

# THE IMPACT OF VIRTUAL STREAMER SOURCE CREDIBILITY ON PURCHASE INTENTIONS IN AGRICULTURAL LIVE STREAMING: A MULTI-METHOD APPROACH

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## ABSTRACT

Live streaming has emerged as a critical channel for connecting farmers with markets. However, the majority of farmers lack e-commerce operation experience, often presenting awkwardly and expressing themselves inadequately during live streaming, which significantly hinders sales performance. Virtual streamers, with their characteristics of round-the-clock availability and extensive knowledge reserves, inject new momentum into agricultural live streaming. Nevertheless, how to efficiently leverage virtual streamers to expand sales channels remains a key issue requiring urgent resolution. Based on the source credibility theory and trust transfer theory, this study focuses on the influence of virtual streamers' source credibility (i.e., trustworthiness, expertise, attractiveness, similarity) on purchase intentions in agricultural live streaming, and explores the mediating role of swift trust and the moderating effect of platform reputation. An analysis of 607 valid questionnaires reveals that virtual streamers' source credibility has a positive impact on purchase intention, with swift trust playing a mediating role in this relationship. Moreover, platform reputation not only positively moderates the effect of virtual streamers' source credibility on swift trust but also moderates the effect of swift trust on purchase intention. Additionally, fuzzy-set qualitative comparative analysis (fsQCA) identifies five configurational paths that trigger high purchase intention. This research expands the research perspective on virtual streamers in agricultural live streaming and provides theoretical references and practical guidelines for optimizing the application strategies of virtual streamers in agricultural live streaming.

Keywords: Agricultural live streaming; Virtual streamers; Swift trust; Purchase intention; Platform reputation

## 1. Introduction

Consolidating poverty alleviation achievements and comprehensively advancing rural revitalization represent core strategies for the stable and healthy development of China's economy and society (Chen & Long, 2024). Against this backdrop, live streaming—with its robust market-connecting capabilities and innovative interactive models—has emerged as a burgeoning force driving rural revitalization. It has constructed a new paradigm for agricultural products circulation by expanding sales channels for agricultural products and innovating industrial structures and business models (Peng et al., 2021). Under the impetus of live streaming, agricultural live streaming has effectively empowered rural brand building (Li et al., 2023a). However, agricultural live streaming exhibits uniqueness: On one hand, consumers face difficulties in effectively evaluating product attributes when lacking seller information, making credibility a critical decision-making factor (Wang et al., 2024). On the other hand, the perishable and fragile physical properties of agricultural products necessitate that merchants complete trust construction and sales conversion within a short timeframe (Li et al., 2023b). Although an increasing number of farmers are attempting to sell agricultural products via live streaming, they generally lack systematic e-commerce knowledge and marketing skills, resulting in

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awkward live streaming performances and difficulty achieving rapid sales conversion. How to enhance farmers' live streaming effectiveness has become a significant challenge in rural revitalization practices.

The development of artificial intelligence (AI) technologies has given rise to virtual streamers, an emerging media form that injects new momentum into live streaming (Hu & Ma, 2023; Wang et al., 2025). Virtual streamers not only possess the capability to broadcast 24/7 to meet diverse consumer demands but also leverage AI to store vast amounts of professional knowledge about agricultural products, demonstrating operational advantages of low cost and high efficiency (Liu et al., 2025). Additionally, through customized image design and interactive logic optimization, virtual streamers can significantly enhance consumers' interactive experiences and reshape the relational bonds between brands and users (Yao et al., 2024). While virtual streamers offer possibilities for content innovation in rural revitalization, how they enhance purchase intentions in agricultural live streaming still requires in-depth theoretical exploration and empirical validation.

Existing studies have primarily focused on the impacts of personal characteristics of virtual streamers on consumer behavior, with examples including linguistic style (Gong & Sun, 2025; Chen et al., 2024; Yao et al., 2024), emotional expression (Zhou et al., 2024; Liu et al., 2024), and different types of virtual streamers (Franke & Groeppel-Klein, 2024; Yan et al., 2024). However, these studies have primarily taken ordinary products as their unit of analysis, with relatively little attention devoted to live streaming scenarios involving agricultural products. The "source credibility–purchase intention" mechanism is further complicated by the high dependence of agricultural live streaming on credibility. Furthermore, while existing studies—primarily adopting an emotional perspective—have identified that virtual streamers struggle to stimulate consumers' purchase intentions when recommending products due to insufficient sensory competence (Hu & Ma, 2023), subsequent research has analyzed how to mitigate the emotional shortcomings of virtual streamers across dimensions such as emotional expression (Zhou et al., 2024), linguistic style (Yao et al., 2024), and virtual streamer appearance design (Yan et al., 2024). Notably, the core strengths of virtual streamers, in reality, reside in technical reliability and system stability (Hu & Ma, 2023). Therefore, how to fully capitalize on the technical strengths of virtual streamers to enhance consumers' trust at the cognitive level—and subsequently translate this trust into purchase intentions—remains an unresolved gap in current research.

Source credibility theory posits that message persuasiveness is closely tied to the credibility of its source (Alam et al., 2024), with trustworthiness, expertise, attractiveness, and similarity commonly serving as core measurement dimensions (Shamim et al., 2024). Building on this, this study examines how each dimension of virtual streamers' source credibility influences purchase intention in agricultural live streaming. Additionally, complexity theory emphasizes that high-quality outcomes often arise from the synergistic interaction of multiple factors (Alboqami, 2023). Therefore, this study not only tests the direct effects of individual dimensions based on source credibility theory but also employs fsQCA to explore the synergistic impacts of multidimensional combinations of trustworthiness, expertise, attractiveness, and similarity on purchase intention.

Trust serves as the core bond for establishing connections between virtual streamers and consumers (Chen et al., 2024). According to trust transfer theory, trust can be categorized into trust based on knowledge accumulation and swift trust under limited interaction (Leung et al., 2022). In the context of agricultural live streaming, the short lifecycle of products requires consumers to complete trust construction within an extremely short timeframe (Li et al., 2023b), making swift trust a critical variable influencing purchase intention (Hameed et al., 2025). This raises new questions: Does swift trust mediate the relationship between virtual streamers' source credibility and purchase intention?

The formation of swift trust often relies on external contextual cues (Li et al., 2023b), and the reputation signals provided by live streaming platforms are crucial in this process. As consumers' comprehensive evaluation of a platform's economic strength, professional capability, and social responsibility fulfillment (Jiang et al., 2021), platform reputation serves as a core element in trust building for e-commerce, enhancing consumer confidence by reducing information asymmetry (Cheng et al., 2025). The trust transfer theory further indicates that a high platform reputation not only enhances users' trust in the platform but also promotes consumers to purchase products on platforms with high reputation (Zhai & Chen, 2023). Based on this, this study further explores: Does platform reputation moderate the impact of virtual streamers' source credibility on swift trust, and does it moderate the impact of swift trust on purchase intention?

