Brand Cross-Boundary Collaborative Innovation and Brand Loyalty: The Mediating Effect of Consumers' Perceived Sincerity and the Moderating Effects of Trait Cynicism and Product Maturity

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Abstract. Brand cross-boundary collaborative innovation has become an important strategy for strengthening brand loyalty. However, its effectiveness varies substantially in practice, and some cross-boundary collaborations may even produce adverse effects. Existing research has not sufficiently examined the psychological mechanisms underlying this process. This study develops a moderated mediation model in which consumers' perceived sincerity serves as the mediator, while trait cynicism and product maturity serve as moderators. Using Luckin Coffee's cross-boundary collaborative innovation as the research context, the model is empirically tested with 258 valid questionnaires. The results show that cross-boundary collaborative innovation positively affects brand loyalty and that consumers' perceived sincerity plays a partial mediating role. Trait cynicism positively moderates the direct effect of cross-boundary collaborative innovation on brand loyalty, while product maturity positively moderates the conversion of perceived sincerity into brand loyalty. These findings provide a theoretical basis and practical reference for brands to develop differentiated cross-boundary marketing strategies according to consumer traits and product maturity.

Keywords: cross-boundary collaborative innovation, brand loyalty, consumers' perceived sincerity, trait cynicism, product maturity.

1. Introduction

As consumer markets continue to evolve and demand becomes increasingly diverse, brand innovation plays an increasingly prominent role in enhancing corporate competitiveness and fostering brand loyalty.[1] To break away from homogeneous competition, attract consumer attention, and establish deeper emotional connections, brands have increasingly engaged in cross-boundary collaborations.[2] Cross-boundary extensions can leverage existing brand equity while disrupting consumers' fixed perceptions of established brands. They also respond to market demand for greater personalization and diversity.[3] Brand loyalty can generate long-term profits by increasing customer lifetime value.[4] Cross-boundary collaborative innovation therefore provides a promising avenue for differentiation. However, not all such initiatives succeed. For example, a collaboration between a milk-tea brand and an otome-game company substantially reduced consumer favorability toward the brand. The game company accused employees of the milk-tea chain of spreading false information and privately selling promotional gifts from the collaboration. There were even incidents in which employees of the collaborating party verbally insulted players. These cases raise an important question: what kinds of cross-boundary collaborative innovation can enhance brand loyalty, and what are the underlying mechanisms and boundary conditions?

Although brand cross-boundary collaborative innovation and brand loyalty have each received academic attention, research that explains the internal mechanisms through which the former affects the latter remains limited. First, the marketing activities of many brands have been criticized for lacking sincerity.[5] Perceived sincerity of motives refers to consumers' judgments about the sincerity underlying a firm's behavioral motives.[6] Whether consumers view a brand's cross-boundary initiative as genuine innovation or opportunistic hype may therefore be a critical link. Existing studies have focused mainly on describing the phenomenon or evaluating its outcomes. Rigorous empirical tests of the pathway through which brands enhance loyalty by strengthening consumers' perceived

sincerity remain scarce. Second, research based on Affective Events Theory shows that the intensity of emotional responses induced by affective events is influenced by individual traits.[7] Trait cynicism reflects a stable tendency to distrust others and hold negative beliefs about human nature.[8] A relevant question is whether highly cynical consumers naturally interpret brand cross-boundary collaborative innovation as a "cash grab," thereby weakening their perceptions of sincerity. Third, Mahajan et al. found that consumers in the early stage of a product life cycle are mostly "innovators" or "experts" and are relatively few in number, whereas many "followers" or "novices" tend to purchase later.[9] Joseph and Wesley further showed that consumers often lack the ability to distinguish good new products from poor ones in the early stages of the product life cycle. They are therefore more likely to purchase when product maturity is higher.[10] In fact, not every brand or product is suitable for cross-boundary innovation. Consumer evaluations may also depend on product maturity, and products with low maturity may elicit doubt and distrust. Research on this issue remains insufficient. Accordingly, this study treats consumers' perceived sincerity as a mediator and trait cynicism and product maturity as moderators to examine how cross-boundary collaborative innovation affects brand loyalty.

