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Xinyuan Xue, Yuanbo Zhang, Qingfeng Zhang

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When negative news fails to deter: the emotional shielding effect of brand attachment on perceived risk

Xinyuan Xue, Yuanbo Zhang and
Qingfeng Zhang*

Kangwon National University,
Chuncheon Campus, 1 Kangwondaehakgil,
Chuncheon-si, Gangwon State, 24341, South Korea
Email: 202415541@kangwon.ac.kr
Email: yuanbozhang@kangwon.ac.kr
Email: 3721@kangwon.ac.kr

*Corresponding author

Abstract: In the context of the widespread use of social media and market volatility, frequent adverse brand events erode consumer trust and amplify perceived risk. However, some consumers still maintain their purchase intentions, a phenomenon that traditional research, which fails to integrate the mechanisms of emotional factors, struggles to explain. This study explores the intrinsic relationships among brand trust, perceived risk, purchase intention, and brand attachment, revealing that brand attachment moderates the mediating effect of perceived risk. An online questionnaire was administered to Toyota China consumers, yielding 189 valid responses. The moderated mediation model was verified using the SPSS PROCESS tool. The results show that brand trust positively influences purchase intention and negatively influences perceived risk. The results further show that brand attachment has a two-stage moderating effect on the mediating path of perceived risk. This study enriches brand relationship theory and provides strategic implications for brand management.

Keywords: brand trust; consumer purchase intention; perceived risk; brand attachment; moderated mediation.

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Biographical notes: Xinyuan Xue is currently pursuing her integrated Master's-PhD program at Kangwon National University, Chuncheon, South Korea. Her research interests focus on brand relationship management, consumer behaviour in emerging markets, cultural identity in branding, and cultural and arts management.

Yuanbo Zhang is currently pursuing his integrated Master's-PhD program at Kangwon National University, Chuncheon, South Korea. His interdisciplinary research interests include digital music dissemination and music and brand marketing. He has practical experience in automotive brand communities in China, where he has participated in and organised various brand community exchange activities.

Qingfeng Zhang is a Professor at Kangwon National University, Chuncheon, South Korea. He obtained his PhD from Kyungpook National University, Daegu, South Korea. His primary research interests lie in cultural and arts management, content-based entrepreneurship, and intellectual property strategy, with particular attention to the management and strategic development of cultural and creative industries.

1 Introduction

Brands play a core asset role in modern business competition, and their value directly determines a company's market competitiveness, with brand trust and emotional connection emerging as the most valuable intangible components of brand equity (Hoang et al., 2025; Nikkiah-Farkhani and Zarenejad, 2025). With the rapid development of information technology and the widespread use of social media, the interaction patterns between consumers and brands have fundamentally changed, as digital platforms have amplified both brand communication effectiveness and the speed of negative information diffusion through word-of-mouth (El Moujabber, 2023; Benevento et al., 2025). On the one hand, brands can efficiently build trust and emotional connections with consumers through diverse channels. Among these, brand trust, as consumers' cognitive assessment and positive emotional expectation of a brand's ability to fulfil its promises, has become a key driver influencing consumer purchase decisions (Dam, 2020); on the other hand, the complexity and volatility of the global market have significantly increased, leading to frequent adverse events such as product quality crises, data breaches, and social responsibility controversies. These events not only directly erode the foundation of consumer brand trust but also amplify perceived purchase risk (Bigné et al., 2023). In this era of trust crisis, a pivotal practical contradiction has emerged: in scenarios of equivalent brand trust levels and perceived risks triggered by negative news, some consumers still maintain their purchase intentions, while others completely abandon the brand. This contradiction exposes a prominent theoretical tension in existing literature, i.e., between rational trust-based models and consumer behaviours characterised by emotional resilience. Overcoming the limitations of traditional trust-building paths and maintaining consumers' lasting loyalty and purchase intention has become a significant challenge for both academia and the business world (Boodai and Boodai, 2025).

In traditional consumer behaviour theory, the logical chain of how brand trust promotes consumer purchase intention by reducing perceived risk has been widely validated (Ventre and Kolbe, 2020). However, as the consumer experience economy deepens and relationship marketing evolves, the connection between consumers and brands has gradually shifted from 'rational evaluation' to 'emotional embedding'. This means that mainstream rational trust models cannot account for the practical phenomenon of consumer emotional resilience, and existing research has neither explicitly elaborated on this tension nor integrated emotional factors into the classic 'trust-risk-purchase intention' path. Specifically, this research gap fails to resolve the theoretical tension between rational and emotional mechanisms, nor does it explain why emotional bonds (e.g., brand attachment) can still help consumers resist the impact of negative news and perceived risks even when rational trust is impaired. Brand attachment refers to a deep, stable, and strong emotional bond. Essentially, it is a self-connection formed when

consumers integrate the brand into their self-cognitive system through emotional investment such as affection and dependence. It complements rational brand trust, which is built on reliability and professionalism. Although extant research has separately confirmed that brand attachment buffers brand failures (Torres et al., 2021) and that brand trust mediates purchase intentions via perceived risk (Ventre and Kolbe, 2020), its underlying mechanism as a boundary condition shaping the rational mediating chain of ‘trust-risk-purchase intention’ remains underexplored and unsystematically integrated in the literature (Kaur et al., 2025). Specifically, it remains unclear how brand attachment impacts the two key stages of this path: whether it strengthens the inhibitory effect of brand trust on perceived risks and whether it weakens the negative impact of perceived risks on purchase intentions. This precise theoretical gap is the key obstacle hindering our understanding of the aforementioned practical contradiction.

Therefore, this study focuses on the intrinsic relationship between brand trust, perceived risk, consumer purchase intention, and brand attachment. The research questions include:

- 1 examining the mediating effect of perceived risk in the relationship between brand trust and consumer purchase intention, clarifying the applicability of this classic path in the current crisis context
- 2 revealing the moderating effect of brand attachment on the above mediating path, precisely defining its direction and intensity of moderation in the two stages of ‘brand trust inhibiting perceived risk’ and ‘perceived risk affecting purchase intention’, filling the research gap in the mechanism of emotional factors in the rational decision-making path.

This study makes two key contributions: first, it explicitly elaborates on the tension between rational trust-based models and consumer behaviours with emotional resilience, and builds a bridge between practical phenomena and theoretical frameworks by integrating brand attachment into the classic ‘trust-risk-purchase intention’ framework. Second, it empirically tests the moderating mechanism of brand attachment, filling the research gap regarding how emotional factors moderate rational decision-making paths in crisis contexts. Methodologically, this study will construct a rigorous theoretical framework and empirical model to conduct precise quantitative analysis of the relationships between variables, aiming to enrich the interactive theories of brand trust and brand attachment. At the practical level, it provides actionable strategic guidance for brand managers, including not only reducing consumers’ perceived risks by consolidating the foundation of brand trust but also enhancing the resilience of purchase intentions in crisis contexts by cultivating brand attachment, thereby helping brands build sustainable competitive advantages in consumer relationships amid fierce market competition.

2 Theoretical background and hypothesis development

2.1 Brand trust and consumer purchase intention

The definition of brand trust is divided into two primary schools of thought: cognitive (risk assessment) and affective (relationship connection). The former argues that brand trust is the result of consumers’ brand perception (Dick and Basu, 1994), meaning that

consumers expect the brand to deliver positive results and are therefore willing to trust the brand when facing risks (Dick and Basu, 1994; Lau and Lee, 1999). The latter argues that trust is a component of the consumer-brand relationship (Blackston, 1992), involving emotional attachment and assumptions of goodwill, emphasising the emotional bond between the brand and the consumer (Chai et al., 2015). Currently, the academic community has reached a consensus that these two schools are not mutually exclusive, and brand trust simultaneously includes cognitive and emotional components, which is a comprehensive explanation of consumer behaviour (Kaur et al., 2025).

Although the dual-component nature of brand trust has been widely recognised, there are differences in the division of its internal dimensions. Scholars have proposed various dimensional classification models, such as the three-dimensional model (reliability, integrity, benevolence) and the dual-dimensional model (cognitive trust, affective trust). The controversy mainly lies in whether the dimensional division should focus on 'ability-oriented cognitive factors' or 'emotion-oriented relational factors', and which dimensional structure is more applicable to different research scenarios.

