

## Digital Service Signals and Purchase Loyalty in Short-Video E-Commerce: An Asymmetric Dual-Pathway S-O-R Model

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**Abstract.** This study, grounded in the Stimulus-Organism-Response (S-O-R) theoretical framework, investigates the differential impact mechanisms of promotional cues and opinion leader cues on consumer purchase loyalty in short-video e-commerce. By constructing a dual-pathway model, the research examines how these two types of external stimuli ultimately influence purchasing behavior through the mediating roles of trust and perceived value.

Based on questionnaire data from 600 consumers who have purchased agricultural products via short-video platforms, empirical testing was conducted using structural equation modeling and the Bootstrap method. The results reveal a significant asymmetry in the influence pathways of the two stimuli: The effect of promotional cues on purchase loyalty is predominantly direct (accounting for 84.6% of the total effect), manifesting as a fast, heuristic decision-making path. In contrast, the influence of opinion leader cues operates mainly through psychological mediation, with indirect effects comprising 52.1% of the total effect. Furthermore, their impact on perceived value ( $\beta = 0.46$ ) is substantially greater than on trust ( $\beta = 0.18$ ), suggesting that they primarily function as "value signal transmitters" in the short-video e-commerce context. Both trust and perceived value serve as partial mediators, validating the applicability of the dual-pathway model.

This study uncovers the differentiated persuasion mechanisms driven by economic incentives and social trust in short-video e-commerce, extends the explanatory boundaries of the S-O-R theory within the social commerce context, and provides empirical evidence and managerial insights for platforms in designing promotional strategies and selecting/collaborating with opinion leaders.

**Keyword:** Short-video E-commerce, SOR, Purchase Loyalty, Dual-Path Model, Opinion Leader, SEM

## **1. Introduction**

Short-form video has rapidly evolved into a predominant digital service system, fundamentally reshaping modern retail and consumer service delivery, where engaging content creation, instant transaction capabilities, and social interaction are integrated into a unified information-intensive platform (Vargo & Lusch, 2004). By the end of 2022, the number of short-video platform users in China alone exceeded 1.01 billion, accounting for over 90% of Chinese internet users (Meng et al., 2024). Global brands have accordingly shifted significant marketing resources into short-video channels like TikTok, Instagram Reels, and Douyin, as spending on video-based ads was projected to reach \$76 billion in 2023. This “short video + e-commerce” model offers high user engagement and cost-effective reach, making it an essential new avenue for digital commerce. However, this rapid growth exposes critical challenges for the sustainability and efficiency of such digital service systems, including service coordination failures (e.g., mismatches between content promise and product delivery logistics), information overload leading to user fatigue, and difficulties in converting one-time transactions into enduring service relationships (Grewal et al., 2011; Kumar et al., 2019; Meng et al., 2024). From a service science and informatics perspective, understanding how to design platform stimuli to foster sustained user loyalty is crucial for the system’s long-term viability (Luo et al., 2025). In service science terms, purchase loyalty transcends a mere repeat transaction metric, it signifies the successful maintenance of a service relationship, reflecting user endorsement of the platform’s service reliability and the continued perceived value of the service exchange (Leung et al., 1998; Gefen et al., 2003).

Despite the booming popularity of short-video shopping, platforms face challenges in converting transient views into sustained consumer relationships, often due to information credibility issues and quality mismatches that erode trust, which is a cornerstone of digital service exchange (Pavlou & Gefen, 2004). Repeated exposure to similar content and credibility concerns in digital media can erode trust, highlighting the need for strategies that build enduring consumer commitment (Luo et al., 2025).

Within the architecture of this digital service system, platform algorithms and information architectures systematically generate and modulate specific informational cues to orchestrate user behavior. These cues are not merely content features but outputs of the platform’s integrated information systems. Two fundamental types of system-engineered informational stimuli are pivotal: (1) Algorithmically-driven promotional service cues (e.g., time-limited discounts, flash sales, personalized recommendations), which are generated by recommendation engines and yield management systems. These cues function as digital tools for value proposition and transaction facilitation, effectively lowering decision thresholds by enhancing consumers’ perceived value (Adomavicius & Tuzhilin, 2005; Grewal et al., 2011; Fan et al., 2024). (2) Socially-embedded opinion leader service cues (e.g., endorsements by influential content creators or Key Opinion Leaders), which act as trust-mediated information filters and social proof mechanisms integral to the platform’s social computing infrastructure. These cues leverage the credibility, relatability, and authenticity of influencers to foster trust and sway consumer attitudes, thereby boosting purchase intentions (Hu et al., 2019; Islam & Rahman, 2017; Wong, 2023; Wahyudi et al., 2025). In essence, while algorithm-driven promotional cues primarily engage users’ economic rationality (the automated deal), socially-embedded opinion leader cues tap into relational and psychological influence (the curated endorsement). Both are omnipresent, engineered components of the short-video service ecosystem, yet they are theorized to activate distinct internal decision pathways for consumers within this information-intensive environment.

The Stimulus–Organism–Response (S-O-R) framework offers a robust theoretical lens to disentangle these dual pathways (Kim et al., 2020). According to S-O-R theory, features of the environment or content (stimuli) elicit internal organismic responses in consumers (such as cognitive evaluations or emotional states), which in turn drive behavioral responses (such as purchase or loyalty). In the context of short-video commerce, a promotional stimulus (e.g. a discount offer on a product in the video) might evoke an organismic response like heightened perceived value or purchase urgency, leading to a

transaction and potentially repeat purchase loyalty (Fan et al., 2024). Conversely, an opinion leader stimulus (e.g. a popular influencer vouching for the product) might trigger consumer trust or identification with the influencer, fostering a relational bond that translates into loyalty toward the recommended product or brand. These theorized dual pathways (one more utilitarian and value-driven, the other more social/affective) align with longstanding notions in consumer research that different persuasive appeals engage different consumer motivations. However, to date, short-video marketing research has rarely examined these pathways in a comparative or integrated manner.

From an informatics standpoint, the organismic states of trust and perceived value are not only internal psychological reactions but also direct reflections of the user's assessment of the platform's information service quality. Trust is built upon the credibility of information sources (e.g., influencer authenticity verified by the platform) and the reliability of the transaction system. Perceived value is derived from the relevance and accuracy of personalized information (e.g., the fit of a recommended discount) and the efficiency of the service process enabled by the interface (Gefen et al., 2003; Everard & Galletta, 2005). Thus, the S-O-R framework in this context must be understood as one where the 'Stimulus' is an artifact of information system design, and the 'Organism' is an evaluator of information service outcomes.

Indeed, while prior studies on short-form video commerce have yielded valuable insights into various isolated factors, for instance, platform features and content format attributes (Meng et al., 2024), a more fundamental conceptual limitation persists in the prevailing theoretical application of the S-O-R framework. The literature predominantly applies S-O-R as a generic process model, implicitly assuming that diverse environmental stimuli uniformly trigger similar psychological mediation pathways to influence behavior, which perhaps overlooks the possibility that stimulus characteristics themselves may condition the very necessity and depth of distinct psychological mechanisms (Meyers-Levy & Malaviya, 1999). For instance, while studies acknowledge both promotional and social cues (Fei et al., 2021), they seldom theorize why and how their underlying psychological routes to a critical outcome like purchase loyalty might diverge fundamentally. Does a time-limited discount and a trusted influencer's endorsement operate through the same cognitive and affective channels? Treating stimuli in aggregate, obscures this question and fails to capture the contingent nature of mediation. Consequently, there is a lack of a theoretically nuanced S-O-R model that posits differential mediation pathways as a function of stimulus type. As a result, existing S-O-R applications are theoretically limited in explaining why some stimuli exert dominant direct effects while others rely heavily on psychological mediation.

To address this theoretical gap concerning asymmetric mediation, this study proposes and tests an asymmetric dual-pathway S-O-R model in the short-video e-commerce context. We focus on promotional cues vs. opinion leader cues as two fundamental stimulus categories in short video marketing, and theorize that each follows a separate psychological route toward influencing purchase loyalty. In our framework, promotional cues are expected to primarily enhance consumers' perceived value or transactional benefits (a cognitive pathway), whereas opinion leader cues are expected to strengthen consumer trust and emotional attachment (a socio-emotional pathway), with both ultimately contributing to higher purchase loyalty (e.g. repeat purchase intentions and advocacy). By examining how different platform-level information service designs (promotional vs. social) differentially shape service quality/value perceptions (trust vs. perceived value) and ultimately service loyalty, this research offers insights for service science on designing digital services for customer retention. It informs informatics on the impact of algorithmic and social cues within information systems. Finally, it provides service operations with an understanding of how front-end digital stimuli relate to sustained transaction flow (purchase loyalty).