In summary, this study integrates source credibility theory and trust transfer theory to construct a multi-layered analytical framework: (1) to analyze the direct effects of virtual streamers' source credibility (trustworthiness, expertise, attractiveness, similarity) on purchase intention; (2) to uncover the mediating mechanism of swift trust; (3) to test the moderating effects of platform reputation. By doing so, this research not only expands the theoretical boundaries of agricultural live streaming and virtual streamers but also contribute to the construction of a digital technology-driven rural e-commerce.

## 2. Literature Review

### 2.1. Live streaming

Live streaming, as an emerging business model in the digital economy era, constructs a highly immersive virtual shopping space through the deep integration of real-time video broadcasting and e-commerce (Luo et al., 2025; Xu et al., 2020). This model enables a “what you see is what you get” consumption experience by virtue of visual product displays and instant interaction features (Wang & Fan, 2021), opening up entirely new scenarios for streamers to deliver product information in real time and influence consumer decisions (Wang et al., 2024).

Existing research has explored the sales mechanisms of live streaming from multiple dimensions, constructing a multi-dimensional theoretical framework encompassing official attributes, brand tone, and scene experience. In the context of official live streaming, Zhang et al. (2024) found that the use of local dialects can significantly enhance consumers’ purchase intentions, which is closely linked to the public welfare attributes of official live streaming serving the local economy. Bao et al. (2025)’s study on luxury brand live streaming indicates that parasocial interaction, self-streamer congruence, and social presence are core factors influencing consumption decisions, highlighting the importance of emotional connection and identity recognition in luxury consumption. Liu et al. (2022)’s research on sports live streaming reveals that audiences’ value perception is constructed through shared experiences, exerting a critical impact on virtual gift-giving behaviors.

Compared with luxury goods or sports live streaming, which are mainly driven by emotions, the core characteristics of agricultural live streaming are reflected in the logic of consumption decision-making and the mechanism of trust building. This uniqueness is mainly manifested as follows: In terms of the logic of consumption decision-making, due to consumers’ lack of information about sellers and difficulty in effectively evaluating the characteristics of agricultural products, the information basis for their decisions has shifted from emotional resonance to factual evidence, making the source credibility of the information conveyed by streamers a key factor (Wang et al., 2024a). In terms of the trust-building mechanism, the perishability of agricultural products shortens the time window for trust construction, requiring a swift transformation from source credibility to consumer trust within an extremely short interaction cycle (Li et al., 2023b). Although existing studies have clarified the crucial role of source credibility in agricultural live streaming (Wang et al., 2024), it remains unclear how streamers can accelerate the establishment of consumers’ swift trust and promote purchase intention by enhancing their own source credibility in the instant transaction scenario with highly compressed time. Focusing on this special field, this study attempts to answer the following questions: Do the components and action paths of the source credibility of streamers change in the instant sales scenario of agricultural products? How does this interaction mode in the time-limited and high-frequency interaction scenario affect the transmission mechanism of “source credibility - purchase intention”? The analysis of these questions can’t only fill the research gaps in specific industrial scenarios but also provide new theoretical insights for the application of source credibility theory and swift trust in time-limited decision-making situations.

### 2.2. Virtual streamer

Virtual streamers are defined as digital characters constructed through speech synthesis and animation technologies (Miao et al., 2021), demonstrating significant advantages over traditional human streamers. In terms of operational efficiency, virtual streamers can achieve 24/7 non-stop live streaming and have significantly lower maintenance costs compared to human streamers (Liu et al., 2025). Regarding audience attraction, they are typically designed with vibrant and unique personas that align with the aesthetic preferences of contemporary young consumers to effectively stimulate curiosity and engagement (Gao et al., 2023). In risk management, virtual streamers’ behaviors and speeches can be pre-programmed, minimizing risks of brand image damage caused by inappropriate conduct and alleviating potential reputation crises associated with human streamers (Hu & Ma, 2023). Leveraging advanced algorithmic technologies, virtual streamers can accurately simulate human facial expressions, body language, and gestures. Combined with their unique competitive advantages, they are being widely adopted by commercial entities to replace traditional human streamers in live streaming (Xiao et al., 2025).

Existing research has focused on the effects of virtual streamers’ linguistic styles (Gong & Sun, 2025; Chen et al., 2024; Yao et al., 2024), emotional expressions (Zhou et al., 2024; Liu et al., 2024; Gerrath et al., 2024), and different types (Franke & Groeppel-Klein, 2024; Yan et al., 2024) on customers (as summarized in Table 1). For example, Gong & Sun (2025) confirmed that colloquial expressions enhance message approachability, while Zhou et al. (2024) found that dynamic micro-expressions strengthen emotional resonance.

Table 1. Main Research Areas of Virtual Streamer

Category	Author	Method	Independent Variable	Dependent Variable	Main Conclusions
Linguistic styles	Gong & Sun (2025)	Experimental method	Language (emotional vs. rational)	Intention to follow the advice	Emotional language used by virtual streamers is more effective than rational language
	Chen et al. (2024)	Experimental method	Sensory language	Purchase intention	Sensory language leads to a decrease in purchase intention
	Yao et al. (2024)	Experimental method	Linguistic style (social-oriented vs. task-oriented)	Purchase intention	The effect of social-oriented language on purchase intention solely in the experience product condition.
Emotional expressions	Zhou et al. (2024)	Questionnaire survey	Emotional richness	Visit intention	Emotional richness of virtual streamers increases the viewer's perception of the streamer's attractiveness
	Liu et al. (2025)	Questionnaire survey	Emotion	Purchase intention	Different emotions significantly affect purchase intentions
Different type	Franke & Groeppe l-Klein (2024)	Experimental method	Type of virtual influencer (cartoon-like vs. human-like)	Attitude towards the ad	Cartoon-influencer's novelty effect is restricted to consumer groups low in VI familiarity
	Yan et al. (2024)	Experimental method	Mimic-human vs. animated-human vs. non-human VI	Emotional attachment Benefit seeking	When a VI shows a higher level of social presence, a higher level of emotional attachment and stronger benefit seeking behaviour will result.