In summary, this study uses Luckin Coffee's cross-boundary collaborative innovation practices as the research context. It develops and tests a theoretical model in which cross-boundary collaborative innovation is the independent variable, consumers' perceived sincerity is the mediator, trait cynicism and product maturity are the moderators, and brand loyalty is the dependent variable. The study examines both the process mechanism and the boundary conditions through which cross-boundary collaborative innovation affects brand loyalty. The findings are expected to provide insights and practical references for future cross-boundary innovation by brands.

2. Literature Review

2.1. Brand Cross-Boundary Collaborative Innovation

Traditional brand alliances refer to cooperation between two or more brands in which the positive assets of the partner brands are transferred to a newly created co-brand.[11] As collaborative innovation has continued to gain popularity in business practice, scholars have conducted substantial conceptual research on this phenomenon. For example, Wang Xuelian et al. argued that brand cross-boundary collaboration emphasizes the role of brand elements, such as brand influence and brand image, in the cross-boundary process. It also highlights cooperation both within and across industries, the creation of new products or service models after collaboration, and the formation of cross-boundary symbiotic systems characterized by mutual connection, dependence, and influence.[12] Han Jie et al. suggested that cross-boundary branding mainly refers to alliances between brands from different industry segments. Such alliances integrate and extend core brand elements to gain favor among target customers, adapt to intense market competition, and meet emerging consumer needs.[13] These studies have examined how brand cross-boundary collaboration affects corporate brand image and consumers' purchase intentions. They have also analyzed customer engagement behavior generated by collaborations among domestic brands. However, they have not adequately examined how consumers interpret such brand behavior or whether all brands are suitable for cross-boundary collaborative innovation.

2.2. Brand Loyalty

Brand loyalty generally includes both behavioral loyalty and attitudinal loyalty.[14] Oliver argued that brand loyalty means that consumers consistently place a particular brand first when choosing products. It is reflected in both a willingness to continue purchasing favored products and services and actual repurchase behavior.[15] Building on this view, scholars have proposed many definitions of the concept in different contexts. Shang Pengfei et al. argued that customer relationship management has become a central component of market strategy and that maintaining customer brand loyalty is critical to corporate success. Consumers' recognition of a brand is also a source of long-

term revenue for firms.[16] Xie Chunlong et al. defined brand loyalty as the process through which consumers develop feelings toward a brand, form a preference for it, and repeatedly purchase it over a long period.[4] Lin Yan et al. argued that, in the experience economy, an important way for firms to strengthen customer brand loyalty is to provide valuable brand experiences created through interactive participation.[17] Wang Xuedong et al. examined brand loyalty in mobile social commerce based on the ECM model.[18] Overall, these studies demonstrate the importance of brand loyalty for brand image development. Accordingly, Hypothesis H1 is proposed:

Brand cross-boundary collaborative innovation has a positive effect on brand loyalty.

2.3. The Mediating Role of Consumers' Perceived Sincerity

The Persuasion Knowledge Model proposes that consumers develop dynamic knowledge structures about persuasion and use them to identify others' persuasive attempts.[19] When consumers receive brand marketing messages, they analyze brand behavior and attribute such behavior to underlying brand motives.[20] When consumers receive information about various corporate activities, their perceptions of corporate motives may be characterized by either "sincerity" or "suspicion."[21] Many commercial marketing activities, including cross-boundary collaborative innovation between brands, may be perceived as attempts to "cash in." They are often viewed as inducements to consume rather than sincere efforts that encourage voluntary consumption. According to psychological reactance theory, merchant behavior that conveys manipulative intent may trigger psychological reactance. Consumers may then become suspicious of marketing strategies and regard them as deceptive.[22] Perceptions of impure motives can hinder brand returns and asset appreciation.[23] Therefore, consumers are more willing to learn about a firm or brand and engage in consumption only when they perceive the brand as sincere. This process can ultimately strengthen brand loyalty. Accordingly, Hypotheses H2 and H3 are proposed:

H2: Consumers' perceived sincerity is significantly and positively associated with brand loyalty.