Overall, this study offers three key contributions. First, rather than merely extending S-O-R to a new context, this study refines the theory by relaxing the implicit assumption of symmetric and necessary

mediation. Second, it bridges the research gap on consumer loyalty in short-form video commerce by revealing how loyalty can be nurtured through different psychological mechanisms in a dual-cue environment. Third, it provides actionable insights for practitioners on short-video platforms: for example, when to emphasize promotional incentives versus influencer partnerships in order to cultivate enduring purchase loyalty. In an era where short-video platforms are becoming a mainstream channel for consumer engagement, such insights can help marketers design more effective content strategies that not only drive immediate sales but also build sustainable customer relationships. By aligning our investigation with these contemporary needs and scholarly gaps, this research contributes to a deeper and more current understanding of purchase loyalty formation in short-video e-commerce.

## **2. Theoretical Framework and Hypothesis Development**

### **2.1 The S-O-R Framework and Its Applicability**

The Stimulus-Organism-Response (S-O-R) model originates from the field of environmental psychology (Mehrabian & Russell, 1974) and is used to explain how environmental factors influence behavioral responses through internal psychological states. Within this framework, "Stimulus" represents external environmental characteristics, "Organism" refers to an individual's internal psychological states, and "Response" denotes the ultimate behavioral outcome. This model effectively captures the causal chain of "environment → cognition → behavior," with its core assumption being that external environmental cues can trigger internal cognitive and affective changes in individuals, thereby determining subsequent behavior (Fan et al., 2024). In recent years, the S-O-R model has been widely applied in online consumption contexts to analyze the interactions between stimuli and consumer psychology and behavior in digital environments.

Short-video e-commerce, as a highly mediated commercial environment, is saturated with rich visual and auditory cues. These information streams are not passively or neutrally transmitted; rather, they are carefully encoded to stimulate consumers' perceptual systems and elicit immediate responses. The S-O-R framework is particularly suited to this context: decision-making in short-video environments is often time-constrained and characterized by rapid cognitive processing, where diverse external cues continuously impact internal psychological processes and drive behavioral decisions. Therefore, adopting the S-O-R model helps systematically elucidate the underlying mechanisms of consumer decision-making in short-video e-commerce, providing a clear theoretical pathway for understanding how complex environmental cues influence consumer psychology.

### **2.2 Selection of Stimulus (S) Variables: Theoretical Foundation and Contextual Typicality**

Not all external environmental features exert equal influence on consumer behavior. In constructing our model, we follow two guiding principles (i.e., theoretical fundamentality and contextual typicality) to identify the key stimulus variables that best explain consumer decision-making in short-video e-commerce. Based on literature review and practical observation, this study focuses on two dimensions of external cues: promotional cues and opinion leader (streamer/content creator) cues. These two types of cues represent the two fundamental driving forces in short-video e-commerce decision-making: economic incentives and social trust.

#### **2.2.1 Promotional Cues (Economic Incentives)**

Promotional information (such as limited-time discounts, coupons, and giveaways) directly targets the economic core of transactions—price and cost—and represents a classic and robust factor in driving short-term purchase behavior. Blattberg and Neslin's (1990) promotion theory has long established that discount offers can significantly increase consumers' immediate purchase likelihood, as reduced prices and additional benefits alter consumers' cost-benefit calculations, making transactions appear more

attractive. On short-video platforms, where users typically receive large volumes of information within brief time windows, the "immediate benefit" signal conveyed by promotions is dramatically amplified, creating a sense of urgency and the psychology of "getting a good deal," thus constituting the most direct purchase inducement. Existing research has confirmed that embedding discounts and other promotions in short-video content enhances consumers' perceived transaction value and triggers impulsive purchase intentions. Therefore, from a theoretical perspective, promotional cues align with the rational pathway of consumer utility maximization; in practice, promotions are universally employed by e-commerce platforms as a means to drive sales volume, and their importance is self-evident.

### **2.2.2 Opinion Leader Cues (Social Trust)**

Short-video e-commerce exhibits significant socialization and personalization characteristics, with consumers often obtaining product information and shopping recommendations through streamers or content creators. According to Source Credibility Theory, the characteristics of information communicators determine whether audiences accept their viewpoints. Ohanian (1990) further refined source credibility into three dimensions: expertise, trustworthiness, and attractiveness. These attributes affect the degree of trust audiences place in information and subsequently influence persuasion effectiveness (Ohanian, 1990). In short-video e-commerce scenarios, streamers/bloggers function as consumers' trust agents: their professional knowledge, authenticity and reliability, and personal charisma all directly influence consumers' trust in their recommended products.

Research has found that compared to traditional celebrity endorsers, consumers often place greater trust in recommendations from social media opinion leaders (such as internet influencers), leading to higher purchase intentions for promoted products. This is because opinion leaders in short videos accumulate social capital through sharing personal experiences and interacting with followers, shortening the psychological distance with consumers and enhancing affinity and credibility. In the trust-deficient online environment, this social guarantee provided by opinion leaders is particularly critical: their endorsement can reduce consumers' perceived risk regarding products and sellers, enabling consumers to purchase with greater peace of mind (Luo et al., 2025).

In summary, opinion leader cues theoretically correspond to the trust-building decision-making pathway and contextually represent a signature element of the rise of short-video e-commerce (for instance, the influence of "live-streaming hosts" is widely recognized in the industry). Therefore, selecting opinion leader cues as stimulus variables captures the unique consumer psychological mechanisms driven by personalized information sources in short-video e-commerce. Overall, promotional cues and opinion leader cues represent the most explanatory external stimuli in short-video e-commerce environments from the perspectives of economic value and social value, respectively. This selection is supported by both existing literature and business practice: promotions drive purchases through direct benefit inducement, while trustworthy opinion leaders facilitate purchases indirectly by establishing trust. Focusing on these two core stimuli helps us construct a research model that is both parsimonious and powerful.

## **2.3 Selection of Organism (O) Variables: The Dual Pathway of Risk and Utility**

In the S-O-R framework, the "Organism" level of internal psychological states serves as a mediating bridge, transforming external stimuli into behavioral intentions. Therefore, our criteria for selecting organism variables are twofold: first, these psychological variables must be key mediators through which external cues influence behavior; second, they should cover the core dimensions of consumer decision psychology—namely, the perception of risk and the evaluation of utility (Harridge-March, 2006; Nguyen, 2025). Based on these two criteria, this study employs trust and perceived value as the core psychological variables at the organism layer.

### **2.3.1 Trust**

Trust is the psychological cornerstone enabling any relational exchange to occur. Morgan and Hunt's (1994) Commitment-Trust Theory of Relationship Marketing emphasizes that in maintaining long-term transaction relationships, trust is an indispensable adhesive and prerequisite condition. In the highly uncertain environment of online shopping, consumer trust in sellers, platforms, or information sources is particularly important—the presence or absence of trust directly determines whether consumers are willing to bear the risks of online transactions. Specifically in short-video e-commerce contexts, trust primarily manifests as consumers' degree of confidence in content providers (streamers/bloggers) and their recommended products. This psychological state precisely corresponds to the social verification process triggered by the aforementioned opinion leader cues: trustworthy streamers can function as "guarantors," providing consumers with a sense of security and reducing perceived risk. Existing empirical research has also demonstrated that enhancing consumers' trust in content creators on short-video social platforms can significantly increase their purchase intentions and plays a mediating role between content and purchase behavior. Therefore, we regard trust as the key mediating variable connecting opinion leader cues and purchase intentions: external personalized cues positively influence purchase decisions by enhancing consumers' trust in the information source. From a decision psychology dimension, trust primarily fulfills a "risk reduction" function—its increase signifies decreased perceived risk and increased sense of security, thereby clearing psychological barriers to transactions.

### **2.3.2 Perceived Value**

Perceived value refers to consumers' overall evaluation of the "benefits received versus costs paid" for a product or service. Zeithaml's (1988) classic definition states: "Perceived value is the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given." Here, "what is received" includes product functionality, quality, and needs fulfilled, while "what is given" encompasses not only monetary price but also various costs such as time, effort, and psychological pressure. Perceived value is regarded as one of the most core factors influencing consumer purchase intentions: when consumers believe a product is "worth it" (i.e., what is received exceeds what is given), purchase intentions naturally strengthen. In our model, perceived value is precisely the primary psychological variable acted upon by promotional cues. Various promotional tactics directly alter the "what is given" component by reducing prices or adding benefits, thereby increasing the cost-effectiveness of the transaction and amplifying consumers' subjectively perceived value. For example, limited-time discounts in short videos make consumers feel that current purchases are more worthwhile than future ones—not only saving money but potentially receiving additional gifts—and this perception of high value strongly drives them to generate immediate purchase intentions. Therefore, perceived value can be viewed as another key mediator connecting promotional cues and purchase intentions: external economic incentives positively influence purchase decisions by enhancing consumers' value assessments of products. From a decision psychology dimension, perceived value corresponds to the "utility maximization" pathway—consumers tend to select options that maximize their net benefit (benefit minus cost), and promotions influence this calculation precisely by altering the benefit/cost structure.

