitality industry. *Journal of Hospitality & Tourism Research*, 35(4), 511-529.
- Wang, Y., & Li, Y. (2013). Empirical study on consumer purchase intentions for new energy vehicles based on perceived risk and involvement. *Statistics and Management*, 32(5), 863-872.
- Wen, Y. (2018). Research on the impact of consumer perceived risk on purchase intentions in new energy vehicle purchases. Guangxi University.
- Wen, Z., Zhang, L., Hou, J., & Liu, H. (2004). The procedure and application of the mediation effect test. *Psychological Science*, (5), 614-620.
- Ye, T. (2019). Research on the impact of automotive product harm crises on consumer purchase intentions. University of Science and Technology of China.
- Yu, W., Zhang, Q., & Duan, G. (2012). Research on the impact of product harm crisis severity on consumer negative emotions and resistance intentions. *Management Research*, 7(3), 52-67.
- Zhang, B., Zhang, Q., & Zhao, C. (2021). The impact of live streaming features in e-commerce on consumer purchase intentions—The mediating role of consumer perception. *China Circulation Economy*, 35(6), 52-61.
- Zhao, J. (2023). Research on the impact of functional brand crisis response strategies on consumer purchase intentions. Lanzhou University of Finance and Economics.
- Zhou, G., Zhou, N., Yu, M., et al. (2020). The impact of brand crisis level on corporate performance—A panel analysis based on crisis reports of China's top 100 brands. *Research on Economics and Management*, 41(3), 117-132.