H3: Consumers' perceived sincerity mediates the effect of cross-boundary collaborative innovation on brand loyalty.

2.4. The Moderating Roles of Trait Cynicism and Product Maturity

According to Affective Events Theory, the relationship between affective events and emotional responses is also moderated by individual characteristics.[7] Cynical tendencies strongly influence an individual's sense of trust and trusting behavior, leading the individual to doubt and distrust the intentions and dishonest behavior of organizations or other entities.[24] Trait cynicism affects how individuals evaluate external events[25] and, to a large extent, reflects individual differences in evaluations of benefits.[26] Extending this reasoning to consumption contexts, different levels of trait cynicism may shape how consumers interpret brand marketing behavior. Cross-boundary collaborative innovation is one typical form of such behavior. Therefore, the effect of cross-boundary collaborative innovation on brand loyalty may depend on consumers' personality traits. This study thus introduces trait cynicism as a moderator to examine the boundary conditions of the effect of cross-boundary collaborative innovation on brand loyalty. Specifically, individuals high in trait cynicism have a natural tendency toward suspicion and often interpret human nature from a negative perspective.[8] When interpreting a brand's cross-boundary collaborative innovation, highly cynical consumers are therefore likely to be more guarded. They may also evaluate brand behavior more carefully and deeply, which can help them recognize cross-boundary collaborative innovation that is genuinely sincere and valuable. Persuasion Knowledge Theory suggests that consumers are less resistant to persuasive information from a firm when they perceive the information source as trustworthy.[19] Thus, when highly cynical consumers perceive a firm's marketing behavior as trustworthy, their brand loyalty may increase substantially. Compared with highly cynical individuals, those low in trait cynicism are more agreeable and can more easily establish positive interpersonal connections.[8] Based on expectation-disconfirmation theory, V. Venkatesh et al. proposed that the theory can explain the dynamic mechanism of user satisfaction. Its central proposition is that user

satisfaction is determined by the gap between expectations and actual experience.[27] Specifically, when actual experience exceeds expectations, positive disconfirmation occurs and produces a utility gain. When actual experience falls below expectations, negative disconfirmation occurs and produces a utility loss.[28] Consumers low in trait cynicism tend to believe that brand marketing activities are designed with consumers' interests in mind and therefore hold positive expectations toward brands. When a brand launches a cross-boundary collaborative product, its actual performance may merely meet or slightly exceed these expectations. Because the experience generates little sense of surprise, the resulting increase in loyalty may be limited. By contrast, highly cynical consumers begin with skepticism. If a cross-boundary product is high in quality and exceeds their expectations, the sharp contrast with their initial skepticism may produce a much larger increase in brand loyalty than that observed among consumers low in trait cynicism. Accordingly, Hypothesis H4 is proposed:

H4: Trait cynicism moderates the relationship between cross-boundary collaborative innovation and brand loyalty. When consumers have high trait cynicism, the positive effect of cross-boundary collaborative innovation on brand loyalty is strengthened.

As the time since a product's launch increases, consumers can obtain product-related information from an increasing number of channels. Products with low maturity tend to have smaller market shares, fewer online customer reviews, and lower consumer awareness.[29] Products with higher maturity therefore allow consumers to better understand their quality and the brand stories behind them. A longer time in the market can also signal that the product has withstood the test of time. From the perspective of product life-cycle theory, the product life cycle also reflects characteristics of consumer culture and captures consumers' attitudes toward products, or more broadly, the relationship between consumers and products.[30] Consumer attitudes differ substantially across stages from market entry to market exit. Mature cross-boundary collaborative products can therefore inspire greater consumer trust. By contrast, less mature collaborative products may lead consumers to wait and see or remain skeptical, thereby reducing purchase intentions. Accordingly, Hypothesis H5 is proposed:

H5: Product maturity moderates the relationship between cross-boundary collaborative innovation and brand loyalty. When a cross-boundary collaborative product has high product maturity, the positive effect of cross-boundary collaborative innovation on brand loyalty is strengthened.