### **2.3.3 Rationale for Focal Variables**

It should be noted that we intentionally focus on trust and perceived value as the two core psychological variables, while not incorporating other potential mediating mechanisms (such as immersion, satisfaction, or emotional pleasure). This decision stems from considerations of model parsimony and theoretical focus. First, satisfaction is typically viewed as a post-transaction outcome evaluation that

emerges after consumers have experienced a product or service. In contrast, trust and value operate more during the pre-purchase phase: consumers judge whether to believe recommendations based on trust and weigh whether to buy based on value perception. Therefore, satisfaction is more suitable as a post-hoc outcome rather than a determinant of pre-purchase intentions. Second, while immersion or emotions certainly influence user experience in short-video scenarios, these influences are largely reflected in consumers' subjective value assessments. For example, an enjoyable short-video shopping experience may enhance consumers' overall evaluation of the transaction (i.e., increase perceived value) or strengthen their positive feelings toward the streamer (i.e., increase trust). Therefore, in our theoretical model, treating trust and perceived value as mediators already implicitly captures the core psychological processes of both risk and utility dimensions, while other variables may exert influence indirectly through these two pathways or operate at more upstream positions. Focusing on the most streamlined yet powerful dual-pathway model centered on trust and value helps us reveal the core psychological "black box" of how external cues influence consumer intentions, avoiding model dilution due to secondary variables.

#### **2.4 Selection of Response (R) Variable: Intention Over Behavior**

This study employs purchase intention (behavioral intention) rather than actual purchase behavior as the response-layer variable. There are two primary reasons: methodological feasibility and theoretical predictive power. In typical cross-sectional survey research, direct measurement of consumers' actual purchase behavior is often extremely difficult due to time and data access constraints (especially on anonymous short-video platforms, where researchers have difficulty tracking individuals' actual transaction records). In contrast, purchase intention is a subjective indicator that can be conveniently obtained through questionnaires. More importantly, according to the Theory of Reasoned Action, behavioral intention is considered the best single predictor of future actual behavior (Nickerson, 2023). Fishbein and Ajzen (1975) pointed out that intention toward a behavior reflects an individual's subjective likelihood of performing that behavior and is highly correlated with subsequent behavioral performance. Numerous empirical studies in the marketing domain support this view: when environmental and temporal intervals permit, intention and behavior exhibit significant positive correlations. Therefore, in a predictive sense, immediate purchase intention can be regarded as an effective proxy indicator for future purchase behavior. Selecting purchase intention also helps avoid interference from certain external factors on actual behavior (such as inventory, logistics, payment issues, and other non-psychological factors), allowing us to more purely examine the mechanisms of psychological variables. At the same time, it must be acknowledged that intention and behavior are not perfectly correspondent; there exists an "intention-behavior gap." However, in the short-term decision-making context examined in this study, this gap is relatively small, as promotional and streamer influences often aim to convert immediately into purchase actions. This study's focus on behavioral intention aligns with the common practice in a large body of marketing literature and conforms to theoretical expectations, as increasing consumer purchase intention is itself an important goal of marketing efforts, strongly presaging growth in actual sales.

#### **2.5 Integrated Research Model and Hypothesis Development**

In summary, this study constructs an integrated model based on the S-O-R framework that includes dual external stimuli, dual internal psychological mediators, and a single behavioral outcome. As elaborated above, promotional cues (S1) and opinion leader cues (S2) serve as stimulus variables, representing the external drivers of economic incentives and social trust, respectively; trust (O1) and perceived value (O2) serve as organism variables, reflecting the internal psychological processes of risk perception and utility evaluation, respectively; and purchase intention (R) serves as the response variable, representing the ultimate behavioral tendency. The model posits the following pathways of influence: external stimuli first affect internal psychological states, which in turn influence behavioral intentions.

Specifically, promotional cues are expected to have the most significant enhancing effect on perceived value, as price reductions and offers primarily and directly increase the net utility of transactions; promotions may also slightly influence consumers' trust in sellers or products (for example, substantial discounts are sometimes viewed as sellers' goodwill or platform credibility signals), but compared to value utility, their effect on trust is relatively secondary. Opinion leader cues are expected to have the most central enhancing effect on trust—credible streamer images will substantially strengthen consumers' confidence in their recommendations; simultaneously, information provided by a professional, attractive streamer may also enhance consumers' perceived value of products (for example, by reducing consumers' information search costs through detailed explanations or elevating products' status in consumers' minds through personal charisma), but compared to trust building, this influence is secondary. Next, at the organism level, both higher trust and higher perceived value will positively promote consumers' purchase intentions. Trust makes consumers more confident that purchase decisions are safe and wise, thus willing to take action; high perceived value signifies "worth buying," naturally strengthening purchase motivation. Finally, throughout the entire chain, we further propose mediation hypotheses: trust primarily mediates the influence of opinion leader cues on purchase intention, meaning that streamers' characteristics influence consumer intentions largely by establishing trust; perceived value primarily mediates the influence of promotional cues on purchase intention, meaning that promotions' facilitative effect on intentions stems mainly from their enhancement of consumers' value assessments of transactions. The following are the specific hypotheses of this study's model:

H1 (Promotion → Value): Promotional cues in short videos will significantly and positively influence consumers' perceived value. In other words, discounts, offers, and other stimuli will make consumers feel that products are more worthwhile.

H2 (Promotion → Trust): Promotional cues in short videos will positively influence consumers' trust. Although this effect is relatively limited, effective promotions may enhance consumers' favorable impressions and trust in platforms or sellers (e.g., perceiving sellers as sincere).

H3 (Opinion Leader → Trust): Opinion leaders' (streamers') expertise, credibility, and attractiveness cues will significantly and positively influence consumers' trust. Highly credible streamer images help establish consumers' trust in their recommended products.

H4 (Opinion Leader → Value): Opinion leader cues will positively influence consumers' perceived value. That is, influential streamers, through information provision and personal charisma, can enhance consumers' perception of product benefits or reduce decision-making costs, thereby increasing their subjective value assessments.

H5 (Trust → Intention): The higher consumers' trust in streamers/sellers, the stronger their purchase intentions. Trust eliminates concerns, making consumers more willing to adopt recommendations and make purchases.

H6 (Value → Intention): The higher consumers' perceived value of products, the stronger their purchase intentions. High value perception signifies excellent value for money, thus driving consumers to place orders.

H7a (Mediation of Trust): Consumers' trust plays a mediating role in the process by which opinion leader cues influence purchase intention. That is, streamer cues enhance purchase intentions primarily by first enhancing consumers' trust in streamers/products.

H7b (Mediation of Value): Consumers' perceived value plays a mediating role in the process by which promotional cues influence purchase intention. That is, promotions increase purchase intentions primarily because they enhance consumers' value perceptions of transactions.