However, existing research examining the mechanism through which virtual streamer characteristics influence consumers has largely been confined to ordinary product contexts; specialized research focusing on agricultural product scenarios remains relatively scarce. Unlike ordinary products, consumers generally exhibit low trust in agricultural products during the purchase process—this is attributed to their insufficient professional knowledge of agricultural products and the inadequacy of platform-based quality tracing mechanisms (Wang & Fan, 2021). Furthermore, in the context of agricultural live streaming, gaps in farmers' e-commerce knowledge and marketing skills not only result in underperforming live streaming but also further amplify consumers' perceived risk (Alam et al., 2024). In studies exploring how virtual streamers shape consumer decision-making, scholars have predominantly focused on an emotional perspective. For instance, Hu & Ma (2023) found that virtual streamers, due to their lack of human sensory traits, struggle to make consumers perceive their altruistic attributes, ultimately leading to reduced consumer purchase intentions. Subsequent research has further investigated how to enhance consumers' emotional perceptions of virtual streamers—across dimensions such as emotional expression (Zhou et al., 2024), linguistic style (Yao et al., 2024), and virtual streamer appearance design (Yan et al., 2024)—to remedy the deficit in human-like emotions. Notably, prior studies have mostly centered on the emotional shortcomings of virtual streamers, with the core approach of optimizing endorsement effectiveness by addressing these emotional deficits. However, they have overlooked the core advantage of virtual streamers: their technical reliability is more likely to foster consumer trust (Hu & Ma, 2023). When combined with the inherent uniqueness of agricultural live streaming scenarios, the complexity of the relational chain—"source credibility → swift trust → purchase intention"—is further exacerbated. Building on the aforementioned research gaps, this study adopts a cognitive perspective, aiming to leverage the technical reliability of virtual streamers to enhance consumers' trust in agricultural products and ultimately boost their purchase intentions.

Based on the source credibility theory, this study integrates contextual variables—including the perishability of agricultural products and trust in the digital identity of virtual technologies—to develop a contextualized model of "source credibility → rapid trust → purchase intention." This model conducts an in-depth analysis of the constituent

elements of source credibility and their combined influence paths, reveals the amplification effect of the agricultural live streaming context on the technological trust mechanism of virtual streamers, and thereby expands the research boundaries in the field of virtual streamers. Furthermore, given the complexity and multiplicity of the triggering conditions for purchase intention, this study employs fsQCA method. This method is used to systematically explore the synergistic paths through which the various dimensions of virtual streamers' source credibility—credibility, expertise, attractiveness, and similarity—exert an impact on purchase intention.

### 2.3. Source credibility theory

Since its formulation by Hovland & Weiss (1951), source credibility theory has remained a core theoretical framework for analyzing message persuasiveness. Its core premise is that the credibility of a message source can significantly enhance the persuasive effect of the message. Hovland et al. (1953) further operationalized the theory by establishing two foundational dimensions: expertise and trustworthiness. Ohanian (1990) integrated the source attractiveness model, incorporating attractiveness as a dimension to form a three-dimensional theoretical system. With the deepening of research, similarity has been identified as a fourth key dimension (Lou & Kim, 2019; Munnukka et al., 2016; Yuan & Lou, 2020), ultimately constructing a four-dimensional analytical framework encompassing expertise, trustworthiness, attractiveness, and similarity. This framework has become the most widely applied credibility evaluation model in current research.

Source credibility theory has been widely applied in social media and AI research. For instance, Li et al. (2023c) employed this theory to investigate how live streaming streamers' identities and rankings influence luxury brand live streaming sales. Meng et al. (2025), meanwhile, compared the differential effects of human influencers and virtual influencers on travel destination visitation intentions. These studies consistently confirm that in social media marketing contexts, source credibility—particularly its expertise and trustworthiness dimensions—exerts a significantly positive influence on consumer attitudes and behavioral intentions (e.g., purchase intention). Given that this study focuses on agricultural live streaming as a specific social media context and uses AI-driven anthropomorphic virtual streamers as its research object, source credibility theory provides a suitable theoretical foundation for analyzing its influence mechanisms.

This study defines virtual streamers' source credibility through four core dimensions: First, trustworthiness refers to the communicator's willingness to truthfully convey valid information (Fileri et al., 2023a), manifested as consumers' perception of the authenticity and honesty of information delivered by virtual streamers (Chao et al., 2024), with its core lying in the objective accuracy of information description. Second, expertise denotes receivers' subjective judgment of the information source's knowledge reserve and professional capabilities (Fileri et al., 2023a). In agricultural live streaming, this is reflected in consumers' perception of whether virtual streamers possess professional capabilities such as analyzing agricultural product characteristics, explaining cultivation processes, and identifying quality (Chao et al., 2024), with its core resting on the authority and practicality of knowledge. Third, attractiveness refers to the degree to which a virtual streamer's appearance, voice, and expressiveness evoke positive emotions in consumers (Silva et al., 2025). Finally, similarity represents the degree of fit between virtual streamers and consumers in characteristics such as appearance, behavior, and interests (Sardar et al., 2024).

Previous research has primarily been conducted along two dimensions: type of communicator and type of communication content. At the communicator level, studies have covered human agents (e.g., brand spokespersons, travel vloggers) and virtual entities (e.g., chatbots, virtual influencers). At the content level, research has focused on the role of credibility in contexts such as misinformation response and social media communication (Chao et al., 2024; Kuutila et al., 2024). However, significant gaps remain in research on virtual entities—particularly virtual streamers. While there is consensus on the credibility impacts of human communicators, the digital identities of virtual streamers render their trust mechanisms distinct from those of human streamers. Fileri et al. (2023b) emphasize the need to deeply explore the differential effects of different types of influencers, and Li et al. (2023d) further reveal that perceived credibility of virtual streamers may be lower than that of human influencers.

The unique value of this study lies in its focus on a dual-special context: On one hand, while advancements in AI technology have enhanced users' acceptance of virtual agents (Wang & Papastathopoulos, 2024), the high trust-dependency attributes of agricultural products (e.g., freshness, safety) make source credibility a core variable in consumption decisions (Wang et al., 2024). On the other hand, the short-interaction characteristics and high perceived risks (logistics losses, quality traceability) in agricultural live streaming may reshape the mechanism of credibility dimensions—single dimensions effective in traditional e-commerce (e.g., attractiveness) may require synergistic effects with expertise and trustworthiness in agricultural live streaming. This research context of “virtual streamers + high-trust-demand products” not only fills the gap in credibility research on virtual streamers in agricultural live streaming but also promises to uncover unique pathways through which source credibility dimensions influence purchase intention via swift trust in new media and complex product environments, providing important contextual expansions for theoretical applications.