To accurately assess the impact of brand trust on consumer purchase intention, this study adopts the most widely accepted dual structure of cognitive trust and affective trust. This choice not only aligns with the existing consensus on the dual components of brand trust but also solves the controversy of dimensional applicability – by focusing on the two core dimensions of rational evaluation and emotional connection, it can effectively capture the complex connotation of brand trust and lay a foundation for subsequent hypothesis derivation. Among these, cognitive trust refers to consumers' belief that a brand can continuously provide high-quality products and services, reflecting the brand's ability to fulfill its commitments (Chaudhuri and Holbrook, 2001; Geyskens et al., 1998). Affective trust reflects the deep emotional bond and attachment between brands and consumers, which is formed when consumers perceive the brand's honesty, sincerity, and care, and is particularly important in high-risk or high-involvement purchase scenarios (Chai et al., 2015).

Consumer purchase intention is a core psychological state in the consumer's purchasing decision process, reflecting their inclination to buy a specific product or service (Ajzen, 1991), and is influenced by a complex interplay of cognitive, emotional, and social factors including word-of-mouth and brand communication (El Moujabber, 2023; Poonia and Pandey, 2023). In studies of factors influencing consumer behaviour, brand trust is widely considered an essential antecedent variable affecting consumer purchase intention, and numerous empirical studies have confirmed a significant positive correlation between the two (Chaudhuri and Holbrook, 2001; Jadir et al., 2022; Gkouna et al., 2023; Phamthi et al., 2024). Specifically, a high level of brand trust can effectively reduce consumers' perceived risk, especially when facing information asymmetry, purchasing high-involvement products, or engaging in e-commerce transactions (Qalati et al., 2021). When consumers trust a brand, they expect the brand to consistently deliver on its promises and provide high-quality products or services, thereby reducing concerns about purchase uncertainty and negative consequences (Chaudhuri and Holbrook, 2001). This sense of trust makes consumers more likely to choose the brand, directly translating into higher purchase intention.

Despite this well-documented direct relationship, recent research has highlighted that the trust-purchase intention link is not universal. In crisis contexts – such as product recalls, brand scandals, or economic downturns – consumers exhibit increased resilience to trust deficits, suggesting that additional psychological mechanisms may be at play

(Gkouna et al., 2023; Sun and Moon, 2024). Emerging studies on consumer resilience have further revealed that post-crisis consumer decision-making is increasingly characterised by a shift from purely rational risk assessment to a more complex interplay of cognitive and emotional factors (Margaret et al., 2020; Han et al., 2022). This shift means that even when trust is compromised, consumers may still maintain purchase intention if strong emotional bonds with the brand exist, challenging the traditional linear model of trust leading directly to purchase. This study extends this emerging literature by examining how perceived risk mediates the trust-purchase intention relationship and how brand attachment further moderates this conditional process.

In summary, brand trust is a key driver of consumer purchase intention. It significantly and positively influences consumers' purchasing behaviour by reducing perceived risk and building strong brand relationships. Therefore, this paper proposes the following hypothesis:

H1 Brand trust has a significant positive impact on purchase intention.

2.2 Perceived risk and consumer purchase intention

Perceived risk refers to the uncertainty and potential negative consequences that consumers perceive during the purchase decision process. Its core dimensions include financial, functional, social, and psychological risks (Bauer, 1960; Peter and Tarpey, 1975). This four-dimensional framework has become the dominant paradigm in consumer behaviour research, with consistent empirical support across diverse product categories and cultural contexts. According to the definition of brand trust, many scholars agree that risk is a key condition of trust. When faced with risk, consumers determine their level of trust in a brand through risk perception and risk prediction, which in turn influences their brand choice behaviour (Lau and Lee, 1999). Numerous existing studies have shown a significant negative relationship between brand trust and perceived risk (Al-Adwan et al., 2022; Sun and Moon, 2024). High brand trust can reduce consumers' perceived risk because trust itself provides assurance and confidence, reducing consumers' concerns about future uncertainty and potential losses (Delgado-Ballester et al., 2003). For example, in online shopping contexts, trust influences behaviour by mitigating perceived risk (Wang et al., 2022). Therefore, when consumers develop cognitive trust in a brand (e.g., reliability), they believe that the brand is capable of providing high-quality products, thus reducing functional risk; when they develop affective trust (e.g., goodwill), they think that the brand will consider their interests, thus reducing psychological and social risks. Accordingly, this paper proposes the following hypothesis:

H2 Brand trust negatively influences perceived risk.

Perceived risk, as a core construct in consumer behaviour, has been widely proven to be an essential factor influencing purchase decisions. Numerous existing studies have shown that perceived risk negatively affects consumers' purchase intentions. When consumers perceive higher functional, financial, or social risk, they tend to avoid purchasing or switch to alternatives to reduce potential losses (Mitchell, 1999). For example, in the purchase of new or high-priced products, due to information asymmetry and high uncertainty, perceived risk is amplified, leading to consumer hesitation and ultimately inhibiting purchase intention (Majeed et al., 2024). Conversely, only when perceived risk

is reduced to an acceptable level are consumers more likely to translate their purchase inclination into actual behaviour. Based on this, this paper makes the following hypothesis:

H3 Perceived risk is negatively related to consumer purchase intention.

Although existing studies have confirmed the relationships between brand trust, perceived risk, and purchase intention, there is still controversy about whether perceived risk plays a stable mediating role between brand trust and purchase intention in different scenarios. Some studies have found that the mediating effect of perceived risk is significant in traditional offline contexts, but its effectiveness in emerging consumption scenarios (such as social commerce) is still to be verified. This study focuses on clarifying the mediating role of perceived risk in the relationship between brand trust and purchase intention, supplementing the scenario adaptability of the mediating mechanism. Specifically, cognitive trust (e.g., reliability) reduces functional risk by enhancing consumers' belief in the brand's product quality, while emotional trust (e.g., benevolence) reduces psychological and social risks by enhancing consumers' belief in the brand's goodwill. Lower perceived risk further promotes purchase intention, forming a complete 'brand trust → perceived risk → purchase intention' chain. Based on this, this paper makes the following hypothesis:

H4 Perceived risk negatively mediates the relationship between brand trust and purchase intention.

2.3 *Brand attachment*

The concept of brand attachment was first proposed by Fournier (1998), who pioneered the application of relationship theory to consumer research, noting that consumers and brands can form various types of relationships and laying the theoretical foundation for brand attachment. Currently, there is a core consensus on the definition of brand attachment in academia, but there are still differences in perspective. Regarding the core consensus, scholars generally agree that brand-self connection is a core component (Thomson et al., 2005; Park et al., 2010), meaning that consumers incorporate the brand into their self-perception, making it an extension or expression of their identity. In addition, all core definitions emphasise the fundamental nature of emotional investment, arguing that brand attachment is not merely a cognitive association but a connection that includes deep emotions such as liking and dependence (Batra et al., 2012; Mugge et al., 2010). Regarding differences in perspective, scholars' differences in perspective on brand attachment focus on emotional intensity (passion) (Thomson et al., 2005), the degree of self-activation (salience) (Park et al., 2010), and identity connection (self-consistency) (Batra et al., 2012), all revolving around 'self-connection + emotional investment'. Among these, it is critical to distinguish brand attachment from affective brand trust, as these two constructs are conceptually distinct despite both involving emotional components. Affective brand trust is a belief about the brand's goodwill and benevolence – consumers trust that the brand will act in their best interests (Chai et al., 2015). In contrast, brand attachment is a deeper, identity-based emotional bond where the brand becomes part of the consumer's self-concept (Park et al., 2010). While trust can develop relatively quickly through consistent brand performance, attachment requires prolonged emotional investment and self-identification. Empirically, studies have shown that trust is

often an antecedent to attachment rather than a component of it (Batra et al., 2012). This conceptual distinction is essential for understanding their differential effects on consumer decision making. In summary, brand attachment is a deep, intense, and stable emotional connection that consumers form with a brand. As an essential component of brand equity, its profound emotional involvement provides significant explanatory power for consumer behaviour (Nikkhah-Farkhani and Zarenejad, 2025; Aydin, 2025).

Existing studies have shown that brand attachment can buffer the impact of brand-related factors on consumer behaviour (Batra et al., 2012; Boodai and Boodai, 2025), but there is controversy about whether brand attachment can regulate the mediating process of ‘brand trust → perceived risk → purchase intention’. Some studies believe that brand attachment only directly affects purchase intention and does not interfere with the mediating effect of perceived risk; others hold that brand attachment can adjust the strength of the mediating effect, but there is no consistent conclusion on the direction of regulation (e.g., whether high attachment strengthens or weakens the mediating effect).