3. Research Design

(1) Variables and Measurement

All core variables in this study were measured using established scales from prior research in China and abroad, with minor adjustments to fit the research context. All items were measured on a five-point Likert scale (1 = "strongly disagree" and 5 = "strongly agree").

3.1. Cross-Boundary Collaborative Innovation

The brand cross-boundary collaboration rationality scale developed by Wang Xuelian et al. (2024) was adopted. The scale measures five dimensions: thoughtfulness of design, responsibility toward consumers, integration of distinctive strengths, brand-fit connections, and elicitation of nostalgia. Representative items include: "I think Luckin Coffee's cross-boundary products are thoughtfully designed" and "I think Luckin Coffee has successfully integrated distinctive strengths."

3.2. Brand Loyalty

The brand loyalty scale developed by Xie Chunlong and Zheng Guohua (2022) was adopted. It measures four dimensions: brand preference, resistance to negative information, emotional responses to brand loss, and product favorability. Representative items include: "No matter how many similar coffee brands are available, I would still choose Luckin Coffee" and "I would feel very sad if Luckin Coffee disappeared."

3.3. Consumers' Perceived Sincerity

The consumer-perceived sincerity scale developed by Yang Sixiao et al. (2025) was adopted. It measures three dimensions: thoughtfulness of marketing activities, brand sincerity, and the feeling of being valued. Representative items include: "I think Luckin Coffee puts considerable thought into its marketing activities" and "I think Luckin Coffee is sincere in this marketing campaign."

3.4. Trait Cynicism

The scale developed by Stavrova et al. was adopted. Representative items include: "Most people would use some unfair means to make a profit or gain an advantage" and "When dealing with strangers, it is better to be cautious before trusting them." To ensure that the measurement results were not affected by other variables, this scale was placed at the beginning of the core-variable section of the questionnaire.

3.5. Product Maturity

A product maturity scale was developed with reference to product life-cycle theory and the specific research context. It measures three dimensions: perceived stage of brand growth, maturity of co-branded products, and degree of product refinement. Representative items include: "I think Luckin Coffee is currently in a stage of rapid growth" and "Luckin's co-branded products (e.g., the Moutai-flavored latte) are mature and stable products to me."

3.6. Control Variables

Demographic variables, including gender, age, education, monthly disposable income, and occupation, were included as control variables.

(2) Case Selection

Luckin Coffee was selected as the focal case for the following reasons:

First, it is highly representative. Luckin Coffee has repeatedly launched popular cross-boundary co-branding campaigns, from the Coconut Cloud Latte created with Coconut Palm Group to the Moutai-flavored latte developed with Kweichow Moutai. Each collaboration has generated extensive public discussion and strong consumer interest. Luckin Coffee is therefore highly representative of cross-boundary marketing and can reflect the common characteristics and practical outcomes of current brand cross-boundary collaborative innovation. This makes it well suited to the research objectives of this study.

Second, the case has broad applicability. Luckin Coffee serves a wide consumer base spanning different age groups, education levels, and income levels. It therefore represents the mass consumer market relatively well. The findings can potentially be extended to cross-boundary marketing scenarios involving many domestic brands, rather than being constrained by an overly narrow target audience.

Third, the case fits the characteristics of the study variables. Luckin Coffee has launched many cross-boundary co-branded products with different levels of maturity. Some are established best sellers that have already been tested by the market, while others are newly introduced collaborations. This variation satisfies the measurement requirements for product maturity and facilitates an examination of how cross-boundary collaborative innovation affects brand loyalty at different levels of product maturity.

(3) Formal Survey

The questionnaire was distributed through the sample recruitment service provided by Wenjuanxing, an online survey platform. It was also circulated through Luckin Coffee-related consumer communities and social media platforms. Data were collected from April 29 to May 10, 2026. A total of 316 questionnaires were returned. After excluding 58 invalid responses because of excessively short completion times, identical answers across all items, or obvious patterned responding, 258 valid questionnaires remained. The valid response rate was 81.6%.