#### 2.4. Trust transfer theory

Trust transfer theory, proposed by McKnight et al. (1998), aims to explain how individuals establish trust in unfamiliar entities through associative cues. Its core mechanism is that when an unknown entity (e.g., a new product) is associated with a known trustworthy entity (e.g., a parent brand), consumers transfer their existing trust to the new object, and the transfer effect depends on the perceived strength of the association between the two (Liao et al., 2024; Han, 2023). This theory has been widely validated in the digital consumption domain. For example, Liao et al. (2024) confirmed that social media platform verification badges can trigger trust transfer, enhancing users' trust in unfamiliar accounts. Han (2023) found that brand familiarity stimulates impulsive consumption behavior through the trust transfer mechanism. Collectively, these studies indicate that in the absence of direct experience, external trustworthy cues (e.g., platform verification, brand endorsements) serve as critical carriers to reduce uncertainty and facilitate trust transfer.

This study introduces trust transfer theory into the context of swift trust building for virtual streamers in agricultural live streaming, constructing the following explanatory framework: First, in the initial trust generation stage, virtual streamers trigger consumers' swift trust through source credibility (trustworthiness, expertise, attractiveness, similarity). Second, in the trust reinforcement and transformation stage, high-reputation live streaming platforms—acting as familiar trustworthy entities for consumers—strengthen consumers' swift trust in virtual streamers through transfer mechanisms via their accumulated institutional trust, driving the transformation of this trust into purchase intention. In this process, platform reputation serves as a lever for trust transfer: High reputation not only directly enhances the positive impact of swift trust on purchase intention but also amplifies the mediating effect of swift trust in the pathway of “virtual streamers' source credibility→purchase intention.”

### 3. Hypotheses development

#### 3.1. The effect of virtual streamers' source credibility on purchase intention

Against the dual backdrop of the deep penetration of live streaming technology and the advancement of the rural revitalization strategy, agricultural live streaming has emerged as a critical model for farmers to expand agricultural product sales. Virtual streamers—defined as anthropomorphic digital avatars mimicking human streamers' behaviors (Miao et al., 2021; Wu et al., 2023)—are reshaping the interaction logic between streamers and consumers (Gong & Sun, 2025). This study focuses on agricultural live streaming contexts, whose core characteristic lies in the product trust attribute: Consumers struggle to directly assess agricultural product quality before purchase and thus heavily rely on sellers' information or third-party certifications (Wang et al., 2024). Rooted in source credibility theory—where source credibility is a key factor influencing message persuasiveness and receivers' behaviors (Chao et al., 2024)—virtual streamers, as the primary information sources in agricultural live streaming, have their dimensions of trustworthiness, expertise, attractiveness, and similarity play a pivotal role in mitigating information asymmetry and influencing purchase intention.

Trustworthiness refers to the degree of confidence consumers have in a communicator's delivery of valid information (Filieri et al., 2023a), manifested in agricultural live streaming as consumers' perception of a virtual streamer's information reliability and sincerity (Chao et al., 2024). Source credibility theory emphasizes that the objectivity and accuracy of an information source form the foundation of persuasiveness (Verma et al., 2023). When a virtual streamer is perceived as trustworthy, the information it conveys is more likely to be regarded as a valid carrier of value (He et al., 2022), directly influencing purchase intention (Sardar et al., 2024). The high trust requirements for products in agricultural live streaming impose stricter demands on the reliability of information sources. As a result, the trustworthiness of virtual streamers becomes a core mediator for resolving information asymmetry, enhancing purchase intention by reducing perceived risk.

Expertise refers to receivers' subjective judgment of an information source's knowledge and skill level (Filieri et al., 2023a), manifested in agricultural live streaming as consumers' evaluation of a virtual streamer's capability to master professional knowledge about agricultural products (Chao et al., 2024). Expertise serves as a core factor influencing consumer attitudes (Sardar et al., 2024), as professional information is more likely to be accepted uncritically by consumers due to its accuracy and persuasiveness (Filieri et al., 2023a). When consumers recognize a streamer's expertise, they tend to rely on its information for product evaluation (Wang et al., 2024). Aiming at consumers' widespread knowledge gaps regarding agricultural products, the professional capabilities demonstrated by virtual streamers (e.g., analyzing cultivation processes, identifying quality) can effectively compensate for such knowledge shortcomings, enhancing consumers' confidence in product evaluation and thereby promoting purchase intention.

Attractiveness refers to the positive emotions evoked by a virtual streamer's appearance, voice, and expressiveness (Silva et al., 2025). Source credibility theory indicates that attractiveness influences consumer attitudes by arousing curiosity and promoting emotional connection (Ohanian, 2013). An attractive streamer can not only

enhance user attention and acceptance of product recommendations (Yuan et al., 2024), but also drive purchase decisions through positive emotions awakened by their external image (Lu et al., 2024). In agricultural live streaming, the strong correlation between agricultural products and farmer images endows attractiveness with special significance: the virtual streamer image integrated with farmer characteristics can evoke consumers' positive associations with the origin of agricultural products (honest and natural). This attractiveness consistent with product attributes will be interpreted as the streamer's in-depth understanding of agricultural products, thereby strengthening purchase intention.

Similarity refers to the degree of congruence between virtual streamers and consumers in terms of appearance, behavior, interests, and other attributes (Sardar et al., 2024). Source credibility theory posits that similarity influences persuasive outcomes by enhancing information dissemination efficiency and emotional resonance (Baudier & de Boissieu, 2025; Ohanian, 1990). Consumers are more inclined to accept recommendations from streamers who exhibit similarities to themselves (Li et al., 2024; Hsieh et al., 2023). In agricultural live streaming contexts where product evaluation is inherently challenging, perceived similarity can significantly reduce psychological distance, enhance affinity and identification, and lead consumers to perceive streamers' recommendations as aligned with their needs, thereby boosting purchase intention. Based on this rationale, the following hypotheses are proposed:

**H1a:** Trustworthiness has a positive influence on purchase intention.

**H1b:** Expertise has a positive influence on purchase intention.

**H1c:** Attractiveness has a positive influence on purchase intention.

**H1d:** Similarity has a positive influence on purchase intention.

### 3.2. The mediating effect of swift trust

Agricultural products possess biological characteristics of short lifecycle and perishability, with their freshness and value decaying rapidly over time, which objectively necessitates merchants to complete sales conversion within a short period (Li et al., 2023b). This core characteristic determines that agricultural live streaming needs to quickly establish trust when consumers first make contact to facilitate instant transactions (Wang et al., 2024), giving rise to the need for swift trust that differs from the long-term interactive trust in traditional contexts—that is, the initial trust formed by consumers in newly contacted entities under limited interaction conditions (Li et al., 2009). According to source credibility theory, virtual streamers' trustworthiness, expertise, attractiveness, and similarity, as core traits, constitute the initial cues for swift trust generation within short decision-making windows, thereby influencing purchase intention.