This study clarifies the regulatory role of brand attachment in the mediating process, which is the key innovation point of this paper. Specifically, this study holds that the regulatory effect of brand attachment is reflected in the difference of the mediating effect of perceived risk under different attachment levels: when consumers have high brand attachment, their purchase decisions are dominated by emotional factors, and the ‘brand trust → perceived risk → purchase intention’ chain is weakened (even negative); when brand attachment is low, consumers’ purchase decisions are dominated by rational factors, and the balance between brand trust and perceived risk is crucial. Trust must effectively reduce perceived risk to stimulate purchase intention, thereby making the mediating effect significant (Phamthi et al., 2024). Recent research on emotional decision making in crisis contexts has provided additional support for this perspective, demonstrating that highly attached consumers engage in ‘emotional heuristic processing’ where identity-based connections override rational risk calculations (Yu et al., 2021; Aydin, 2025). This two-stage buffering effect has been observed in recent crisis context studies (Gkouna et al., 2023), but has not been systematically integrated into a single moderated mediation framework. Based on this, this paper proposes the following hypothesis:

H5 Brand attachment moderates the conditional process by which brand trust influences purchase intention. Specifically, it strengthens the direct effect of brand trust on purchase intention while weakening the indirect effect through perceived risk (second-stage moderation).

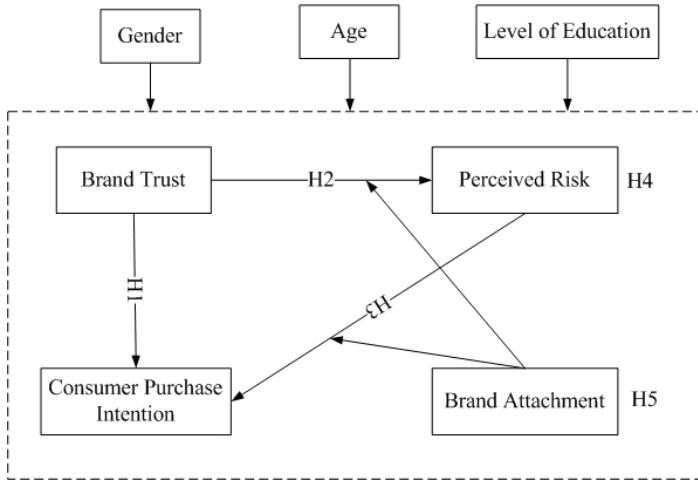
Consequently, the positive indirect effect of brand trust on purchase intention via perceived risk is significantly diminished for consumers with high brand attachment compared to those with low brand attachment.

2.4 Research model

Based on the above analysis, this paper constructs a corresponding research model (Figure 1). This model comprises four key variables: brand trust, consumer purchase intention, perceived risk, and brand attachment. Brand trust is set as the independent variable; purchase intention is set as the dependent variable; perceived risk and brand

attachment are set as the mediating variable and moderating variable, respectively. In addition, gender, age, and education level are used as control variables. Because previous studies have shown that these factors influence consumer decision making, perceived risk, and brand loyalty through social role preferences, emotional perception tendencies, accumulated consumption experience, risk tolerance, cognitive abilities, and information screening logic, controlling for these three factors aims to eliminate their interference with the relationships between the main variables. Through the synergistic interaction of various variables, a multidimensional, systematic analytical framework is constructed.

Figure 1 Research model



3 Research methodology

3.1 Sample and data collection

This study collected data via questionnaires, distributed online via Questionnaire Star from 5–18 October 2025, and supplemented recruitment from Toyota’s official owner communities and automotive interest circles on WeChat, Xiaohongshu and Weibo. The sampling frame of this study was defined as Chinese consumers who have been exposed to Toyota brand automobiles, and rigorous screening criteria were formulated:

- 1 ≥18 years old with independent automobile purchase decision-making ability
- 2 having Toyota consumption experience or explicit purchase intention
- 3 able to independently complete the questionnaire and understand the Toyota brand and products.

This study divided respondents into current Toyota owners and potential buyers. This dual-sample setting aligns with the research focus on the core variable ‘purchase intention’ and ensures the generalisability of conclusions to all Toyota China’s target consumers.

Prior to formal data collection, a pre-test was conducted via Questionnaire Star from 25–30 September 2025, with 30 respondents meeting formal sampling criteria. The pre-test examined the questionnaire's readability, item clarity, and semantic consistency, with Cronbach's α coefficient of each latent variable >0.70 (good internal consistency). Based on pre-test feedback, the research team revised translation-induced semantic deviations and ambiguous items, adjusted the item order, and deleted three redundant questions (one for brand trust, two for brand attachment) to optimise the questionnaire structure. Attention check items were also retained in the formal questionnaire to further screen out invalid responses.

Table 1 Variable manipulation and measurement definitions

<i>Construct</i>	<i>Item</i>	<i>Survey question</i>	<i>Scale source</i>
Brand trust	BT1	I believe Toyota possesses all the knowledge necessary to manufacture excellent products.	Delgado-Ballester et al. (2003) and Erdem and Swait (2004)
	BT2	I believe Toyota is highly capable of providing high-quality products.	
	BT3	I believe Toyota is reliable and trustworthy.	
	BT4	I believe Toyota will consistently deliver high-quality products.	
	BT5	I believe Toyota will consider my best interests, listen to my concerns, and continuously improve as a result.	
	BT6	I believe Toyota will treat all consumers fairly and impartially.	
	BT7	I believe Toyota's advertisements are truthful and honest, without any false claims.	
Consumer purchase intention	CPI1	If I plan to buy a car within the next five years, Toyota's products and services will be my first choice.	Spears and Singh (2004)
	CPI2	If I plan to buy a car, I would likely consider purchasing Toyota products and services.	
	CPI3	I am willing to try/purchase new products or services offered by Toyota.	
	CPI4	If my friends or family are planning to buy a car, I would recommend Toyota's products and services.	
Perceived risk	PR1	I believe that Toyota cars cannot protect my personal safety in the event of an accident.	Jacoby and Kaplan (1972), Dowling and Staelin (1994) and Featherman and Pavlou (2003)
	PR2	I believe that a safety defect in Toyota cars could lead to serious accidents and endanger my personal safety.	
	PR3	I believe that buying a Toyota car would make my friends or family think I made a wrong and foolish choice.	
	PR4	I believe that due to a series of negative news stories about Toyota, choosing to buy a Toyota car would make my friends or family think I am irresponsible.	

Table 1 Variable manipulation and measurement definitions (continued)

<i>Construct</i>	<i>Item</i>	<i>Survey question</i>	<i>Scale source</i>
Brand attachment	BA1	I would be depressed if I could no longer use/experience Toyota products and services.	Thomson et al. (2005)
	BA2	I love Toyota very much.	
	BA3	I think about Toyota all the time; it's always on my mind.	
	BA4	I feel like Toyota is deeply integrated into my life.	
	BA5	I feel an inexplicable connection to Toyota; it's personal.	
	BA6	I feel very dependent on Toyota.	

This study strictly followed academic ethics, with an informed consent statement at the questionnaire outset specifying the research purpose, academic use only of data, strict confidentiality of personal information, and respondents' right to voluntary participation and unconditional withdrawal. Respondents could only complete the questionnaire after electronic informed consent confirmation. A total of 224 questionnaires were collected. To ensure the reliability and representativeness of the sample data, a rigorous multi-dimensional screening process was implemented to mitigate response bias: excluding logically inconsistent responses (e.g., conflicting reverse-coded answers), questionnaires completed in <90 seconds, responses with random or perfunctory answering behaviour, and those failing the attention check; duplicate questionnaires were deleted via IP and device information. Finally, 189 valid questionnaires were confirmed, with an effective response rate of 84.38%. To verify statistical robustness, a post-hoc power analysis was performed via G*Power 3.1.9.7. Given $\alpha = 0.05$ and a medium effect size ($f^2 = 0.15$), the power ($1 - \beta$) reached 0.98 for the 189 valid samples, comfortably surpassing the 0.80 benchmark required for complex moderated-mediation analysis. These valid questionnaires formed a solid data foundation for subsequent in-depth data analysis and model validation, effectively ensuring the accuracy and reliability of the research conclusions.