Regarding the demographic characteristics of the sample, 97 respondents were male (37.6%) and 161 were female (62.4%). In terms of age, 80 respondents were aged 18-30 (31.0%), 49 were aged 30-45 (19.0%), and 129 were older than 45 (50.0%). A total of 196 respondents (76.0%) held a bachelor's degree or above. Monthly disposable income was concentrated mainly in the RMB 3,001-6,000 group (89 respondents, 34.5%) and the RMB 3,000-or-below group (72 respondents, 27.9%). Overall, the sample consisted mainly of young and middle-aged consumers and showed relatively good representativeness.

4. Research Results

4.1. Main-Effect Test

This study first examined the direct effect of cross-boundary collaborative innovation on brand loyalty. A regression analysis was conducted with cross-boundary collaborative innovation as the independent variable and brand loyalty as the dependent variable. The results show that cross-boundary collaborative innovation has a significant positive effect on brand loyalty ($\beta = 0.850$, $t = 16.521$, $p < 0.001$), with $R^2 = 0.516$. The regression results for the main effect are reported in Table 1. As shown in Table 1, cross-boundary collaborative innovation significantly and positively affects brand loyalty ($\beta = 0.850$, $t = 16.521$, $p < 0.001$). Hypothesis H1 is therefore supported.

Table 1. Summary of Regression Model Coefficients

X	→	Y	Unstandardized Path Coefficient	SE	z (CR)	p	Standardized Path Coefficient
Independent-Variable Mean	→	Dependent-Variable Mean	0.850	0.051	16.582	0.000	0.718

Note: → indicates a directional path effect.

4.2. Mediation-Effect Test

The mediating effect of consumers' perceived sincerity was tested using bootstrapping with 5,000 resamples and a 95% confidence interval. Cross-boundary collaborative innovation was specified as the independent variable, consumers' perceived sincerity as the mediator, and brand loyalty as the dependent variable. The analysis was conducted using Model 4 of the PROCESS macro.

Cross-boundary collaborative innovation significantly and positively affects consumers' perceived sincerity ($\beta = 0.903$, $t = 24.775$, $p < 0.001$, $R^2 = 0.706$). When cross-boundary collaborative innovation and consumers' perceived sincerity are entered simultaneously, consumers' perceived sincerity has a significant positive effect on brand loyalty ($\beta = 0.662$, $t = 8.477$, $p < 0.001$), while the direct effect of cross-boundary collaborative innovation on brand loyalty remains significant ($\beta = 0.252$, $t = 3.007$, $p < 0.01$). The bootstrap test shows an indirect effect of 0.598, with a 95% confidence interval of [0.463, 0.750], which does not include zero. The total effect is 0.850 and the direct effect is 0.252. The mediation effect accounts for 70.31% of the total effect. Table 2 reports the mediation effect sizes, and Table 3 presents the 95% bootstrap confidence intervals. The simplified mediation model results are summarized in Table 4. As shown in these tables, the indirect effect is 0.598, with a 95% confidence interval of [0.463, 0.750], and the mediation effect accounts for 70.312% of the total effect. Thus, consumers' perceived sincerity partially mediates the relationship between cross-boundary collaborative innovation and brand loyalty, supporting Hypotheses H2 and H3.

Table 2. Summary of Mediation Effect Sizes

Item	Test Conclusion	c Total Effect	a*b Mediation Effect	c' Direct Effect	Formula for Effect Proportion	Effect Proportion
Independent-Variable Mean => Mediator Mean => Dependent-Variable Mean	Partial Mediation	0.850	0.598	0.252	a * b / c	70.312%

Table 3. 95% Confidence Intervals for Effect Estimates

Item	c Total Effect	a	b	a*b Mediation Effect	c' Direct Effect
Independent-Variable Mean => Mediator Mean => Dependent-Variable Mean	0.749 ~ 0.951	0.831 ~ 0.974	0.508 ~ 0.816	0.463 ~ 0.750	0.087 ~ 0.418

Note: a*b is reported with a 95% bootstrap CI; bootstrap type = percentile bootstrap.