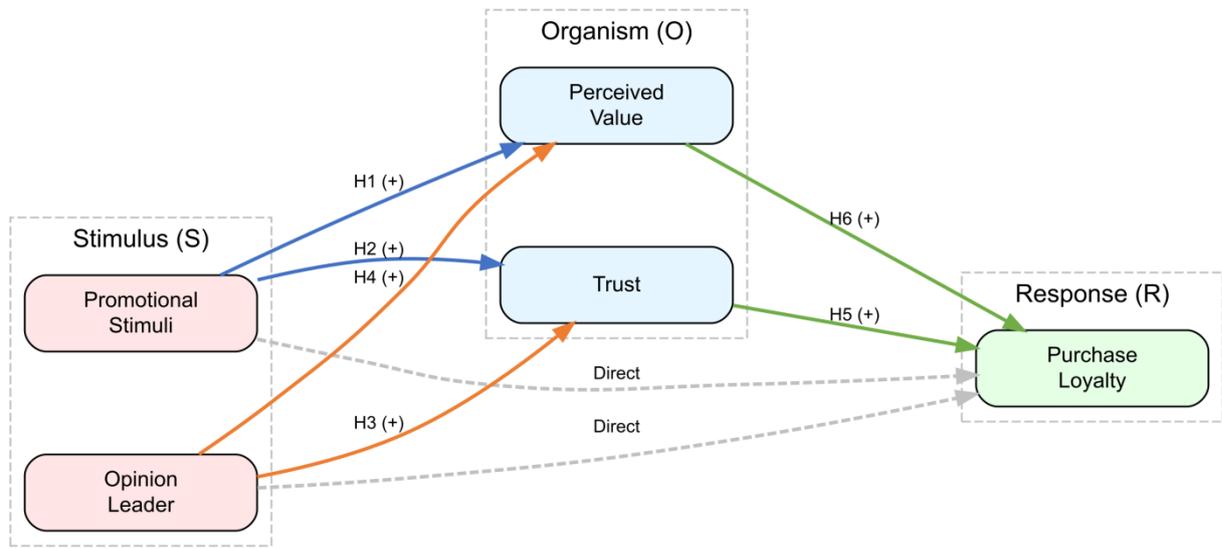


Fig.1: SOR Path Model

The above hypotheses delineate the mechanism of "external cues → internal psychology → behavioral intention" in short-video e-commerce scenarios. Among them, promotions activate the "calculating value" utility evaluation pathway, while streamers shape the "trust endorsement" risk control pathway, both jointly driving consumers' purchase decisions. This dual-pathway model finds strong support in existing literature: economic incentives and social trust have been repeatedly proven as important drivers of online consumer behavior; psychological variables such as trust and value have been verified as key bridges connecting external stimuli and purchase intentions. Through empirical testing of this model, we hope to deepen theoretical understanding of the drivers of consumer decision-making in short-video e-commerce modes and provide guidance for marketing practice. The model's innovation lies in combining traditional promotional effects with social trust effects, enabling more comprehensive explanation of the psychological pathway from "being influenced" to "placing orders" in emerging social commerce environments, providing a solid theoretical foundation and testable hypotheses for subsequent research.

### 3. Methodology

#### 3.1 Research Design

This study employed a quantitative research design to investigate the factors influencing consumer purchase loyalty in short-video e-commerce platforms. Based on the Stimulus-Organism-Response (S-O-R) framework, a structured questionnaire was developed to collect data from consumers who had purchased agricultural products through short-video platforms (e.g., Douyin, Kuaishou, Xiaohongshu) within the past three months.

#### 3.2 Sample and Data Collection

Data were collected from 847 participants in China, where 600 participants (70.8 %) who met the

following criteria: (1) aged 18 years or older, (2) had purchased agricultural products through short-video platforms within the past three months, and (3) watched agricultural product-related short videos at least occasionally, and (4) must fully completed the questionnaire. A method combining convenience sampling and snowball sampling were adopted for data collection. The questionnaires were mainly distributed through the university network (students on campus and their social circles), which effectively reached one of the target groups of this study, young people with a high acceptance of emerging e-commerce models, especially college students. At the same time, inviting family members (e.g., parents or grandparents) to participate through student channels has also helped us reach the middle-aged group with more consumption experience. The sample characteristics are presented in Table 1.

Table 1. Demographic Characteristics of Respondents (N = 600)

Characteristic	Category	n	%
Gender	Male	312	52.0
	Female	288	48.0
Age	18-24	346	57.7
	25-34	84	14.0
	35-44	29	4.8
	45-55	123	20.5
	55+	18	3.0
Education	Junior high school or below	150	25.0
	High school/Vocational	84	14.0
	College/Bachelor	325	54.2
	Master or above	41	6.8
Monthly Income (CNY)	0-3,000	233	38.8
	3,001-5,000	180	30.0
	5,001-7,000	81	13.5
	7,001-9,000	56	9.3
	9,001-11,000	72	12.0
	11,001-20000	22	3.7
	20001+	1	0.2

Note. CNY = Chinese Yuan.

The sample exhibited a relatively balanced gender distribution (52.0% male, 48.0% female). Reflecting the sampling method that primarily targeted university students and their families, the age distribution is skewed towards younger adults, with 57.7% of respondents aged 18-24. Correspondingly, individuals with higher education levels constitute a significant portion, as 54.2% hold a college or

bachelor's degree. The monthly income distribution is notably concentrated in lower brackets, with 68.8% reporting a personal income of ¥5,000 or below. This pattern likely captures a large proportion of students with limited or no fixed income, alongside some middle-aged or elderly family members.

We acknowledge that this sample structure characterized by a high concentration of young, educated individuals with relatively low personal incomes, is not statistically representative of the broader demographic profile of short-video e-commerce consumers in China. However, the primary objective of this study is theoretical testing, specifically, verifying the hypothesized relationship paths among variables within the S-O-R framework. For this purpose, the presence of sufficient variability in the core psychological and behavioral constructs under investigation is more critical than demographic representativeness. The obtained sample provides adequate diversity for examining these theoretical relationships. Subsequent analyses will proceed based on this sample, and the limitations to external validity arising from this sampling approach will be explicitly addressed in the discussion section.

### **3.3 Measurement Instruments**

All constructs were measured using multi-item scales adapted from prior literature. Responses were recorded on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The measurement instrument included: (1) Promotional Stimuli (3 items), measuring the perceived attractiveness of promotional activities such as limited-time discounts and gifts; (2) Opinion Leader Characteristics (3 items), assessing the perceived professionalism, popularity, and reputation of the streamer/host; (3) Trust (3 items), evaluating consumer trust in the product quality based on video content; (4) Perceived Value (3 items), measuring beliefs about product quality reliability and purchase decision wisdom; and (5) Purchase Loyalty (3 items), assessing willingness to purchase, repurchase, and recommend.

### **3.4 Data Analysis Strategy**

Data analysis proceeded in several stages. First, descriptive statistics and reliability analysis (Cronbach's alpha) were conducted to assess measurement quality. Second, confirmatory factor analysis (CFA) was performed to evaluate the measurement model, including convergent validity (AVE, CR) and discriminant validity (Fornell-Larcker criterion). Third, common method variance (CMV) was assessed using Harman's single-factor test. Fourth, structural equation modeling (SEM) was employed to test the hypothesized relationships using the maximum likelihood estimation with robust standard errors (MLR). Fifth, mediation effects were examined using the bootstrap method with 5,000 resamples to construct bias-corrected 95% confidence intervals. All analyses were conducted using the lavaan package (version 0.6-21) in R (version 4.5).

## **4. Results**

### **4.1 Descriptive Statistics and Reliability**

Descriptive statistics and reliability coefficients for all constructs are presented in Table 2. Four of the five constructs demonstrated acceptable to excellent internal consistency ( $\alpha$  ranging from .77 to .89), with the notable exception of the Promotional Stimuli scale ( $\alpha = .49$ ). This limitation is acknowledged and will be addressed in the Discussion. As shown in the correlation matrix (Table 3), all constructs were significantly correlated in expected directions. Of particular note, Promotional Stimuli showed the strongest correlation with Purchase Loyalty ( $r = .65$ ), while Opinion Leader exhibited a strong association with Perceived Value ( $r = .51$ ), providing initial support for the hypothesized differential pathways.

Table 2. Descriptive Statistics and Reliability

Variable	Items	M	SD	$\alpha$
Promotional Stimuli	3	2.38	0.76	.49
Opinion Leader	3	2.94	0.73	.85
Trust	3	3.30	0.73	.89
Perceived Value	3	3.74	0.77	.77
Purchase Loyalty	3	2.40	0.70	.81

Note.  $\alpha$  = Cronbach's alpha. Acceptable threshold:  $\alpha > .70$ .

Table 3. Correlation Matrix of Study Variables

Variable	1	2	3	4	5
1. Promotion	—				
2. Opinion Leader	.30**	—			
3. Trust	.26**	.24**	—		
4. Perceived Value	.31**	.51**	.23**	—	
5. Purchase Loyalty	.65**	.44**	.46**	.48**	—

Note. \*\* $p < .01$ .

## 4.2 Measurement Model Evaluation

Confirmatory factor analysis (CFA) was conducted to assess the measurement model. The five-factor model demonstrated marginally acceptable fit to the data:  $\chi^2(80) = 514.72$ ,  $p < .001$ ; CFI = .91; TLI = .88; RMSEA = .095, 90% CI [.087, .103]; SRMR = .067. Although RMSEA exceeded the conventional threshold of .08, CFI met the acceptable criterion of .90, and SRMR was below .08, suggesting that the overall model fit was acceptable for the current study. This marginal fit, particularly as it relates to the promotional stimuli construct, will be further discussed in the limitations section.