3.2 Measures

This study selected Toyota brand products as the empirical context because the brand deeply integrates global technological benchmarks with local market adaptability, and its unique features align well with the study's core research questions. Toyota's robust brand trust (e.g., the TPS production system and the zero spontaneous combustion record of hybrid technology) coexists with dynamic crisis risks amid its transformation (e.g., global recalls and the bZ4X range controversy), making it a typical representative of the crisis context specified in the first research question and enabling the rigorous verification of the applicability of the classic 'brand trust-perceived risk-purchase intention' mediating path in such contexts. For the second research question, Toyota's market presence in China (with cumulative sales exceeding 15 million units and 68.3% of its users being young and middle-aged) provides a sample with sufficient variability in brand attachment, which allows for the precise identification of the direction and intensity of the two-stage moderating effect of brand attachment and the effective revelation of the mechanism of emotional factors in the rational 'trust-risk-intention' decision-making

path. In addition, as a mature global brand undergoing localised transformation in China, Toyota endows the research conclusions with generalisability beyond a single brand, thereby enhancing the theoretical external validity of this study.

This study designed a 21-question questionnaire. The scales were based on mature domestic and international scales, adaptively adjusted to the study's research questions. To ensure cross-cultural validity, we adopted Brislin's (1970) rigorous back-translation method with minor contextual refinements: two bilingual marketing researchers translated English scales into Chinese; two native English consumer behaviour scholars back-translated without referring to the original; three marketing professors reviewed and resolved semantic deviations, revising culture-loaded expressions to fit Chinese consumers' cognition; the final Chinese scales were confirmed after expert review and pre-test optimisation ($n = 30$) to ensure readability and consistent understanding, see Table 1 for details. Specifically, brand trust (seven context-adapted items) referenced Delgado-Ballester et al. (2003) and Erdem and Swait (2004), integrating multiple perspectives; consumer purchase intention (four context-adapted items) was based on Spears and Singh (2004); perceived risk (four context-adapted items) drew on Jacoby and Kaplan (1972), Dowling and Staelin (1994) and Featherman and Pavlou (2003); brand attachment (six context-adapted items) used the widely adopted Thomson et al. (2005) scale. Demographic items used categorical scales, while all other items used a five-point Likert scale to ensure comprehensive and accurate data collection and provide strong support for subsequent research.

Regarding common method bias (CMB), we employed both procedural remedies (e.g., ensuring anonymity and optimising item wording) and statistical verification. Harman's single-factor test showed that the first factor accounted for only 38.08% of the total variance, falling below the 40% cutoff. These results suggest that CMB does not pose a substantial threat to the validity of our findings.

3.3 Data analysis technique

This study used SPSS 27.0 and AMOS 29 as the analysis tools and analysed the data through a multi-method approach. First, descriptive statistics were performed on demographic characteristics using frequency analysis to clarify the sample's elemental composition. Second, to ensure the reliability and validity of the scales, reliability testing and confirmatory factor analysis (CFA) were used to test the reliability and validity of the scales, laying a solid data foundation for theoretical hypothesis testing, model optimisation, and calibration. Finally, based on the chained mediation and conditional moderation framework of this study, Hayes PROCESS Model 15 was selected for empirical analysis. This model is specifically designed for moderated chained mediation, which fully conforms to the conceptual structure of this study and accommodates the chained relationship between independent, mediating, and dependent variables, as well as conditional moderation effects. Combined with regression and Bootstrap analysis, this study systematically examines inter-variable causal relationships, mediating pathways and moderating mechanisms, quantifies the magnitude and direction of each variable, and clarifies the inherent relationships among brand trust, perceived risk, brand attachment, and consumer purchase intention.

4 Analysis of results

4.1 Descriptive analysis

Regarding the characteristics and distribution of the valid sample (Table 2), this study collected 189 valid samples. The sample basically covered the main occupational categories in various industries. In addition, the distribution characteristics of the samples are as follows: the gender distribution is relatively balanced, with slightly more males (56.6%); the age structure is mainly composed of young and middle-aged people, with respondents aged 26–30 accounting for the highest proportion (28.6%), and the group aged 18–40 accounting for nearly 70% (68.3%), closely aligns with the proportion of core young and middle-aged users disclosed by Toyota China, and aligns with this study's research design focusing on Toyota's core consumer group in its transformation period; the education level is mainly undergraduate (41.3%), followed by junior college (19.6%) and high school/vocational school (16.9%), indicating a generally high educational level of the samples, equipping respondents with independent decision-making capacity for automobile consumption and the ability to accurately perceive research variables such as brand trust and perceived risk, thereby further ensuring the validity of the survey data.

Table 2 Descriptive statistics for the effective sample

	Category	Frequency	Percentage
Gender	Male	107	56.6%
	Female	82	43.4%
Age	18–25 years old	33	17.5%
	26–30 years old	54	28.6%
	31–40 years old	42	22.2%
	41–50 years old	37	19.6%
	51–60 years old	16	8.5%
	60 years old and above	7	3.7%
Level of education	Lower secondary education and below	13	6.9%
	Upper secondary education	32	16.9%
	Short-cycle tertiary education	37	19.6%
	Bachelor's or equivalent level	78	41.3%
	Master's or equivalent level and above	29	15.3%

Secondly, this study analysed and statistically summarised the descriptive characteristics of each construct.

Table 3 shows that, regarding the control variables, gender is significantly positively correlated with consumer purchase intention ($r = 0.164$, $p < 0.05$) and brand attachment ($r = 0.171$, $p < 0.05$); age is significantly negatively correlated with education level ($r = -0.239$, $p < 0.01$). Furthermore, age is significantly positively correlated with brand trust ($r = 0.200$, $p < 0.01$) and brand attachment ($r = 0.204$, $p < 0.01$); education level is only significantly negatively correlated with brand trust ($r = -0.147$, $p < 0.05$). Regarding the research variables, brand trust is significantly positively correlated with consumer purchase intention ($r = 0.542$, $p < 0.01$) and brand attachment ($r = 0.723$, $p < 0.01$), and

significantly negatively correlated with perceived risk ($r = -0.196, p < 0.01$); consumer purchase intention is significantly negatively correlated with perceived risk ($r = -0.205, p < 0.01$) and significantly positively correlated with brand attachment ($r = 0.588, p < 0.01$); perceived risk is significantly negatively correlated with brand attachment ($r = -0.148, p < 0.05$). This provides preliminary evidence for testing the hypotheses of this study.

Table 3 Correlation of variables

Variable	Mean	Standard deviation	1	2	3	4	5	6
1 Gender	1.434	0.497	1					
2 Age	3.841	1.355	-0.024	1				
3 Level of education	3.413	1.143	0.011	-0.239**	1			
4 Brand trust	3.175	1.014	0.139	0.200**	-0.147*	1		
5 Consumer purchase intention	3.490	0.780	0.164*	0.024	-0.036	0.542**	1	
6 Perceived risk	3.213	0.955	-0.098	-0.099	0.074	-0.196**	-0.205**	1
7 Brand attachment	3.093	1.026	0.171*	0.204**	-0.132	0.723**	0.588**	-0.148*

Note: * $p < 0.05$; ** $p < 0.01$.

4.2 Reliability and validity analysis

Cronbach’s α coefficient is a key statistic for assessing the internal consistency and reliability of a scale, reflecting the average inter-item correlation (Hair et al., 2019). Generally, an alpha value of ≥ 0.65 is considered acceptable, and ideally, $\alpha \geq 0.70$ (Taber, 2018). In this study, Cronbach’s α values for all variables are above 0.79 (see Table 4), indicating good internal consistency and reliability and suitability for this study.

Preliminary reliability analysis was conducted with SPSS 27.0, and confirmatory factor analysis (CFA) was performed using AMOS 29 to verify the correspondence between individual measurement items and latent factors. Regarding data suitability, the KMO values ranged from 0.784 to 0.895 (all ≥ 0.7), indicating excellent suitability for factor analysis (Kaiser and Rice, 1974). Reliability and validity indicators met academic standards: the composite reliability (CR) of all constructs was ≥ 0.862 , ensuring good internal consistency; the average variance extracted (AVE) was ≥ 0.564 , with the AVE values for purchase intention, perceived risk, and brand attachment all ≥ 0.6 , demonstrating excellent convergent validity. In terms of factor loadings, following the recommendations of Hair et al. (2019), the factor loadings of all observed variables were ≥ 0.7 . All items for purchase intention (CPI1 – CPI3) and most items for brand attachment (BA2 and BA3) exhibited factor loadings of 0.800 or higher. These results fully demonstrate that the latent factor structures are clear, and there is a strong to very strong association between the observed variables and their corresponding latent factors, indicating that the measurement model possesses reliable validity and internal consistency.