Trustworthiness, as a concentrated reflection of information objectivity and integrity (Shamim et al., 2024; Verma et al., 2023), serves as the cornerstone of swift trust. In contexts where consumers struggle to immediately verify agricultural product quality, the authenticity of information delivered by virtual streamers and the reliability of their commitments become critical immediate cues for judging trustworthiness (Alcántara-Pilar et al., 2024). This integrity-based perception directly reduces consumers' uncertainty, establishing a cognitive foundation for swift trust.

Expertise accelerates trust building through knowledge authority. Consumers tend to accept the views of expert information sources while reducing critical thinking (Filiari et al., 2023a). Virtual streamers with high expertise can provide accurate agricultural product information (e.g., cultivation techniques, quality identification). In situations where consumers lack verification means, this professional capability serves as a marker of a reliable information source (Kim & Yoon, 2024; Alnoor et al., 2024), significantly enhancing the efficiency of swift trust formation.

Attractiveness shortens trust distance through emotional resonance. Virtual streamer images aligned with rural culture (e.g., peasant costumes, regional expressions) can evoke consumers' positive associations with the original ecology of agricultural products. This visual and emotional closeness creates positive emotional arousal in short interactions (Ohanian, 2013; Alnoor et al., 2024). As an emotional cue, a warm and trustworthy streamer image serves as a catalyst for swift trust building. Particularly in agricultural live streaming that emphasizes origin authenticity, this attractiveness directly correlates with consumers' trust transfer toward product sources.

Similarity fosters trust identification by reducing psychological distance. When virtual streamers exhibit characteristics congruent with target consumers (e.g., dialect use, lifestyle), shared values or backgrounds enhance information acceptance and emotional bonds (Baudier & Boissieu, 2025; Yuan et al., 2024). In contexts where knowledge barriers exist in agricultural product evaluation, similarity diminishes consumers' unfamiliarity, making them more receptive to streamers' recommendations. This socially identified trust demonstrates a significant accelerating effect during the initial contact phase.

Swift trust, as a form of trust in short-term interactions (Wang et al., 2024), serves as a critical mediator linking virtual streamers' credibility traits to purchase intention by reducing perceived risk and enhancing information dependency. Under the dual constraints of agricultural products' perishability and inherent online transaction risks, consumers' swift trust in virtual streamers directly translates into confidence in immediate purchase decisions, forming

a transmission pathway of “virtual streamers’ source credibility—swift trust—purchase intention.” Based on this reasoning, the following hypotheses are proposed:

- H2a:** Swift trust mediates the effect of trustworthiness on purchase intention.
- H2b:** Swift trust mediates the effect of expertise on purchase intention.
- H2c:** Swift trust mediates the effect of attractiveness on purchase intention.
- H2d:** Swift trust mediates the effect of similarity on purchase intention.

### 3.3. The moderating effect of platform reputation

Due to the short lifecycle and perishable nature of agricultural products, coupled with the prevalent information asymmetry in the industrial chain (Xu et al., 2025; Wang & Fan, 2021), consumers face significant uncertainties in their purchasing decisions. In this context, consumers highly rely on observable external signals (such as reputation) to assess product quality and transaction risks, so as to bridge the information gap. Platform reputation is defined here as consumers’ comprehensive evaluation of the live streaming platform in terms of economic strength, professional capability, and social responsibility fulfillment (Jiang et al., 2021). Source credibility theory indicates that the perceived credibility of information sources by receivers is a key antecedent influencing their attitudes and behaviors (Ohanian, 1990). Trust transfer theory further clarifies that when an individual perceives a connection between two entities, their trust in the known entity can be transferred to the related unknown entity (Han, 2023). In the unique environment of agricultural live streaming, consumers’ concerns about the freshness, safety, and authenticity of fresh agricultural products are particularly prominent. As the core disseminator of product information, the virtual streamers’ source credibility (i.e., trustworthiness, expertise, attractiveness, and similarity) becomes a critical cue for consumers to quickly establish trust to address uncertainties. However, the formation of this swift trust based on streamers’ characteristics and its transformation into purchase intention highly depend on consumers’ overall trust in the entire transaction environment - namely, platform reputation. Platform reputation plays a crucial moderating role here.

When a platform maintains a high reputation, it conveys strong positive signals to consumers: the platform possesses robust operational capabilities, strict merchant admission and regulatory mechanisms, and commitments to safeguarding consumer rights (Chameroy et al., 2024). This significantly reduces consumers’ overall perceived risk in transactions (Li et al., 2022). According to trust transfer theory, consumers’ trust in a high-reputation platform is positively transferred to the streamers on the platform and the products they promote (Cheng et al., 2025; Li et al., 2024). Specifically, a high platform reputation enhances the positive effect of virtual streamers’ source credibility (trustworthiness, expertise, attractiveness, and similarity) on the establishment of consumers’ swift trust. Consumers are more inclined to believe that streamers appearing on high-reputation platforms have undergone rigorous screening and are reliable, with their information being more authentic and effective, thereby accelerating and strengthening the formation of swift trust based on streamers’ traits. Meanwhile, a high platform reputation also enhances the conversion of swift trust established through streamers’ credibility traits into actual purchase intention. The platform’s good reputation provides a safety net for transactions; consumers believe that even if issues arise, they will be properly resolved (Cheng et al., 2025), which increases their confidence in purchase decisions derived from trust in streamers (Li et al., 2024). Therefore, a high platform reputation not only positively moderates the impact of virtual streamers’ source credibility on swift trust but also positively moderates the impact of swift trust on purchase intention, thereby significantly enhancing overall purchase intention.