Table 4. Measurement Model Results: Factor Loadings and Convergent Validity

Factor/Item	Loading	AVE	CR	$\sqrt{\text{AVE}}$	VIF
Promotional Stimuli		.31	.53	.56	1.18
Item A1	.49***				
Item A2	.80***				
Item A3	.25***				
Opinion Leader		.66	.85	.81	1.42
Item B1	.88***				
Item B2	.79***				
Item B3	.77***				

Trust		.75	.90	.86	1.12
Item C1	.81***				
Item C2	.77***				
Item C3	1.00***				
Perceived Value		.57	.79	.75	1.42
Item D1	.56***				
Item D2	.74***				
Item D3	.92***				
Purchase Loyalty		.63	.83	.79	
Item E1	.81***				
Item E2	.63***				
Item E3	.90***				

Note. All loadings significant at \*\*\* $p < .001$ . Recommended threshold:  $\lambda > .50$ . AVE = average variance extracted; CR = composite reliability;  $\sqrt{AVE}$  = square root of AVE. Recommended thresholds: AVE  $> .50$ , CR  $> .70$ .

Most items loaded significantly on their respective factors (loadings  $> .50$ ), though Item A3 exhibited a low loading (.25), contributing to the suboptimal reliability and convergent validity of the Promotional Stimuli construct ( $\alpha = .49$ , AVE = .31, CR = .53). Despite this limitation, the construct was retained for theoretical relevance.

Common method variance (CMV) was assessed using two approaches. First, Harman's single-factor test revealed that a single factor accounted for only 36.6% of the total variance, well below the 50% threshold that would indicate substantial CMV. Second, a comparison between the single-factor CFA model (CFI = .50) and the hypothesized five-factor model (CFI = .91) yielded a substantial difference ( $\Delta CFI = .41$ ), further confirming that CMV was not a serious concern in this study. Multicollinearity was also not an issue, with all VIF values well below 5.0 (range: 1.12 - 1.42) (See Table 4).

### 4.3 Structural Model Comparison and Path Analysis

Three competing structural models were estimated to identify the best-fitting representation of the data: (1) a direct effects model, where Promotional Stimuli and Opinion Leader directly predicted Purchase Loyalty; (2) a full mediation model, where the stimulus variables influenced Purchase Loyalty only through Trust and Perceived Value; and (3) a partial mediation model, which included both direct and indirect paths. Table 6 presents the fit indices for each model.

Table 5. Structural Model Comparison

Model	$\chi^2$	df	CFI	TLI	RMSEA	SRMR	R <sup>2</sup>
Direct Effects	0.00	0	1.00	1.00	.000	.000	.49
Full Mediation	273.49	3	.66	-.02	.388	.121	.35
Partial Mediation	5.77	1	.99	.95	.089	.021	.59

Note. R<sup>2</sup> = variance explained in Purchase Loyalty. Recommended: CFI  $> .90$ , TLI  $> .90$ , RMSEA  $< .08$ ,

SRMR < .08.

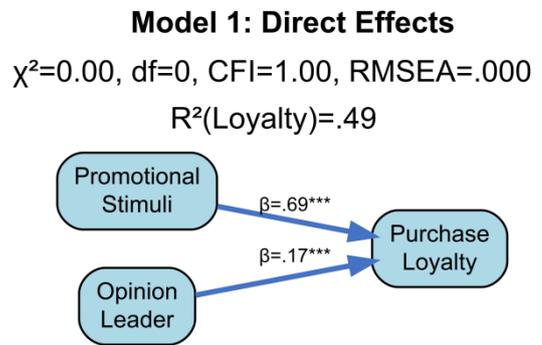
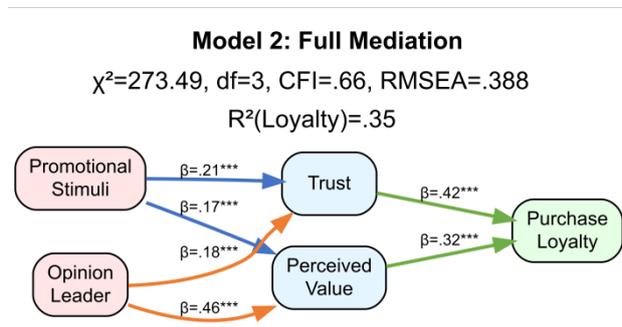


Fig.2&3: Model 1 Direct Effects Model and Model 2 Full Mediation Model

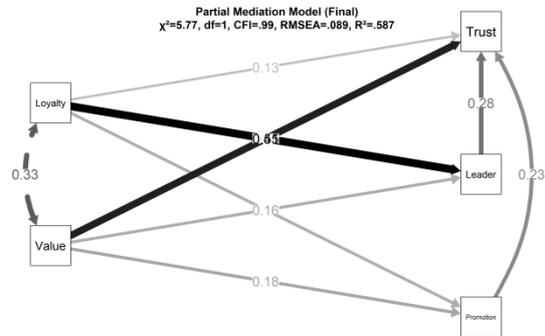
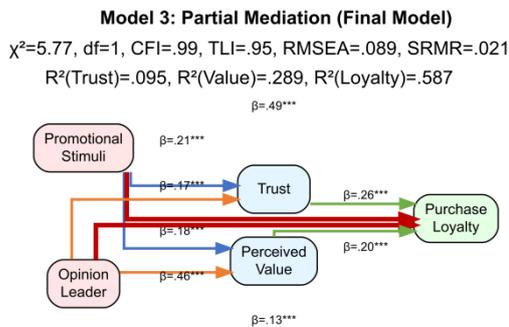


Fig. 4 & 5: Model 3 Patial Mediation

As shown in Table 5, the partial mediation model demonstrated superior explanatory power ( $R^2 = .59$ ) and fit ( $CFI = .99$ ,  $TLI = .95$ ,  $SRMR = .021$ ) compared to the full mediation model ( $R^2 = .35$ ,  $CFI = .66$ ,  $TLI = -.02$ ,  $SRMR = .121$ ) and the direct effects model ( $R^2 = .49$ ). Although its  $RMSEA (.089)$  was slightly above the  $.08$  threshold, it was selected as the final model for hypothesis testing.

Table 6 presents the standardized path coefficients from the partial mediation model. All hypothesized paths were statistically significant ( $p < .001$ ).

Table 6. Standardized Path Coefficients (Partial Mediation Model)

Path	B	SE	$\beta$	z	p
<b>Stimulus → Organism</b>					
Promotion → Trust	.20	.04	.21	5.53	<.001
Opinion Leader → Trust	.18	.04	.18	4.15	<.001
Promotion → Value	.17	.04	.17	4.84	<.001
Opinion Leader → Value	.49	.04	.46	11.89	<.001
<b>Organism → Response</b>					

Trust → Loyalty	.25	.02	.26	10.76	<.001
Value → Loyalty	.19	.03	.20	6.49	<.001
Direct Effects (S → R)					
Promotion → Loyalty	.45	.03	.49	14.26	<.001
Opinion Leader → Loyalty	.12	.03	.13	4.13	<.001

Note. B = unstandardized coefficient;  $\beta$  = standardized coefficient.

Regarding the StimulusOrganism paths, Promotional Stimuli significantly predicted both Trust ( $\beta = .21$ ) and Perceived Value ( $\beta = .17$ ), supporting H1 and H2. Opinion Leader characteristics also significantly influenced Trust ( $\beta = .18$ ) and Perceived Value ( $\beta = .46$ ), with a notably stronger effect on Perceived Value, supporting H3 and H4. For the Organism → Response paths, both Trust ( $\beta = .26$ ) and Perceived Value ( $\beta = .20$ ) significantly predicted Purchase Loyalty, supporting H5 and H6. Additionally, significant direct effects from both Promotional Stimuli ( $\beta = .49$ ) and Opinion Leader ( $\beta = .13$ ) to Purchase Loyalty were observed, indicating partial rather than full mediation.