Table 4 Confirmatory factor analysis (CFA) and measurement reliability indicators

<i>Construct</i>	<i>Item code</i>	<i>Factor loading</i>	<i>Cronbach's α</i>	<i>KMO</i>	<i>CR</i>	<i>AVE</i>
Brand trust	BT1	0.720	0.854	0.865	0.900	0.564
	BT2	0.703				
	BT3	0.771				
	BT4	0.777				
	BT5	0.734				
	BT6	0.792				
	BT7	0.757				
Consumer purchase intention	CPI1	0.863	0.842	0.814	0.906	0.706
	CPI2	0.854				
	CPI3	0.836				
	CPI4	0.806				
Perceived risk	PR1	0.757	0.793	0.784	0.862	0.609
	PR2	0.785				
	PR3	0.787				
	PR4	0.792				
Brand attachment	BA1	0.791	0.889	0.895	0.913	0.635
	BA2	0.827				
	BA3	0.832				
	BA4	0.790				
	BA5	0.759				
	BA6	0.780				

Table 5 Discriminant validity results

<i>Construct</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
1 Brand trust	0.751			
2 Consumer purchase intention	0.542** (0.612)	0.840		
3 Perceived risk	-0.196** (0.541)	-0.205** (0.625)	0.780	
4 Brand attachment	0.743** (0.578)	0.588** (0.641)	-0.148** (0.593)	0.797

Notes: **p < 0.01. Values in bold are the square roots of the average variance extracted (AVE); values in parentheses represent the heterotrait-monotrait (HTMT) ratios.

Discriminant validity was further assessed to rule out potential construct overlap. This study used the Fornell and Larcker (1981) criterion to assess discriminant validity, as the square root of the average variance extracted (AVE) for each construct was greater than the correlation coefficients between corresponding latent variables. Furthermore, the HTMT criterion (Henseler et al., 2015) was adopted as a rigorous supplementary test. All HTMT values remained below the conservative threshold of 0.85, confirming that the latent variables exhibit sufficient discriminant validity. This indicates that the measured

constructs are distinct and do not suffer from excessive overlap, thereby providing a robust foundation for proceeding with further structural model analysis (as shown in Table 5).

4.3 Hypothesis testing

Since the measurement model met acceptable standards for factor loadings, reliability, and validity, the proposed research hypotheses were tested using the PROCESS plugin in SPSS 27.0. The significance level for all statistical tests was set at $\alpha = 0.05$, and the confidence intervals for mediating and moderated mediating effects were calculated through 5,000 bootstrap resamples.

4.3.1 Direct effect analysis

This study used a linear regression model to construct five progressive sub-models (M1–M5) to separate the independent effects of control variables and core variables, in order to reasonably test the direct relationship between brand trust, perceived risk, and consumer purchase intention. The specific results are summarised in Table 6.

Table 6 Direct effect analysis

Variable	CPI	PR	CPI	PR	CPI
	M1	M2	M3	M4	M5
<i>Control variable</i>					
(Constant)	2.561** (6.313)	3.577** (9.128)	0.466 (1.111)	4.291** (9.086)	3.169** (6.559)
Gender	0.295* (2.038)	-0.193 (-1.380)	0.118 (0.954)	-0.133 (-0.951)	0.262 (1.822)
Age	0.133* (2.442)	-0.062 (-1.184)	0.125* (2.713)	-0.060 (-1.150)	0.123* (2.263)
Level of education	-0.094 (-1.456)	0.045 (0.717)	-0.079 (-1.441)	0.040 (0.642)	-0.087 (-1.352)
<i>Predictor variable</i>					
BT			0.667** (8.645)	-0.227* (-2.622)	
PR					-0.170* (-2.258)
R ²	0.071	0.023	0.340	0.058	0.096
ΔR^2	0.071	0.023	0.268	0.035	0.096
F	4.742*	1.422	74.739**	6.875*	4.911**

Notes: * $p < 0.05$; ** $p < 0.01$. Values in parentheses are t-values.

The data analysis in Table 6 shows the following: first, models M1 and M2, which only include control variables, have weak explanatory power ($R^2 = 0.071$, $R^2 = 0.023$). Only age has a significant positive impact on purchase intention ($B = 0.133$, $p < 0.05$). This result is theoretically consistent with fundamental perspectives in consumer behaviour: demographic characteristics typically explain only a small portion of variance in

consumer decisions because they serve as proxies for deeper psychological variables rather than direct drivers. This indicates that demographic characteristics are not the core influencing factors of perceived risk. Controlling for these variables in subsequent analyses can effectively eliminate interference. Second, after controlling for demographic variables, M3 introduces brand trust, and the model's explanatory power significantly increases ($\Delta R^2 = 0.268$, $F = 74.739$, $p < 0.01$), indicating that brand trust is a key predictor of purchase intention.

Specifically, the main effect of brand trust on consumer purchase intention is significantly positive ($B = 0.667$, $p < 0.01$) supporting the directional hypothesis H1 that 'brand trust significantly positively affects purchase intention'. In addition, M4, introduced after controlling for variables, shows a significant improvement in explanatory power compared to the baseline model M2 ($\Delta R^2 = 0.035$, $F = 6.875$, $p < 0.05$). The results show that brand trust negatively predicts perceived risk ($B = -0.227$, $p < 0.05$), indicating that the higher the consumer's trust in the brand, the lower the perceived purchase risk, thus supporting H2. Finally, M5, introduced after controlling for variables, shows an improvement in explanatory power compared to the baseline model M1 ($R^2 = 0.096$, $F = 4.911$, $p < 0.01$). Specifically, perceived risk has a significant negative effect on consumer purchase intention ($B = -0.170$, $p < 0.05$), indicating that higher perceived risk reduces purchase intention, thus supporting H3.

In summary, the main effect test results show that the independent main effects of brand trust, perceived risk, and purchase intention are all significant and consistent with theoretical hypotheses, laying a solid empirical foundation for subsequent testing of the mediating effect of perceived risk and the moderating effect of brand attachment.

4.3.2 Mediation analysis

This study used the bootstrap method to test the mediating effect of perceived risk between brand trust and consumer purchase intention, and the results are shown in Table 7.

Table 7 Mediation analysis

Path	Path symbol	Effect	95%BootCI		SE	t	p
			Lower	Upper			
BT => PR => CPI	a*b	0.015	-0.016	0.043	0.014	1.052	0.293
BT => PR	a	-0.227	-0.398	-0.056	0.087	-2.622	0.009*
PR => CPI	b	-0.067	-0.196	0.062	0.066	-1.020	0.309
BT => CPI	c'	0.651	0.496	0.806	0.079	8.295	0.000**
BT => CPI	c	0.667	0.514	0.819	0.077	8.645	0.000**

Note: * $p < 0.05$; ** $p < 0.01$.

Following the mediation effect testing procedure proposed by Wen and Ye (2014), this study first examined the two direct effects in the mediation path (paths a and b): the main effect test above has confirmed that H2 is valid, i.e., brand trust has a significant negative impact on perceived risk. The data in Table 6 further supports this conclusion – path a is significant ($p < 0.05$, 95% Boot CI [-0.398, -0.056]); however, the test results for path b show that the impact of perceived risk on consumer purchase intention did not reach statistical significance ($p = 0.309$, 95% Boot CI [-0.196, 0.062]). Specifically, model M5

in Table 6 shows that perceived risk has a significant negative effect on purchase intention ($B = -0.170$, $p < 0.05$), whereas the coefficient for path b in Table 7 becomes non-significant ($B = -0.067$, $p = 0.309$). This discrepancy stems from the fundamental difference in statistical settings between the two models: model M5 only includes control variables and perceived risk as independent variables, testing the total effect of perceived risk on purchase intention; in contrast, path b in Table 7 represents the net partial effect of perceived risk on purchase intention after simultaneously controlling for brand trust and all demographic variables. Due to the significant negative correlation between brand trust and perceived risk (as verified by path a), when two highly correlated independent variables enter the regression equation simultaneously, a typical phenomenon of suppressor effect occurs – the extremely strong direct effect of brand trust on purchase intention ($c' = 0.651$, $p < 0.01$) absorbs and masks the original independent explanatory power of perceived risk, causing the net partial effect of perceived risk to be significantly weakened to a statistically non-significant level.