When a platform has a low reputation (such as emerging live streaming platforms or self-established live streaming channels in rural areas), it is perceived by consumers as lacking effective merchant review mechanisms, consumer protection measures, and a reliable transaction environment (Zhai & Chen, 2023). This significantly increases consumers’ perceived risk throughout the shopping process. Specifically, low platform reputation severely weakens or even negates the role of virtual streamers’ source credibility (trustworthiness, expertise, attractiveness, and similarity) in establishing consumers’ swift trust. Consumers’ negative impressions of the platform contaminate their initial judgments of streamers on the platform: even if streamers exhibit positive personal traits, consumers may doubt the authenticity of their information or their motives, making it difficult for streamers’ credibility to effectively activate swift trust. Meanwhile, low platform reputation significantly inhibits the conversion of swift trust established by streamers into purchase intention, and may even completely disrupt this process. Consumers worry that the platform cannot guarantee transaction security, product quality, or after-sales service, perceiving shopping on low-reputation platforms as excessively risky (Zhai & Chen, 2023). This is particularly true for perishable agricultural products, where consumers have higher demands for quality assurance and timely fulfillment, amplifying the insecurities caused by low platform reputation. Therefore, even if consumers develop some degree of swift trust in streamers, they may abandon final purchase intention due to profound distrust in the platform. Based on this reasoning, the following hypotheses are proposed:

**H3a:** Platform reputation positively moderates the effect of trustworthiness on purchase intention.

**H3b:** Platform reputation positively moderates the effect of expertise on purchase intention.

**H3c:** Platform reputation positively moderates the effect of attractiveness on purchase intention.

**H3d:** Platform reputation positively moderates the effect of similarity on purchase intention.

**H4:** Platform reputation positively moderates the effect of swift trust on purchase intention.

#### 3.4. Moderated-mediation effect of platform reputation

Trust transfer theory posits that when individuals perceive a connection between a known entity and an unknown entity, trust established in the known entity is transferred to the unknown entity (Han, 2023). The platform is regarded as a known entity by consumers, while virtual streamers and the agricultural products they recommend are treated as relatively unknown entities. Therefore, platform reputation—as a cognitive evaluation of the platform’s overall credibility and reliability—not only directly influences consumers’ trust in the platform itself (Cheng et al., 2025), but more crucially, acts as a conduit or catalyst for the transfer of consumer trust from the platform to its streamers and recommended products through the trust transfer mechanism (Song et al., 2024).

When a platform enjoys a high reputation, it itself serves as a powerful credibility signal. This effectively reduces the information asymmetry and uncertainties consumers face in live streaming (Cheng et al., 2025). Through the trust transfer mechanism, consumers’ strong trust in the platform significantly strengthens their initial trust foundation—i.e., swift trust—in the virtual streamers on the platform. This enhancement stems from consumers’ inference that a highly reputable platform is more likely to rigorously screen and regulate its streamers (Han, 2023), thereby enhancing streamers’ credibility endorsement value. Consequently, in the context of high platform reputation, the conversion pathway of swift trust established by virtual streamers through their source credibility (i.e., trustworthiness, expertise, attractiveness, similarity) into purchase intention is significantly reinforced (Song et al., 2024). Additionally, once swift trust in virtual streamers is formed, it further elevates consumers’ purchase intention through swift trust.

When a platform has a low reputation (such as emerging live streaming platforms or self-established live streaming channels in rural areas), consumers’ trust in it is weak and may even develop negative perceptions. This not only directly undermines consumers’ confidence in the platform but, more importantly, severely hinders the occurrence of trust transfer (Cheng et al., 2025). Consumers tend to believe that a poorly reputed platform lacks effective oversight, making it difficult to guarantee streamers’ credibility. In such cases, even if virtual streamers exhibit high source credibility, the swift trust they establish is unlikely to be effectively converted into purchase intention. More critically, extremely low platform reputation may constitute a trust threshold: consumers may reduce their purchase intention due to a lack of trust in the platform itself (Cheng et al., 2025). Therefore, low platform reputation weakens the positive impact of virtual streamers’ source credibility on purchase intention through swift trust. Based on this reasoning, the following hypothesis is proposed:

**H5a:** Platform reputation moderates the mediating role of swift trust in the relationship between trustworthiness on purchase intention.

**H5b:** Platform reputation moderates the mediating role of swift trust in the relationship between expertise on purchase intention.

**H5c:** Platform reputation moderates the mediating role of swift trust in the relationship between attractiveness on purchase intention.

**H5d:** Platform reputation moderates the mediating role of swift trust in the relationship between similarity on purchase intention.

The research model is shown in Figure 1.