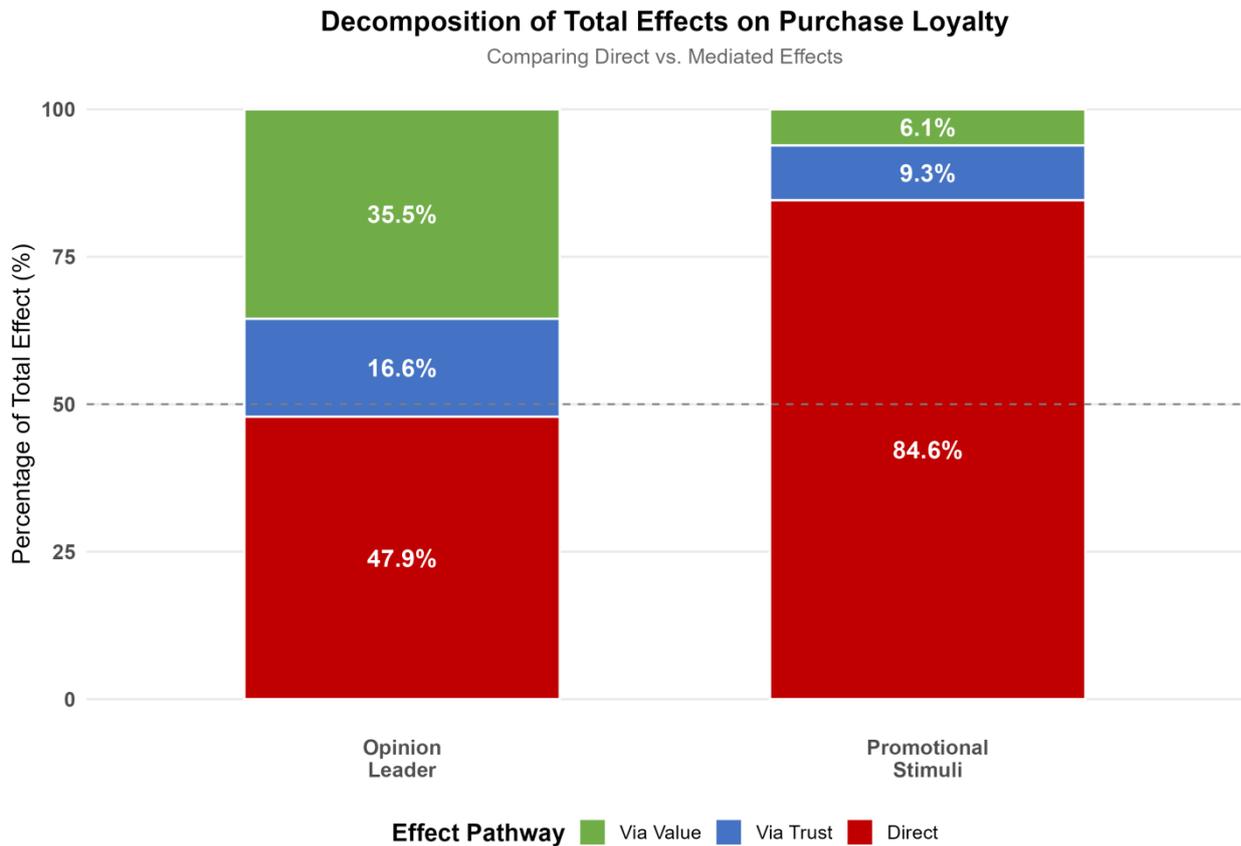


Fig.6: Mediation Comparison

This model explained 9.5% of the variance in Trust, 28.9% of the variance in Perceived Value, and 58.7% of the variance in Purchase Loyalty, indicating substantial predictive power for the outcome variable.

#### 4.4 Mediation Analysis

To test the mediation hypotheses (H7a and H7b), indirect effects were estimated and tested using bootstrapping with 5,000 resamples. Table 8 presents the decomposition of effects and the bootstrap

confidence intervals.

Table 7. Mediation Effects with Bootstrap 95% Confidence Intervals

Effect	Estimate	SE	95% CI
<b>Specific Indirect Effects</b>			
Promo → Trust → Loyalty	.049	.010	[.031, .070]
Promo → Value → Loyalty	.032	.008	[.017, .049]
Leader → Trust → Loyalty	.044	.011	[.023, .066]
Leader → Value → Loyalty	.090	.015	[.061, .122]
<b>Total Indirect Effects</b>			
Promotional Stimuli	.081	.013	[.058, .107]
Opinion Leader	.134	.019	[.097, .173]
<b>Proportion Mediated</b>			
Promotional Stimuli	15.4%	.022	[11.2%, 19.9%]
Opinion Leader	52.1%	.085	[37.3%, 71.0%]

Note. CI = confidence interval. Sig. = significant if 95% CI does not include zero. Bootstrap resamples = 5,000.

All specific indirect effects were statistically significant, as none of the bootstrap 95% confidence intervals included zero. The total indirect effect of Promotional Stimuli on Purchase Loyalty through the mediators was .081 (95% CI [.058, .107]), representing 15.4% of the total effect. In contrast, the total indirect effect of Opinion Leader was .134 (95% CI [.097, .173]), representing 52.1% of the total effect. These results support H7a and H7b, confirming that Trust and Perceived Value partially mediate the relationships between the stimulus variables and Purchase Loyalty.

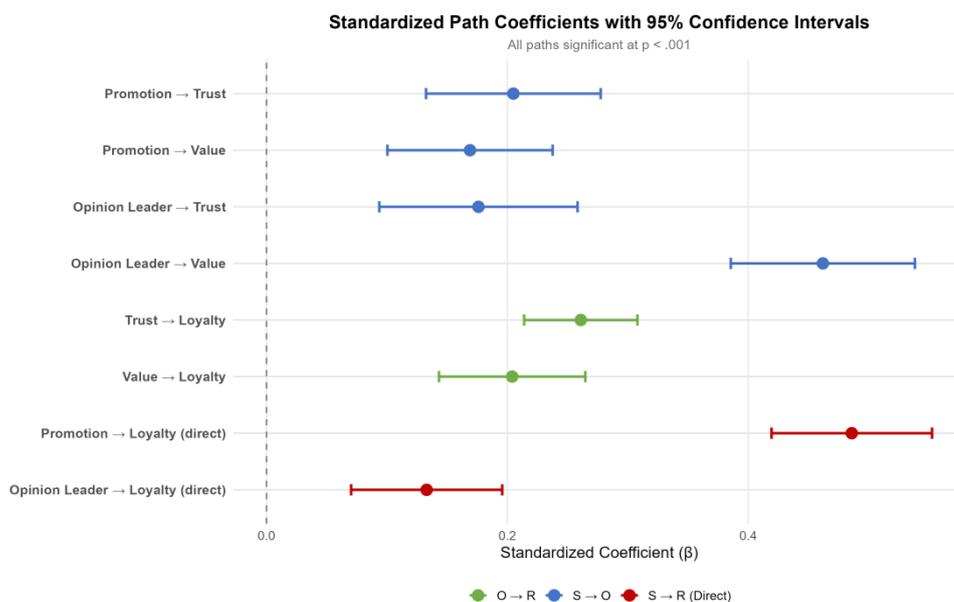


Fig.7: Path Coefficients Forest

Notably, the mediation pattern differed substantially between the two stimulus variables. For Promotional Stimuli, the direct effect ( $\beta = .49$ ) was considerably larger than the indirect effect, indicating that promotions primarily influence purchase loyalty directly rather than through psychological mechanisms. Conversely, for Opinion Leader, the indirect effect accounted for more than half of the total effect, suggesting that the influence of opinion leaders on purchase loyalty is largely transmitted through enhanced trust and perceived value.

Table 8. Summary of Hypothesis Testing Results

Hypothesis	$\beta$	Result
H1: Promotion $\rightarrow$ Perceived Value (+)	.17	Supported
H2: Promotion $\rightarrow$ Trust (+)	.21	Supported
H3: Opinion Leader $\rightarrow$ Trust (+)	.18	Supported
H4: Opinion Leader $\rightarrow$ Perceived Value (+)	.46	Supported
H5: Trust $\rightarrow$ Purchase Loyalty (+)	.26	Supported
H6: Perceived Value $\rightarrow$ Purchase Loyalty (+)	.20	Supported
H7a: Trust mediates S $\rightarrow$ R	.04–.05	Supported
H7b: Value mediates S $\rightarrow$ R	.03–.09	Supported

Note. All paths significant at  $p < .001$ . Mediation effects tested with bootstrap 95% CIs.