Based on this, the test results for the indirect effect show that the indirect effect of brand trust on purchase intention through perceived risk is not significant ($a*b = 0.015$, $p = 0.293$, 95% Boot CI $[-0.016, 0.043]$). At the same time, the total effect of brand trust on purchase intention ($c = 0.667$, $p < 0.01$) and the direct effect ($c' = 0.651$, $p < 0.01$) are very similar, further verifying that, at the overall sample level, perceived risk does not play a significant mediating role between brand trust and consumer purchase intention.

However, the finding of a ‘non-significant overall mediation effect’ holds important theoretical implications rather than being a mere statistical result. First, it challenges the universal linear transmission mechanism of ‘brand trust → reducing perceived risk → increasing purchase intention’ commonly assumed in previous studies, indicating that perceived risk is not the core or necessary mediation path for brand trust to influence purchase intention. In fact, the data in this study show that the direct effect of brand trust on purchase intention accounts for 97.6% of the total effect, suggesting that consumer trust in a brand can directly translate into a strong purchase inclination without the intermediate step of reducing perceived risk. This finding theoretically revises the traditional risk perception decision model, which overemphasises the central role of rational risk assessment in consumer decision making while neglecting the powerful role of affective trust as a heuristic decision shortcut. Second, this result highlights an important methodological consideration for future research: studies that test the mediating role of perceived risk without controlling for the dominant effect of brand trust may overestimate the magnitude of this indirect path.

More importantly, the absence of an overall mediation effect does not mean that perceived risk plays no role in any context. According to the conditional process analysis theory proposed by Edwards and Lambert (2007), when a mediation effect is non-significant in the overall sample, a plausible explanation is the presence of unincluded moderating variables that cause the mediation path to exhibit heterogeneous effects across different boundary conditions – that is, positive and negative effects cancel each other out at the overall level, resulting in a non-significant average effect. This study speculates that brand attachment, as a core indicator of the emotional bond between consumers and brands, is precisely such a key boundary condition. Specifically, H5 posits that for consumers with high brand attachment, brand trust may translate directly into purchase intention, with the mediating role of perceived risk being almost non-existent; for consumers with low brand attachment, brand trust may primarily

influence purchase intention indirectly by reducing perceived risk. This heterogeneous effect is averaged out in the overall sample, leading to the non-significance of the overall mediation effect. This theoretical perspective transcends the traditional ‘all-or-nothing’ logic of mediation effect testing and emphasises the situational dependence and individual differences in consumer decision-making mechanisms. Therefore, to further reveal the conditional dependence of the mediation effect, this study will next test a moderated mediation model with brand attachment as the moderator.

4.3.3 Moderated mediation analysis

This study used the PROCESS Model 15 to examine the proposed moderated mediation framework. All predictor and moderating variables were mean-centred prior to analysis to reduce multicollinearity among interaction terms and improve the interpretability of interaction results. This section focuses on the conditional moderating effect of brand attachment on the mediation pathway of ‘brand trust → perceived risk → consumer purchase intention’. Corresponding centred variable results and conditional effects are presented in Tables 8, 9 and 10, with interactive effects visualised via simple slope plots (Figure 2).

Table 8 Moderated mediation analysis

Dependent variable	Independent variable	B	SE	t	p	95%BootCI		R ²	ΔR ²	F
						Lower	Upper			
Consumer purchase intention	(Constant)	5.362	0.972	5.516	0.000**	3.46	7.26	0.637	0.619	39.532**
	Brand trust (BT)	-0.422	0.181	-2.329	0.021*	-0.77	-0.07			
	Perceived risk (PR)	-0.826	0.154	-5.375	0.000**	-1.13	-0.52			
	Brand attachment (BA)	-1.166	0.353	-3.300	0.001**	-1.86	-0.47			
	BT*BA	0.256	0.063	4.055	0.000**	0.13	0.38			
	PR*BA	0.251	0.048	5.275	0.000**	0.16	0.35			
	Gender	0.038	0.094	0.401	0.689	-0.15	0.22			
	Age	0.045	0.036	1.249	0.213	-0.026	0.116			
	Level of education	-0.006	0.042	-0.152	0.879	-0.089	0.077			

Note: *p < 0.05, **p < 0.01.

The overall regression analysis results of the moderated mediation model with consumer purchase intention as the dependent variable are shown in Table 8. The model is statistically significant (F = 39.532, p < 0.01, ΔR² = 0.619), indicating that the model has good explanatory power. According to the logic of moderated mediation model testing (Edwards and Lambert, 2007), the significance of the key interaction terms directly reflects the impact of the moderating effect on the mediation path: first, the interaction term between brand trust and brand attachment (BT×BA) is significantly positive (B = 0.256, p < 0.01), indicating that brand attachment significantly moderates the first stage of the mediation path (path a: brand trust → perceived risk), meaning that the strength of

the negative influence of brand trust on perceived risk changes with the level of brand attachment; second, the interaction term between perceived risk and brand attachment (PR×BA) is significantly positive ($B = 0.251, p < 0.01$), indicating that brand attachment significantly moderates the second stage of the mediation path (path b: perceived risk → consumer purchase intention), meaning that the strength of the negative influence of perceived risk on purchase intention also depends on the boundary conditions of brand attachment. The simultaneous significance of these two interaction terms confirms that brand attachment has a two-stage moderating effect on the complete mediation path of ‘brand trust → perceived risk → purchase intention’, providing a basis for the existence of a moderated mediation effect. Regarding the negative main effects of brand trust and brand attachment observed in the integrated model, these outcomes are contextualised within interactive conditions. Such negative associations are conditional effects arising from controlled multi-variable interactions, rather than standalone main effects. Consequently, robust interpretation requires comprehensive consideration of variable behaviours across different levels of brand attachment, to avoid one-sided conclusions drawn from isolated main effect values.

Further examination of the results, as shown in Table 9, reveals that the conditional direct effect is not significant at low levels of the moderating variable (BA) ($-1 \text{ SD} = 2.067$) ($B = 0.106, p = 0.195$), but is significant at the mean (3.093) ($B = 0.368, p < 0.01$), and even stronger and more significant at high levels ($+1 \text{ SD} = 4.118$) ($B = 0.630, p < 0.01$). This result has profound theoretical implications: it reveals that there are essential differences in the mechanisms by which brand trust translates into purchase intention. For consumers with low brand attachment, who lack deep emotional connections with the brand, brand trust cannot directly translate into purchase behaviour and must function through other mediating paths. In contrast, as brand attachment increases, consumers establish strong emotional bonds with the brand, which allows brand trust to bypass rational risk assessment processes and directly drive purchase decisions. This finding supports the ‘affective heuristic’ theory of brand attachment, which posits that consumers with high brand attachment rely more on emotional intuition than rational calculation in decision making. This indicates that as brand attachment increases, the direct path (brand trust → consumer purchase intention) shifts from non-significant to significant, thus confirming the moderating effect of brand attachment on this path.

Table 9 Conditional direct effect analysis

Level	Value of level	Effect	SE	t	p	95%BootCI	
						Lower	Upper
Low level (-1 SD)	2.067	0.106	0.081	1.301	0.195	-0.054	0.265
Mean	3.093	0.368	0.079	4.676	0.000	0.214	0.522
High level ($+1 \text{ SD}$)	4.118	0.63	0.119	5.302	0.000	0.397	0.863

Finally, as shown in Table 10, the conditional indirect effect (mediated by perceived risk) is significantly positive at low levels of brand attachment ($-1 \text{ SD} = 2.067$) ($B = 0.070, 95\% \text{ Boot CI } [0.001, 0.135]$), not significant at the mean level (3.093) ($B = 0.011, 95\% \text{ Boot CI } [-0.013, 0.039]$), and also not significant at high levels ($+1 \text{ SD} = 4.118$) ($B = -0.048, 95\% \text{ Boot CI } [-0.104, 0.001]$). These results theoretically clarify why the overall mediation effect was non-significant: the mediating role of perceived risk exists exclusively in the consumer group with low brand attachment. For this group, who have