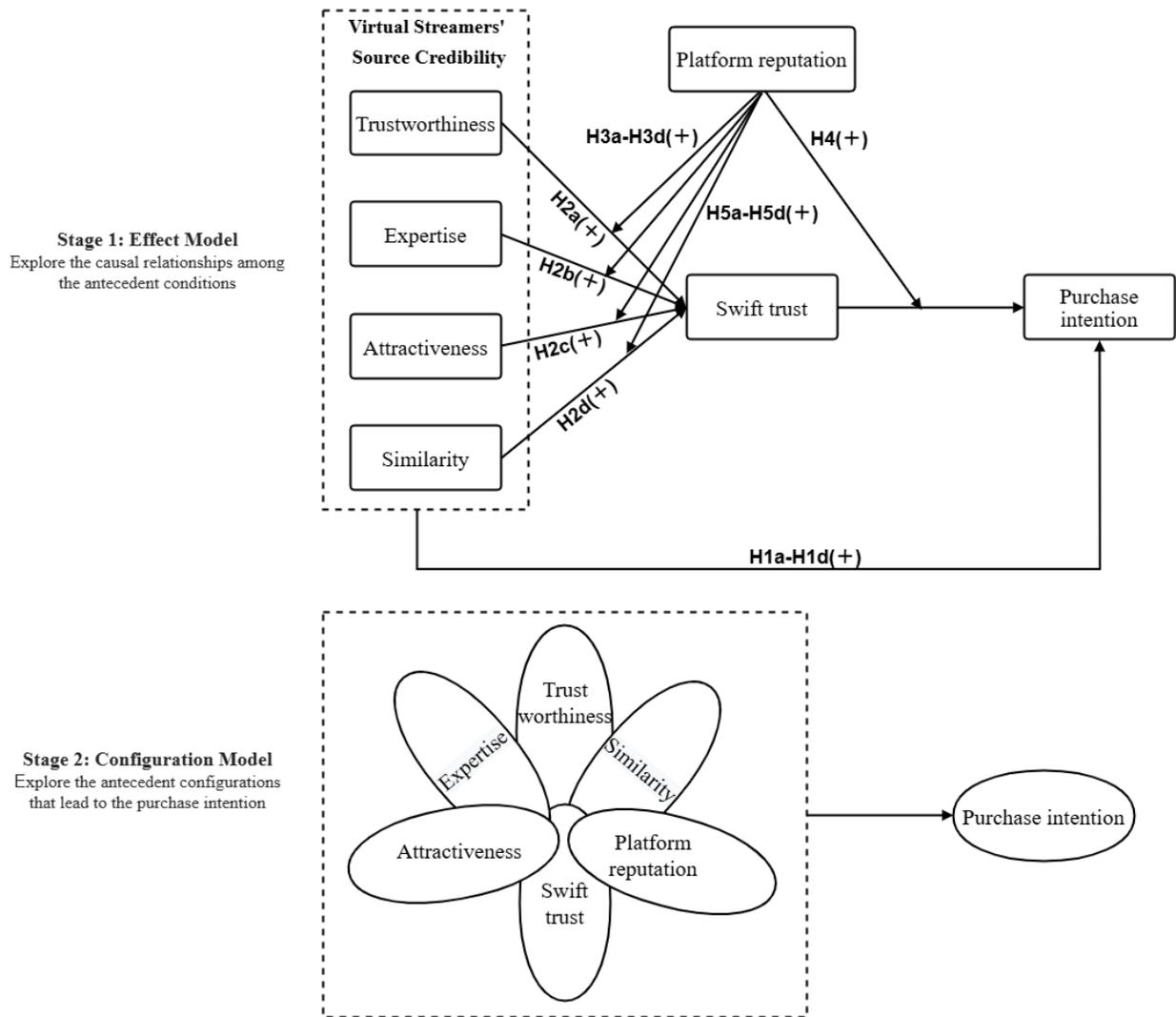


Figure 1. Research Model

## 4. Methods

### 4.1. Selection of research methods

In the field of virtual streamer research, existing literature widely employs survey-based research methods when exploring user behavior. This study also adheres to a survey research design, collecting data through formal questionnaires to deeply explore the formation mechanism of consumers' purchase intention in the context of agricultural live streaming. To comprehensively analyze the complex connotations of the data, this study adopts a multi-method data analysis strategy, integrating structural equation modeling (SEM), regression analysis, and fsQCA as two complementary analytical techniques.

The selection of this data analysis scheme is based on the following considerations: First, SEM and regression analysis can simultaneously handle the relationships between multiple independent and dependent variables, effectively addressing the growing complexity in social science theoretical models. Their ability to integrate observed and latent variables aligns closely with the abstract constructs prevalent in social science research. Additionally, by treating independent variables as competing factors to explain the variance of dependent variables, SEM and regression analysis help test direct effects, mediating effects, and the overall model fit. Second, as a technique combining qualitative and quantitative elements, fsQCA's core advantage lies in identifying the combinatorial effects of antecedent conditions and analyzing them based on set-theoretic relationships rather than mere correlations. fsQCA can reveal multiple concurrent paths leading to the same outcome (e.g., high purchase intention). Given the complexity of real-world consumption decision-making environments—where consumers' behavioral choices often result from

the combined influence of multiple heuristic cues embedded in the context—fsQCA provides a powerful tool for exploring such complex causal combinations. Existing studies have shown that comparing and integrating the analysis results of SEM and fsQCA not only enhances the robustness of research conclusions but also deepens the understanding of phenomena by providing complementary interpretations of data and research models (Chakraborty et al., 2024; Lu et al., 2024).

Therefore, the analysis process of this study is specifically designed as follows: In the first stage, SEM and regression analysis are used to empirically test the path relationships and influence mechanisms among the virtual streamers’ source credibility (including trustworthiness, expertise, attractiveness, and similarity), swift trust, platform reputation, and purchase intention. In the second stage, fsQCA is employed to deeply explore the differentiated combinatorial effects of the above six antecedent conditions (trustworthiness, expertise, attractiveness, similarity, rapid trust, platform reputation) on purchase intention, identifying multiple conditional combination paths leading to purchase intention.

4.2. Data collection procedures and participants

The formal investigation of this study was conducted from November 2024 to February 2025, with data collection facilitated by the domestic professional research platform Credamo. The questionnaire is designed into three functional modules: First, in the initial section, a screening question—“Have you ever watched virtual streamers’ agricultural live streaming?”—serves as the first item for sample stratification. Respondents who answer “yes” proceed to the subsequent items, while those who answer “no” are redirected to the questionnaire’s end page. This section also includes an explanation of the research purpose, acknowledgment notes, and response guidelines to guide participants to complete the questionnaire with due care. Second, the second section focuses on collecting data for core variables, covering all latent variables in the theoretical model. Structured scale items are employed to systematically gather the essential data required for hypothesis testing, providing an empirical foundation for subsequent analysis. Finally, the third section collects demographic information, including items on gender, age, occupation, and monthly income, which are used for sample background analysis and subsequent data grouping.

In the quality control phase, dual safeguards were implemented: First, following the methodology of Nan et al. (2023), attention-check questions were embedded (e.g., “When reading this question, please select option B”) to accurately identify inattentive or perfunctory responses during data collection. Second, the platform’s real-name authentication system was activated, ensuring each individual could submit the questionnaire only once via unique ID number verification. After rigorous data cleaning, 31 invalid responses that failed the attention check were systematically excluded, resulting in a final dataset comprising 607 valid samples.

The demographic characteristics of the formal survey sample are presented in Table 2. The gender distribution of the sample was balanced, with males comprising 48.8% and females 51.2%. The age distribution was dominated by the 21-30 age group (38.6%), followed by the 31-40 age group (26.9%). In terms of occupation, teachers constituted the largest proportion (26.5%), followed by government and party organization staff (24.1%) and corporate employees (14.3%). The educational attainment of the sample was predominantly at the master’s level (22.4%), and monthly income was most concentrated in the 5,000-7,499 RMB range (28.2%). Regarding live streaming platform preferences, Douyin (33.4%) and Kuaishou (20.8%) were the most favored platforms among participants.

Table 2. Distribution of Subjects’ Population Characteristics

Characteristics	Categories	N	%	Characteristics	Categories	N	%
Gender	Male	296	48.80	Monthly income	< 2500	84	13.80
	Female	311	51.20		2500-4999	126	20.80
Age	19-20	22	3.60	5000-7499	171	28.20	
	21-30	234	38.60	7500-9999	124	20.40	
	31-40	163	26.90	> 10000	102	16.80	
	41-50	92	15.20	Junior high school or below	121	19.90	
Occupation	> 50	96	15.80	Education	High school	127	20.90
	Student	47	7.70	Undergraduate	99	16.30	

Government and party organization staff	146	24.10		Master	136	22.40
Corporate employees	87	14.30		Doctor	124	20.40
Teacher	161	26.50		Taobao	87	14.30
Freelancers	75	12.40		Douyin	203	33.40
Retirees	43	7.10	Most favored platform	Kuaishou	126	20.80
Others	48	7.90		Xiaohongshu	116	19.10
				Others	75	12.40

#### 4.3. Measurements

This study employs a multidimensional measurement approach, with all variable scales rigorously selected and adapted from authoritative literature. Specifically, purchase intention, as a unidimensional variable, is measured using a 4-item scale developed by Gao et al. (2025). Trustworthiness is assessed using a 5-item scale adapted from Filieri et al. (2023a), while expertise is measured with a 3-item scale also derived from Filieri et al. (2023a). Attractiveness is evaluated using a 3-item scale developed by Silva et al. (2025), and similarity is measured with a 3-item scale from the same source. Swift trust, as a unidimensional construct, is measured using a 3-item scale developed by Dubey et al. (2020) and Sangal et al. (2024). Platform reputation is assessed with a 3-item unidimensional scale adapted from Jiang et al. (2021). To ensure translation accuracy, a standard back-translation procedure was employed to convert the original English scales into Chinese versions, with the translated scales reviewed and refined by a bilingual expert team to guarantee linguistic equivalence and cultural appropriateness of the measurement instruments. All measurement items are evaluated using a 7-point Likert scale, where 1 indicates “strongly disagree” and 7 indicates “strongly agree.”