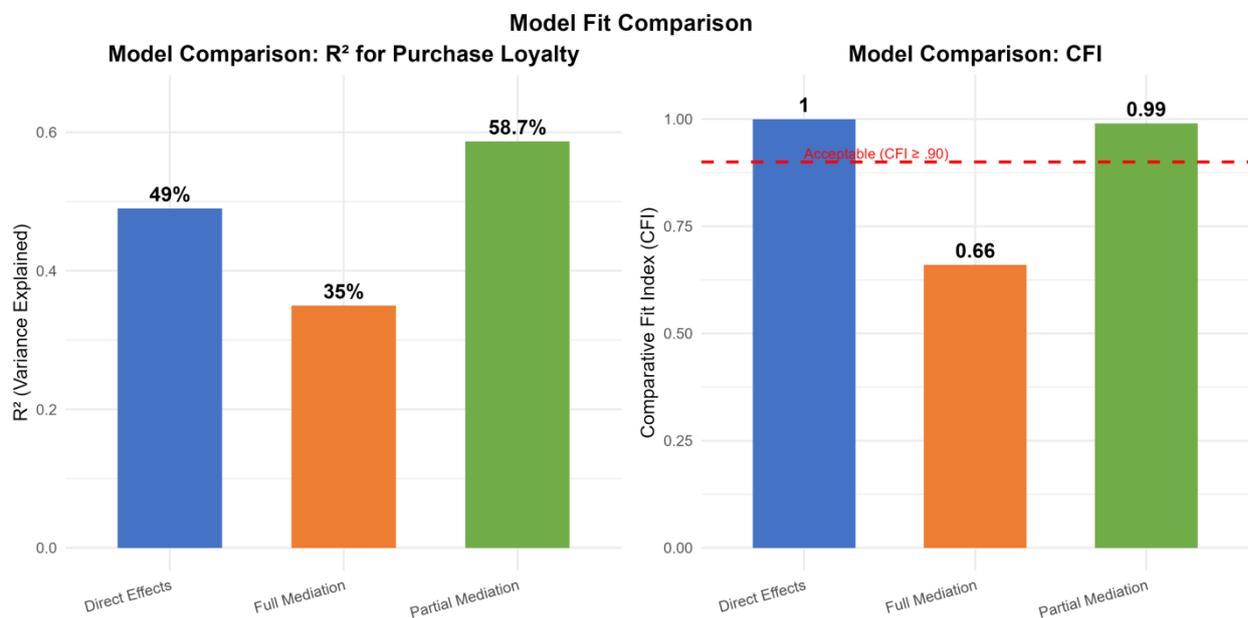


Fig.8: Model Fit Comparison

In summary, as shown in Table 9, all eight hypotheses were supported by the data. Both stimulus variables (Promotional Stimuli and Opinion Leader) significantly influenced the organism variables (Trust and Perceived Value), which in turn predicted the response variable (Purchase Loyalty). The partial mediation model provided a more comprehensive explanation of consumer purchase loyalty in short-video e-commerce than either the direct effects model or the full mediation model.

## 5. Discussion

This study examined the psychological mechanisms through which promotional stimuli and opinion leader characteristics influence consumer purchase loyalty in short-video e-commerce contexts, grounded in the Stimulus-Organism-Response (S-O-R) framework. The findings reveal a dual-pathway model wherein economic incentives (promotional stimuli) and social trust mechanisms (opinion leader characteristics) operate through distinct psychological processes to shape consumer behavior. This section interprets these findings within the broader theoretical landscape, discusses their implications, and acknowledges the study's limitations.

### 5.1 Theoretical Implications

#### 5.1.1 *The Asymmetric Dual-Pathway Model*

Our findings reveal a stark asymmetry in effect magnitude and mediation depth between promotional and opinion leader stimuli, which constitutes our core theoretical contribution. First, regarding direct effects, promotional stimuli exerted a substantially stronger direct influence on purchase loyalty ( $\beta = .49$ ) compared to opinion leader cues ( $\beta = .13$ ). In practical terms, a one-standard-deviation increase in exposure to promotional cues is associated with nearly half a standard-deviation increase in loyalty intentions, bypassing deep psychological processing to a significant degree. This large direct effect (accounting for 84.6% of its total effect) suggests that in the fast-paced short-video environment, salient economic incentives often function as powerful heuristic cues, triggering a “System 1” type of decision-making characterized by immediacy and low cognitive elaboration.

Second, and in sharp contrast, the influence of opinion leader cues was predominantly transmitted through psychological mediation (52.1% of total effect indirect). Notably, opinion leaders’ effect on the key mediator of Perceived Value was remarkably strong ( $\beta = .46$ ), far exceeding their impact on Trust ( $\beta = .18$ ) or any path from promotional cues. This pattern indicates that influencers in this context serve primarily as efficient value signalers who reduce information search costs and enhance product attractiveness, a process requiring deeper “System 2” cognitive-affective engagement.

Therefore, our study does more than confirm that both paths are “significant.” It quantifies and contrasts their fundamentally different operating logics. This stimulus-contingent asymmetry challenges the implicit assumption of uniform mediation in generic S-O-R applications. We propose a refined S-O-R framework where the necessity and depth of psychological mediation (“O”) are conditional upon the nature of the “S”: transactional, algorithm-driven cues (promotions) can leverage direct, heuristic routes; whereas relational, socially-embedded cues (opinion leaders) require and activate deeper valuation and trust-building processes. This refinement moves the theory from asking “does mediation occur?” to a more nuanced question: “how much and through what specific mechanism does mediation occur, depending on the stimulus?”

#### 5.1.2 *Reconceptualizing the “Organism”*

Our results also illuminate the distinct roles of trust and perceived value as mediating mechanisms, revealing functional specialization within the organism layer of the S-O-R model. Opinion leaders exerted their strongest effect through perceived value ( $\beta = .46$ ) rather than trust ( $\beta = .18$ ), a pattern that warrants theoretical reconsideration. Traditional source credibility theory emphasizes trust as the primary mechanism through which credible sources influence audiences. However, in short-video e-commerce—where content is transient, entertainment-oriented, and commercially integrated—opinion leaders may function less as “trust anchors” and more as “value signals” who reduce information search costs and enhance the perceived attractiveness of offerings.

This study aligns with the classic assertion that relationship quality serves as a key mediator (Liang et

al., 2011), but it reveals that in the specific context of short-video e-commerce, the formation and function of relationship quality exhibit differentiation: economic incentives (promotions) mainly shape instrumental trust between users and the platform or sellers; while social trust (opinion leaders) nurtures emotional commitment and identification between users and key individuals (i.e., the opinion leaders themselves). This differentiation is the underlying reason for the different paths of action (direct vs. mediated) of the two.

Meanwhile, trust operated more uniformly across both stimulus types, serving as a general psychological facilitator. Its moderate effects from both promotional stimuli ( $\beta = .21$ ) and opinion leaders ( $\beta = .18$ ) suggest that trust functions as a baseline psychological condition—a necessary but not sufficient factor for purchase loyalty. This is consistent with findings from live-streaming e-commerce research showing that trust plays a mediating role between social presence, personalization, and entertainment factors and impulsive buying behavior. The partial mediation observed in our study supports this interpretation: trust enables but does not fully account for the stimulus-response relationship.

### **5.1.3 Extending S-O-R Theory**

The findings of this study can be linked to previous research on customer engagement and behavioral stickiness (Zhang et al., 2017). The trust and high perceived value inspired by opinion leaders essentially reflect users' deep psychological engagement. This sense of engagement serves as the psychological foundation for fostering users' behavioral stickiness (i.e., repeated visits and prolonged stays) toward specific content sources or opinion leaders, which ultimately paves the way for long-term loyalty. This provides a connection for understanding the complete sequence from "psychological state" (organism) to "behavioral inertia" and finally to "loyalty" (response).

Furthermore, this study's finding that attitudinal loyalty significantly influences behavioral loyalty robustly supports the classic loyalty framework proposed by Dick and Basu (1994). This confirms that even in the fragmented and impulsive consumption environment of short-video e-commerce, rational attitudinal sedimentation (such as positive attitudes based on value judgments) remains a reliable theoretical cornerstone for predicting repeat purchasing behavior. It highlights the enduring importance of cognitive evaluation at the "organism" level in the S-O-R model.

## **5.2 Practical Implications**

### **5.2.1 Strategic Resource Allocation in Short-Video Marketing**

For marketers operating in short-video e-commerce, our findings suggest differentiated investment strategies. Given the exceptionally large direct effect of promotional stimuli on loyalty ( $\beta = .49$ , 84.6% of total effect direct), brands should prioritize promotional content that emphasizes clear, immediate economic benefits—discount percentages, limited-time offers, bundled deals—presented in visually prominent, easily processable formats. Research has shown that various promotional methods significantly impact not only promoted products but also motivation for non-promoted products, with promotional stimuli triggering psychological and emotional responses. The minimal mediation required suggests that elaborate storytelling or trust-building may be less critical for promotional content; instead, clarity and salience are paramount.

Conversely, opinion leader collaborations demand a different approach. With 52.1% of their influence operating indirectly through trust and perceived value, brands must invest in long-term partnerships with influencers who can authentically demonstrate product value and build credibility over time. Micro-influencers can generate 60% more trust among consumers compared to macro influencers, with authenticity being the key driver in short-form video contexts. Single sponsored posts may fail to activate these mediating mechanisms; sustained engagement—through repeat collaborations,

transparent disclosure, and genuine product usage—is more likely to cultivate the trust and value perceptions necessary for loyalty.

### **5.2.2 Content Design Principles for Dual Pathways**

The dual-pathway finding implies distinct content design principles. For promotional content, marketers should: (1) Maximize visual and temporal salience of economic benefits in the first 3-5 seconds; (2) Use numerical anchors (e.g., "50% OFF") and urgency cues (e.g., "Today Only") prominently; (3) Minimize cognitive load—simple, direct messages outperform complex narratives; and (4) Leverage platform features (countdown timers, price comparison overlays) to reinforce direct economic cues

For influencer content, marketers should: (1) Prioritize authentic product integration over scripted endorsements; (2) Encourage influencers to explicitly articulate product benefits (enhancing perceived value) and demonstrate expertise (building trust); (3) Allow creative freedom—authenticity-driven trust cannot be achieved through heavily controlled messaging; and (4) Focus on influencers' ability to build trust in the brand, as the success of influencer marketing depends not only on popularity but also on trust-building capacity.