Table 4. Mediation Model Test - Simplified Format

	Dependent-Variable Mean	Mediator Mean	Dependent-Variable Mean
Constant	0.284 (1.332)	0.357* (2.368)	0.047 (0.248)
Independent-Variable Mean	0.850** (16.521)	0.903** (24.775)	0.252** (3.007)
Mediator Mean			0.662** (8.477)
Sample Size	258	258	258
R^2	0.516	0.706	0.622
Adjusted R^2	0.514	0.705	0.619
F Value	F (1,256)=272.940,p=0.000	F (1,256)=613.787,p=0.000	F (2,255)=210.170,p=0.000

* p < 0.05, ** p < 0.01; t values are shown in parentheses.

4.3. Moderation-Effect Test

This study further examined whether trait cynicism moderates the relationship between cross-boundary collaborative innovation and consumers' perceived sincerity. The analysis was conducted using Model 7 of the PROCESS macro.

With consumers' perceived sincerity as the dependent variable, the main effect of cross-boundary collaborative innovation on consumers' perceived sincerity is significant (β = 0.903, t = 24.775, p < 0.001). In the model that includes trait cynicism and the interaction term, with brand loyalty as the dependent variable, the interaction between cross-boundary collaborative innovation and trait cynicism is significant (β = 0.205, t = 2.957, p < 0.01). This result indicates that trait cynicism significantly moderates the direct effect of cross-boundary collaborative innovation on brand loyalty. Conditional direct-effect analysis shows that, at a low level of trait cynicism (-1 SD), the direct effect is 0.106 (p = 0.242, not significant). At the mean level, the direct effect is 0.232 (p < 0.01). At a high level (+1 SD), the direct effect is 0.358 (p < 0.001). These results indicate that the positive effect of cross-boundary collaborative innovation on brand loyalty becomes stronger as consumer cynicism increases. As shown in Table 7, the total indirect effect is 0.581 (Boot CI = [0.448, 0.732]), and the mediation effect remains significant.Table 5 summarizes the regression models for trait cynicism moderation, and Table 6 reports the conditional direct effects. As shown in Table 5, the interaction between cross-boundary collaborative innovation and trait cynicism is significant (β = 0.205, t = 2.957, p < 0.01). Table 6 shows that the direct effect is stronger at high trait cynicism. Hypothesis H4 is therefore supported.

Table 5. Summary of Regression Models

	Dependent-Variable Mean				Mediator Mean			
	β	*SE*	t Value	p Value	*β*	*SE*	t Value	p Value
Constant	2.877	1.166	2.468	0.014*	0.357	0.151	2.368	0.019*
Independent-Variable Mean	-0.580	0.281	-2.064	0.040*	0.903	0.036	24.775	0.000**
Trait-Cynicism Mean	-0.682	0.300	-2.276	0.024*				
Independent-Variable Mean * Trait-Cynicism Mean	0.205	0.069	2.957	0.003**				
Mediator Mean	0.644	0.076	8.496	0.000**				
Sample Size	258				258			
R^2	0.648				0.706			
Adjusted R^2	0.641				0.703			
F Value	F (4,253)=116.598,p=0.000				F (1,256)=613.787,p=0.000			

* $p < 0.05$, ** $p < 0.01$

Table 6. Conditional Direct Effect Results

Level	Level Value	Effect	SE	t Value	p Value	LLCI	ULCI
Low (-1 SD)	3.350	0.106	0.090	1.174	0.242	-0.071	0.282
Mean	3.967	0.232	0.082	2.813	0.005	0.070	0.393
High (+1 SD)	4.584	0.358	0.095	3.750	0.000	0.171	0.545

Note: LLCI and ULCI denote the lower and upper bounds of the 95% confidence interval, respectively.