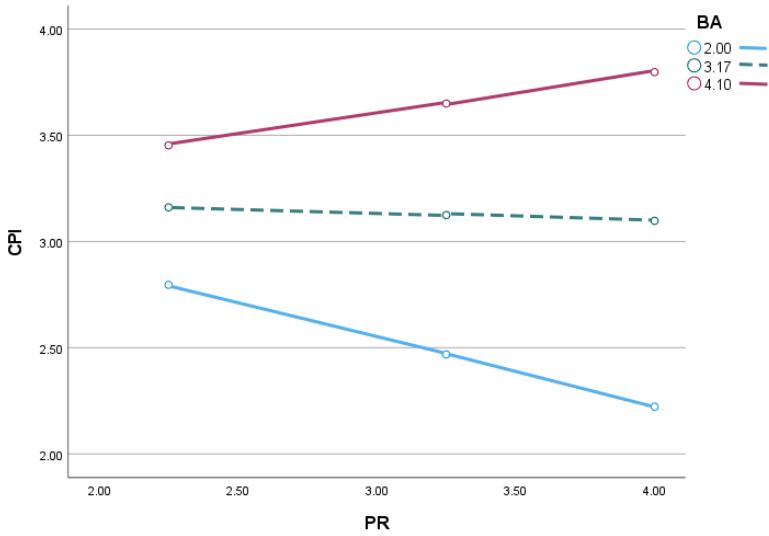
distant relationships with the brand and engage in more rational and cautious decision-making processes, brand trust primarily influences purchase intention indirectly by reducing perceived risk. As brand attachment strengthens, however, consumers gradually transform from ‘rational decision makers’ to ‘emotional followers’, and the importance of perceived risk in the decision-making process gradually declines, eventually disappearing entirely in the high brand attachment group. These results indicate that brand attachment significantly moderates the strength of the indirect path: as brand attachment increases, the mediating effect of perceived risk gradually weakens from significant and positive to non-significant. To formally test the moderated mediation effect, we calculated the index of moderated mediation. According to the criteria proposed by Hayes (2015), the significance of the index of moderated mediation is the core statistical basis for determining whether a moderated mediation effect exists; its value represents the change in the mediation effect for each unit change in the moderator. Our results show that the index of moderated mediation is negative and significant (index = -0.057 , 95%BootCI [-0.110 , -0.001]), indicating that for every one standard deviation increase in brand attachment (SD = 1.026), the mediating effect of perceived risk significantly weakens by 0.057 units. This result clearly confirms that brand attachment has a significant negative moderating effect on the ‘brand trust → perceived risk → consumer purchase intention’ mediation path. Therefore, the overall model supports the moderated mediation hypothesis H5.

Table 10 Conditional indirect effect analysis

Level	Value of level	Effect	SE	95%BootCI	
				Lower	Upper
Low level (−1 SD)	2.067	0.070	0.034	0.001	0.135
Mean	3.093	0.011	0.013	−0.013	0.039
High level (+1 SD)	4.118	−0.048	0.028	−0.104	0.001

To further visualise the interaction between perceived risk (PR) and brand attachment (BA) in predicting consumer purchase intention, we plotted a simple slope graph (see Figure 2). The graph shows that at low levels of brand attachment, perceived risk has a strong negative impact on purchase intention (steeper slope), whereas at high levels of brand attachment, the negative impact of perceived risk on purchase intention is significantly weakened (flatter slope). This interaction pattern visually demonstrates the ‘risk buffering’ effect of brand attachment: when consumers develop deep emotional attachments to a brand, they form a kind of ‘emotional immunity’ that prevents their purchase intention from declining significantly even when they perceive certain risks. This risk buffering effect can be explained by cognitive dissonance theory: consumers with high brand attachment actively underestimate or ignore potential risks to maintain their positive attitudes toward the brand and preserve cognitive consistency. This interaction pattern is entirely consistent with the trend of the conditional indirect effects, visually confirming the buffering effect of brand attachment in the relationship between perceived risk and purchase intention: when consumers have high brand attachment, their purchase intention does not drop significantly even if they perceive certain risks.

Figure 2 Simple slope plot showing the interaction between perceived risk and brand attachment (see online version for colours)



Note: The simple slopes for perceived risk were tested at one standard deviation below the mean, the mean, and one standard deviation above the mean of brand attachment.

5 Conclusions and discussion

This study, using Toyota as an example, aims to analyse the intrinsic relationships among brand trust, perceived risk, consumer purchase intention, and brand attachment. It seeks to reveal how brand attachment moderates the mediating role of perceived risk in the relationship between brand trust and consumer purchase intention. Data were collected via a questionnaire and analysed using SPSS 27.0 and its PROCESS plugin. Based on the conditional findings of this cross-sectional self-reported study, the research conclusions and discussion are presented below.

5.1 Research conclusions

First, brand trust has a significant positive impact on consumer purchase intention and a substantial adverse effect on perceived risk. In contrast, the direct negative impact of perceived risk on purchase intention is not statistically significant. This result indicates that, in the sample of Toyota's Chinese consumers in this study, brand trust's effect on purchase intention is more direct. At the same time, the independent inhibitory impact of perceived risk is relatively limited. From the perspective of relationship marketing theory, this finding validates the core proposition of relationship marketing: when consumers establish a trust-based relationship with a brand, transactions are no longer purely rational calculation processes but natural outcomes of relationship continuation (Morgan and Hunt, 1994). Brand trust, as the cornerstone of relationship marketing, can directly translate into purchase behaviour without necessarily going through the

intermediary link of risk assessment. This is highly consistent with the ‘affective heuristic’ theory in the emotional decision-making literature, which posits that trust, as a positive emotion, can serve as a decision shortcut to simplify complex purchase decision processes (Kaur et al., 2025; Aydin, 2025).

Second, when the moderating variable is not included, the mediating effect of perceived risk on the relationship between brand trust and purchase intention is not significantly established. This finding differs from some traditional research conclusions, but its root lies in the conditional dependence of the mediating path; the moderating effect of brand attachment masks the overall mediating effect. Traditional mediation effect testing often assumes that effects are homogeneous across the overall sample, an assumption that contradicts the ‘relationship quality heterogeneity’ emphasised by relationship marketing theory. Relationship marketing theory points out that there are significant differences in the quality of consumer-brand relationships, and consumer decision-making mechanisms vary dramatically at different relationship quality levels. The findings of this study precisely provide empirical support for this theoretical perspective: the mediating role of perceived risk is not universally present but depends on the strength of the emotional connection between consumers and the brand. This result also revises the traditional view of the relationship between rationality and emotion in emotional decision theory, indicating that rational and emotional factors are not simply in a trade-off relationship but present complex interaction patterns in different relational contexts.

Third, brand attachment has a significant two-stage moderating effect on the complete mediating path of ‘brand trust → perceived risk → purchase intention’. Specifically, brand attachment significantly moderates both the first stage (brand trust → perceived risk) and the second stage (perceived risk → purchase intention) of the mediation, with both interaction term coefficients being significantly positive ($BT \times BA = 0.256$, $p < 0.01$; $PR \times BA = 0.251$, $p < 0.01$); the conditional direct effect changes from non-significant to strongly significant positive as the level of brand attachment increases (low attachment: $B = 0.106$, $p = 0.195$; high attachment: $B = 0.630$, $p < 0.01$); the conditional indirect effect shows a change in direction, being significantly positive at low levels of attachment ($B = 0.070$, 95%CI[0.001, 0.135]) and significantly negative at high levels of attachment ($B = -0.048$, 95%CI [-0.104, 0.001]), with a moderated mediation index of -0.057 (95%CI [-0.110, -0.001]). This finding of two-stage moderating effect has important theoretical significance, as it deepens relationship marketing theory and emotional decision literature from two levels. First, in the first-stage moderation (brand trust → perceived risk), this study finds that as brand attachment increases, the inhibitory effect of brand trust on perceived risk gradually weakens. This result can be explained by the ‘relationship norms’ in relationship marketing theory: in high brand attachment relationships, consumers and brands form relationship norms based on emotion rather than transaction norms based on calculation. Under relationship norms, consumers are more inclined to interpret brand behaviour from a positive perspective. Even if the brand has certain potential risks, they will give the brand the benefit of the doubt due to their emotional attachment, thereby weakening the negative relationship between brand trust and perceived risk. This is consistent with the ‘emotional filtering’ effect in the emotional decision literature, which states that positive emotions filter out negative information and make individuals less sensitive to risks. Second, in the second-stage moderation (perceived risk → purchase intention), this study finds that as brand attachment increases,

the negative impact of perceived risk on purchase intention is not only weakened but even shows a trend of reversal. This finding goes beyond the traditional ‘risk buffering’ perspective and reveals the more powerful ‘emotional transformation’ role of brand attachment. According to relationship marketing theory, consumers with high brand attachment view the brand as an extension of their self-concept. Purchasing the brand’s products is not only to meet functional needs but also to express self-identity and maintain self-consistency. In this case, perceived risks are no longer factors that hinder purchase but may instead be interpreted as ‘costs willing to bear for unique experiences’ or ‘tests of brand loyalty’. This finding provides strong empirical support for the ‘affect priority’ principle in emotional decision theory, indicating that under strong emotional connections, emotional factors can completely dominate the decision-making process and even reverse traditional rational decision logic, a phenomenon that has also been observed in consumer responses to eco-friendly products and cause-related marketing (Aydin, 2025; Poonia and Pandey, 2023).