### **5.2.3 Platform-Specific Optimization**

In livestreaming e-commerce contexts, psychological distance between consumers and products plays a mediating role, with brand identification and time pressure serving as important moderators. Short-video platforms should consider algorithm adjustments that recognize the dual-pathway nature of persuasion. Promotional content might benefit from placement in high-intent browsing contexts (e.g., users actively searching for product categories), where direct effects can capitalize on existing purchase motivation. Influencer content, requiring deeper psychological processing, may perform better in low-intent browsing contexts (e.g., entertainment feeds), where users have cognitive capacity to process trust and value cues.

Additionally, platforms could develop analytics tools that distinguish between direct-effect content (promotions) and mediated-effect content (influencer posts), providing differentiated performance metrics. For example, promotional content might be evaluated on immediate click-through and conversion rates, while influencer content might be assessed on engagement depth, repeated exposure, and longitudinal purchase patterns.

## **5.3 Comparison with Existing Literature**

Our findings both confirm and extend existing research. Consistent with prior work, we found that: (1) Both trust and flow experience mediate relationships between stimulus variables and purchase behavior in live-streaming commerce; (2) External stimuli influence impulse buying through internal psychological states like the urge to buy impulsively; (3) Perceived value represents consumers' overall assessment of utility based on perceptions of what is received and given, functioning as a fundamental driver of behavior.

However, we diverge from some literature in important ways. While many studies assume full or near-full mediation in S-O-R models, our partial mediation finding—with promotional stimuli operating primarily directly—suggests that short-video contexts may reduce psychological processing depth. Recent research has confirmed that interactive environmental cues elevate emotional arousal, which partially mediates effects on impulsive buying behavior, but our results indicate that the extent of mediation varies substantially by stimulus type.

Moreover, our finding that opinion leaders' strongest effect is on perceived value ( $\beta = .46$ ) rather than trust ( $\beta = .18$ ) contrasts with traditional source credibility theory, which prioritizes trust. Contemporary research has shown that emotionally resonant storytelling and interactive content enhance parasocial

interaction, which strengthens consumer trust and brand loyalty. However, in the rapid, entertainment-focused environment of short videos, influencers may function more as efficiency-enhancing information brokers than as traditional trust anchors. This suggests that classical models developed for television advertising or print media may require recalibration for short-video platforms.

## **6. Limitations and Future Research**

Several limitations warrant acknowledgment. First, the measurement quality of the Promotional Stimuli construct represents a key limitation. Although promotional stimuli exhibited a strong and theoretically meaningful direct effect on purchase loyalty, the construct showed relatively low internal consistency and convergent validity. In particular, one item displayed a low factor loading, which may have introduced measurement noise. Importantly, because promotional stimuli were modeled as an exogenous variable, such measurement error is more likely to attenuate estimated effects rather than inflate them. Nonetheless, future studies should adopt richer and more fine-grained operationalizations of promotional information, incorporating multiple dimensions such as price discounts, scarcity cues, bundling offers, and time pressure, and re-estimate the measurement model to ensure stronger reliability and validity.

Second, this study relies on self-reported, single-source, cross-sectional survey data, which may introduce common method variance (CMV). While procedural remedies and statistical tests (including Harman's single-factor test and model comparison) were applied, residual CMV cannot be fully ruled out. Such bias may inflate correlations among perceptual variables, particularly trust and perceived value. Future research could adopt more rigorous designs, such as multi-wave surveys, objective behavioral data (e.g., actual purchase records), or marker-variable and latent method factor techniques, to further mitigate common method bias.

Third, the agricultural product context was not fully theorized within the core model, which may limit the generalizability of the findings. Agricultural products are characterized by perishability, quality uncertainty, and pronounced information asymmetry, features that may amplify the importance of trust and perceived value in consumer decision-making. Although these characteristics likely strengthen the observed asymmetric mediation patterns, our study does not explicitly model product-specific attributes. Future research should either extend the framework to other product categories (e.g., durable goods, digital products, or services) or formally treat product type as a boundary condition or moderator of the proposed dual-pathway mechanism.

Fourth, the interpretation of results, while statistically robust, is constrained by the cross-sectional design and the reliance on behavioral intentions rather than actual behavior. Although purchase loyalty intention is a well-established proxy for future behavior, the intention-behavior gap may be particularly salient in fast-paced short-video environments where impulse-driven decisions fade quickly. Longitudinal or panel-based studies tracking actual repeat purchases would allow stronger causal inference and a more precise assessment of loyalty formation over time.

Fifth, this study focuses on two key organismic mediators, while other psychological and experiential mechanisms may also operate in parallel. Multiple organism variables, including positive affect, flow state, and emotional attachment, can function as parallel mediating processes. Future studies should expand the organism layer to include emotional and experiential variables, examining whether additional mediators further differentiate the pathways through which promotions and influencers operate.

Sixth, the limitations of the sampling method affect the generalizability of the research conclusions. This study primarily employed convenience sampling among college students and their associated communities via online platforms, resulting in a sample with a higher educational attainment and a potential skew in personal monthly income distribution compared to the overall consumer population.

While this sample is suitable for preliminary theoretical testing in this study, future research requires more rigorous and representative sampling strategies (e.g., collaborating with major e-commerce platforms for random sampling, or employing stratified sampling to cover consumers across different geographic regions, age groups, and income levels) to validate the external validity of this model. This will ensure research findings can be generalized to a broader population of short-video e-commerce consumers.

Finally, the theoretical contribution of this study should be interpreted as a context-sensitive refinement rather than a fundamental extension of the S-O-R theory. While the findings challenge the assumption of uniform mediation by demonstrating stimulus-contingent differences in mediation depth and effect magnitude, the study does not seek to replace the S-O-R framework. Instead, it refines its application by showing how stimulus characteristics condition the necessity and strength of psychological mediation in information-intensive digital service systems.

## **7. Conclusion**

This study advances our understanding of consumer persuasion specifically among young and digitally engaged users in short-video e-commerce by revealing a dual-pathway model wherein promotional stimuli and opinion leader characteristics operate through fundamentally different psychological mechanisms. While promotions primarily exert direct effects, bypassing extensive psychological elaboration, opinion leaders' influence is substantially mediated through trust and—especially—perceived value. These findings challenge the assumption of uniform mediation in S-O-R theory and call for more context-sensitive models that account for stimulus characteristics, platform affordances, and information processing modes. For practitioners, the results suggest differentiated content strategies: promotional content should maximize economic cue salience for direct impact, while influencer partnerships should prioritize authentic value demonstration and long-term trust cultivation. As short-video commerce continues to reshape retail landscapes globally, understanding these distinct persuasion pathways among digitally active consumer segments becomes increasingly critical for both theoretical development and managerial practice.

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## **Appendix**

### Measurement Items (5-point Likert Scale)

(1 = Strongly disagree, 5 = Strongly agree)

#### A. Promotional Stimuli

A1. In short-form videos, promotional activities offered by sellers attract my attention.

A2. Limited-time promotional campaigns launched by sellers strongly stimulate my purchase desire.

A3. I purchase iron-toned audio products because of the gifts or bonuses provided by sellers.

#### B. Opinion Leader Characteristics

B1. The higher the streamer's level of professional expertise, the greater my trust in the iron-toned audio products.

B2. The higher the streamer's popularity, the greater my trust in the iron-toned audio products.

B3. When a streamer enjoys social recognition and reputation, I have greater confidence in the quality of the iron-toned audio products.

#### C. Trust

C1. Short-form videos showing the process of cultivating and harvesting iron-toned audio products enhance my sense of trust.

C2. Scenes displayed in short videos showing the streamer tasting the product make the product seem more authentic and trustworthy.

C3. Watching short-form videos increases my trust in the quality of iron-toned audio products.

#### D. Perceived Value

D1. I believe that the iron-toned audio products recommended in short-form videos are reliable.

D2. I believe I can purchase iron-toned audio products that meet my expectations through short-form videos.

D3. I believe purchasing iron-toned audio products recommended in short-form videos is a wise decision.

#### E. Purchase Loyalty

E1. I am willing to purchase iron-toned audio products while watching short-form videos.

E2. I am willing to continue watching short-form videos and repeatedly purchase iron-toned audio products.

E3. I am willing to recommend iron-toned audio short-form videos to my friends and family.