Table 7. Indirect Effect Results

Item	Effect	BootSE	BootLLCI	BootULCI
Total	0.581	0.073	0.448	0.732
Mediator Mean	0.581	0.073	0.448	0.732

Note: BootLLCI and BootULCI denote the lower and upper bounds of the 95% bootstrap confidence interval, respectively; bootstrap type: percentile bootstrap.

This study examined whether product maturity moderates the relationship between consumers' perceived sincerity and brand loyalty. The analysis was conducted using Model 14 of the PROCESS macro.

With brand loyalty as the dependent variable, consumers' perceived sincerity has a significant main effect on brand loyalty ($\beta = 0.339$, $t = 4.670$, $p < 0.001$). The interaction between cross-boundary collaborative innovation and product maturity is significant ($\beta = 0.072$, $t = 2.047$, $p < 0.05$), indicating that product maturity significantly and positively moderates the effect of cross-boundary collaborative innovation on brand loyalty. The total indirect effect is 0.306 (Boot CI = [0.158, 0.468]), and the mediation effect is significant. The results show that, as product maturity increases, the effect of cross-boundary collaborative innovation on brand loyalty through perceived sincerity becomes stronger. Table 8 reports the regression results for product maturity moderation. As shown in Table 8, the interaction between cross-boundary collaborative innovation and product maturity is significant ($\beta = 0.072$, $t = 2.047$, $p < 0.05$). The total indirect effect is 0.306 (Boot CI = [0.158, 0.468]). Hypothesis H5 is therefore supported.

Table 8. Summary of Regression Models

	Dependent-Variable Mean				Mediator Mean			
	β	*SE*	t Value	p Value	*β*	*SE*	t Value	p Value
Constant	0.797	0.524	1.520	0.130	0.357	0.151	2.368	0.019*
Independent-Variable Mean	-0.198	0.143	-1.384	0.168	0.903	0.036	24.775	0.000**
Product-Maturity Mean	0.306	0.156	1.962	0.051				
Independent-Variable Mean * Product-Maturity Mean	0.072	0.035	2.047	0.042*				
Mediator Mean	0.339	0.073	4.670	0.000**				
Sample Size	258				258			
R^2	0.736				0.706			
Adjusted R^2	0.730				0.703			
F Value	F (4,253)=176.001,p=0.000				F (1,256)=613.787,p=0.000			

* $p < 0.05$, ** $p < 0.01$

5. Conclusion

5.1. Research Conclusions

Against the practical background in which brand cross-boundary collaborative innovation is flourishing while failures remain frequent, this study uses Luckin Coffee as a case to examine the mechanisms and boundary conditions through which such innovation affects brand loyalty. Particular attention is given to the mediating role of consumers' perceived sincerity and the dual moderating roles of trait cynicism and product maturity. An empirical analysis of 258 valid questionnaires yields the following main conclusions:

First, brand cross-boundary collaborative innovation positively affects brand loyalty, and consumers' perceived sincerity plays a partial mediating role. Persuasion Knowledge Theory suggests that consumers are often well aware of sales and persuasion tactics used by marketers and may therefore become suspicious of marketers' motives.[31] Once suspicion arises, consumers tend to become more vigilant and are less likely to accept information delivered by marketing or service personnel.[32] Psychological reactance theory further suggests that when marketing activities or messages trigger psychological reactance, consumers become less willing to participate in the activity or accept the information. They may even make decisions contrary to the recommendations conveyed in the marketing message.[33] Perceived sincerity can therefore reduce consumer resistance. Specifically, when consumers believe that a brand's cross-boundary behavior is thoughtfully designed, responsible toward consumers, and sincere, the persuasion knowledge that is activated no longer leads primarily to resistance. Instead, it can be transformed into trust and acceptance of the brand, while psychological reactance is replaced by favorable brand attitudes. Sincerity gives consumers a sense of reassurance and security, which can substantially improve brand favorability and increase purchase intentions. Brand loyalty consequently rises, thereby achieving the objective of cross-boundary marketing. Consumers' perceived sincerity is therefore an effective pathway linking cross-boundary collaborative innovation to brand loyalty.