And low-attachment consumers primarily follow a rational decision-making path, where brand trust enhances purchase intention by reducing perceived risk; however, high-attachment consumers are driven more by emotional factors, where the rational evaluation of perceived risk is masked or even reversed by emotional bonds. Based on these precise coefficient patterns, this study cautiously suggests that high brand attachment, through its emotional buffering effect, not only weakens the inhibitory effect of brand trust on perceived risk but also observes a conditional reversal of the logic regarding perceived risk’s impact on purchase intention in this sample, providing preliminary support for the existence of an ‘emotion-first’ decision-making tendency in high emotional connection contexts.

This finding aligns with the core tenet of relationship marketing theory emphasising that emotional bonds transcend rational evaluation, and reveals the potential dominant role of emotional connection in consumer decision making under risky situations, thereby enriching the research perspective on the ‘rational-emotional’ interaction in brand relationship theory. Furthermore, it validates the two-stage moderating mechanism of brand attachment, expanding the application scenarios of the moderated mediation model. This study finds that brand attachment moderates both stages of the mediation path rather than a single stage, which complements existing research focusing only on single-stage moderation.

The most significant theoretical contribution of this study is the clarification of the mechanism of the ‘emotional shielding’ effect: brand attachment can not only buffer the perceived risk brought by negative information but also change the traditional negative relationship between perceived risk and purchase intention at high attachment levels. This ‘emotional shielding’ effect can be explained by integrating relationship marketing theory and emotional decision theory: on the one hand, the concept of ‘psychological contract’ in relationship marketing theory indicates that consumers with high brand attachment form an implicit psychological contract with the brand, which makes consumers believe that the brand will act in their best interests, thereby reducing their sensitivity to risks; on the other hand, the ‘emotional halo’ effect in emotional decision theory points out that positive emotional experiences create a halo effect that makes individuals evaluate all aspects of the brand positively, including their assessment of potential risks. These two mechanisms work together to form a powerful ‘emotional shielding’ effect that enables high-attachment consumers to resist the negative impact of perceived risk on purchase

intention. This finding modifies the boundary conditions of the mediating effect of perceived risk and provides a new theoretical perspective for re-examining the relationship between brand trust and perceived risk.

5.2 *Management implications*

Based on the correlational findings of this cross-sectional study rather than causal conclusions, this study provides the following conditional strategic references for brand managers in the automotive industry:

First, implement a ‘trust-attachment’ dual-driven strategy, which has been identified as the most effective approach to building sustainable brand equity in recent research (Nikkhah-Farkhani and Zarenejad, 2025). Brand trust serves as the foundation, which requires continuously improving product quality (strengthening cognitive trust), fulfilling social responsibility, and enhancing transparent communication with consumers (cultivating emotional trust) to build core trust assets. Simultaneously, attention should be paid to cultivating brand attachment and strengthening consumers’ self-connection with the brand through the following operational methods:

- 1 brand storytelling: focus on brand history, values, and real user stories to trigger emotional resonance
- 2 user community operations: establish exclusive brand communities to promote interaction and identity recognition among users
- 3 personalised experience design: provide customised products and services to meet consumers’ unique needs.

These strategies can specifically target the core dimensions of brand attachment identified in this study (‘brand integration into life’ and ‘emotional dependence’). From the practical perspective of relationship marketing, this dual-driven strategy means that brand management should shift from the traditional ‘transaction-oriented’ approach to a ‘relationship-oriented’ approach, focusing not only on the completion of single transactions but also on the establishment of long-term emotional relationships.

Second, implement more precise consumer segmentation strategies based on brand attachment levels. For consumers with low brand attachment, the focus should be on reducing perceived risk through trust signals (such as quality certification and after-sales commitments) to activate the rational path of ‘trust → risk reduction → purchase intention’. For consumers with high attachment, emotional resonance and identity recognition should be emphasised (e.g., through limited-edition products and exclusive membership benefits), leveraging their emotional resilience toward the brand, which may help buffer the impact of perceived risk from adverse events, and maintaining stable purchase intentions. This segmentation strategy embodies the idea of ‘differentiated relationship management’ in relationship marketing theory, that is, adopting different marketing strategies for consumers with different relationship qualities to achieve optimal resource allocation.

Third, consider the potential role of emotional factors in brand crisis management, as positive brand attitudes built through consistent emotional communication can significantly mitigate the negative impact of negative news and word-of-mouth (El Moujabber, 2023; Poonia and Pandey, 2023). When a brand faces quality crises, negative public opinion, and other risk events, in addition to promptly restoring trust

(such as open and transparent communication and taking responsibility), one could try to activate the ‘emotional shield’ effect of brand attachment – by awakening consumers’ memories of emotional connections with the brand (such as past positive experiences and identity recognition), which may help weaken the negative impact of perceived risk on purchase intention, and reduce the erosion of brand assets by the crisis. This implication provides a new perspective for brand crisis management: crisis management should not only be rational public relations but also emotional relationship repair. By activating the emotional bond between consumers and the brand, an emotional defence line can be established during crises to protect the brand from serious damage.

Fourth, target customer segments more accurately. The sample in this study shows that young and middle-aged groups (18–40 years old, accounting for 68.3%) and consumers with a bachelor’s degree or above (56.6%) are the core groups for brand trust and attachment. Brands can optimise product design and marketing communication for this group, while also expanding the trust conversion path for low-attachment groups through market education in lower-tier markets and services tailored to middle-aged and elderly groups.

5.3 Limitations and future directions

Despite the findings presented above, this study has the following limitations, which provide directions for future research: first, the research design limits causal inference. This study utilises a cross-sectional self-report design, which cannot establish causal relationships between variables; all findings serve as correlational evidence. Future research should employ experimental designs (e.g., manipulating brand trust or attachment levels) or longitudinal tracking designs to enhance causal explanatory power and verify the causal direction of the moderated mediation mechanism proposed here.

Second, common method bias from a single source. All variables were measured via consumer self-reports, which may involve common method variance. Although Harman’s single-factor test was used for control, future research could integrate multi-source data (e.g., brand sales data, social media sentiment analysis) or objective measurement methods (e.g., neuroscience tools) to improve accuracy and reliability.

Third, the potential issue of construct overlap. Brand trust and brand attachment, as two core constructs in relationship marketing, may overlap to some extent in concept and measurement. Brand trust is primarily based on a rational evaluation of brand competence and reliability, while brand attachment stems more from emotional connection and self-identity. Future research could further clarify the theoretical boundaries between these two constructs and use more distinctive measurement tools to verify the robustness of these findings.

Fourth, limitations regarding the specificity of the sample and context. This study focused exclusively on Chinese consumers of the Toyota brand, presenting clear national and industry specificities. The sample was concentrated among young and middle-aged, highly educated groups, which may involve population selection bias. Future research could expand the sample scope to cover different industries (e.g., FMCG, luxury goods, digital services), different brand types (local vs. international brands), and cross-cultural backgrounds (e.g., Eastern and Western markets) to systematically test the cross-cultural validity and generalisability of the model.

Fifth, expansion of variable measurement and deepening of the theoretical model. The measurement of perceived risk focused on safety and social risk dimensions; future research could include additional dimensions, such as financial and functional risks. The measurement of brand attachment could incorporate neuroscience tools (such as EEG and eye-tracking) to achieve objective measurement of emotional connection, compensating for the potential biases of self-report scales. Simultaneously, this study did not explore the antecedent variables of brand attachment (such as brand personality and self-congruence); future research could construct a complete chain of ‘antecedents → brand attachment → moderating effects → outcomes’. Additionally, other potential moderating variables (such as product involvement and consumer risk aversion) could be introduced to enrich the model’s boundary conditions further.

Declarations

All authors declare that they have no conflicts of interest.

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