Second, trait cynicism significantly and positively moderates the direct effect of cross-boundary collaborative innovation on brand loyalty. This study identifies a noteworthy phenomenon that differs from conventional expectations: under certain conditions, trait cynicism strengthens the positive effect of cross-boundary innovation on brand loyalty. Although highly cynical consumers tend to be skeptical of commercial marketing, this does not mean that they necessarily reject brand marketing activities. Instead, they may process information more cautiously. When they recognize that a brand's marketing behavior is trustworthy, their favorable response to cross-boundary collaborative innovation can increase more strongly than that of consumers low in trait cynicism. Their brand loyalty can therefore increase to a greater extent.

Third, product maturity positively moderates the effect of consumers' perceived sincerity on brand loyalty. The findings show that the higher the product maturity, the more effectively perceived sincerity is converted into brand loyalty. This result is consistent with the expectation of cognitive consistency theory. Mature products have already established stable and positive brand-related cognitions in consumers' minds. Under these conditions, consumers are more likely to accept cross-boundary innovation launched by the brand, allowing perceived sincerity to translate into brand loyalty. From a product life-cycle perspective, this finding provides important empirical evidence on the boundary conditions of cross-boundary innovation.

5.2. Theoretical Contributions

This study systematically examines the process mechanisms and boundary conditions through which cross-boundary collaborative innovation affects brand loyalty. It also investigates the psychological mechanisms through which consumers interpret brands' cross-boundary behavior.

First, previous studies have recognized the positive effects of cross-boundary innovation on brand equity. For example, research on brand cross-boundary collaboration has identified brand-level factors such as brand-identity consistency, cross-boundary collaboration fit, coopetition associations, and brand-association strategies.[13] Other studies have examined brand activation processes and pathway patterns at the organizational level from the perspectives of cross-boundary innovation and strategic choice.[34][35] However, this literature has largely remained at the macro level and has not fully revealed the psychological processes experienced by consumers. This study shows that consumers' judgments of the motives underlying brand marketing behavior are based on their own perceptions of sincerity. It thus extends discussion of the effects of brand cross-boundary collaborative innovation from a consumer-psychology perspective and contributes to the enrichment and refinement of theories of brand cross-boundary collaboration.

Second, this study reveals the positive moderating role of trait cynicism in specific contexts. Trait cynicism has long been associated with individuals who are difficult to please and naturally distrustful of others.[36][37] However, this study offers a dialectical perspective: highly cynical consumers can be cautious evaluators with stronger information-discrimination ability. When they genuinely recognize a carefully designed cross-boundary innovation, they may exhibit a stronger affective response. This finding challenges the stereotypical view of cynicism and shows that, under certain conditions, it may even become a positive force that strengthens brand loyalty.

Third, this study incorporates product maturity into the boundary conditions of cross-boundary innovation. Existing research on how cross-boundary initiatives enhance brand equity has focused mainly on brand-level factors, such as the effects of brand fit and brand involvement,[38] while overlooking a crucial objective factor: the product itself. This study confirms that mature products are more likely to inspire consumer trust and encourage consumption. Mature cross-boundary collaborative products therefore have a clear advantage in strengthening brand loyalty.

5.3. Research Limitations and Future Directions

This study's questionnaire survey focused only on Luckin Coffee. Although the empirical analysis produced several meaningful findings, it remains unclear whether these conclusions apply to other brands. In addition, the limitations inherent in cross-sectional data mean that the study cannot completely eliminate the potential threat of common method bias. Future research should therefore conduct surveys involving other brands to further test the generalizability of the findings. The product maturity scale also requires further validation. There is currently no unified academic scale for measuring product maturity, so this study developed its own measure with reference to product life-cycle theory and the specific context of Luckin Coffee. The counterintuitive applicability of trait cynicism also warrants further examination. This study finds that high cynicism strengthens the positive effect of cross-boundary innovation on loyalty in specific contexts, but whether this finding is broadly generalizable remains to be assessed.

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