To ensure the scientific rigor of the measurement tools, a rigorous two-stage pretesting procedure was implemented. In the first stage, 10 master’s and doctoral students in the field of marketing were invited to conduct a professional review of the questionnaire items. Based on their feedback, the item wording was refined to eliminate ambiguity and ensure logical consistency and contextual appropriateness. In the second stage, a preliminary survey was conducted via the Credamo platform, recruiting 221 participants, each compensated with 3 RMB upon completion of the questionnaire. Following the methodology of Nan et al. (2023), an attention-check item (“When you read this question, please select B”) was included, resulting in the exclusion of 21 questionnaires that failed the test. Ultimately, 200 valid samples were obtained. The sample characteristics are as follows: gender distribution was balanced (50% male and 50% female), the majority of participants were aged 21-30 (39%), educational attainment was predominantly at the master’s level (22.5%), the most common occupation was government and party organization staff (20%), monthly income was concentrated in the 5,000-7,499 RMB range (26.5%), and the most frequently used live streaming platform was Douyin (34.5%). This sample profile ensures the representativeness and diversity of the study’s findings.

For scale validation, an exploratory factor analysis was first conducted on the source credibility scale. The results demonstrated strong structural stability, with four common factors extracted: Factor 1 included items TW1-TW5, with factor loadings ranging between 0.860 and 0.889; Factor 2 comprised items EX1-EX3, with factor loadings ranging from 0.819 to 0.842; Factor 3 consisted of items AT1-AT3, with factor loadings between 0.818 and 0.860; and Factor 4 included items NT1-NT3, with factor loadings ranging from 0.863 to 0.869. All factor loadings exceeded the acceptable threshold of 0.5, indicating that the source credibility scale encompasses four dimensions and exhibits good construct validity. This analysis confirms the robustness of the measurement tool and its suitability for capturing the multifaceted nature of source credibility in the study context.

Finally, the reliability and validity of the pretest data were examined. The reliability analysis revealed that the Cronbach’s  $\alpha$  coefficients for all variables exceeded 0.7, indicating strong internal consistency of the scales. The validity analysis demonstrated that all measurement items had standardized factor loadings greater than 0.8, composite reliability (CR) values above 0.8, and average variance extracted (AVE) values exceeding 0.7, confirming good convergent validity of the scales. Based on these analytical results, the final version of the formal survey questionnaire was determined.

## 5. Data analysis and results

### 5.1. Measurement model: Validity and reliability

The validity and reliability of the 607 valid responses were assessed using SPSS 26.0, with the results presented in Table 3. The reliability analysis revealed that the Cronbach's  $\alpha$  coefficients for all variables exceeded 0.8, indicating high internal consistency of the scales. The validity analysis demonstrated that the standardized factor loadings and CR values for all variables were greater than 0.8, and the AVE values exceeded 0.7, confirming strong convergent validity of the measurement instruments.

Table 3. Reliability and Convergence Validity Analysis Results

Construct	Items	Factor loading	Cronbach's $\alpha$	AVE	CR
Trustworthiness	I think virtual streamer is honest	0.913	0.953	0.803	0.953
	I think virtual streamer is trustworthy	0.888			
	I think virtual streamer is sincere	0.894			
	I think virtual streamer is dependable	0.890			
	I think virtual streamer is believable	0.895			
Expertise	I think virtual streamer is an expert in agricultural products	0.911	0.927	0.808	0.927
	I think virtual streamer is experienced in purchasing agricultural products	0.895			
	I think virtual streamer is knowledgeable about agricultural products	0.891			
Attractiveness	Virtual streamers attract my visual attention.	0.918	0.936	0.831	0.937
	Virtual streamers are attractive.	0.913			
	Virtual streamers are very beautiful.	0.904			
Similarity	I can easily identify virtual streamers.	0.860	0.882	0.714	0.882
	Virtual streamers are very similar to me.	0.836			
	Virtual streamers and I have a lot in common.	0.838			
Swift trust	I felt the virtual streamers were committed to serving the customers	0.932	0.931	0.831	0.937
	I have no reason to doubt the abilities and preparations of virtual streamers.	0.883			
	When making a purchase, I believe I can rely on virtual streamers.	0.899			
Purchase intention	I became interested in making a purchase.	0.903	0.948	0.819	0.948
	I am willing to buy the products shown.	0.914			
	I will consider buying the products shown.	0.900			
Platform reputation	I may buy the products shown.	0.903	0.907	0.766	0.907
	The live streaming platform is recognized by the industry.	0.870			
	The live streaming platform enjoys a high reputation.	0.883			
	The live streaming platform has a good public image.	0.872			

The discriminant validity among the variables was further examined, with the results presented in Table 4. The analysis revealed that the square roots of the AVE for all variables were greater than their correlation coefficients with other factors, demonstrating satisfactory discriminant validity.

Table 4. Differential Validity Analysis Results

	Trustworthiness	Expertise	Attractiveness	Similarity	Swift trust	Purchase intention	Platform reputation
Trustworthiness	0.896						
Expertise	0.486	0.899					
Attractiveness	0.480	0.608	0.912				
Similarity	0.122	0.146	0.068	0.845			
Swift trust	0.287	0.365	0.333	0.257	0.912		
Purchase intention	0.553	0.608	0.563	0.167	0.502	0.905	
Platform reputation	0.094	0.065	0.077	0.493	0.371	0.136	0.875

Two methods were employed to test for common method bias. First, Harman's single-factor test was conducted using SPSS 26.0, with all measurement items subjected to exploratory factor analysis. The results showed that the first factor accounted for only 18.51% of the total variance, well below the critical threshold of 50%, indicating that common method bias was not a significant concern. Second, following the approach of Podsakoff et al. (2003), a single common method factor was introduced to further assess common method bias. Specifically, a method factor was added to the original seven-factor model, and changes in model fit indices before and after the inclusion of the method factor were compared. The results, as shown in Table 5, revealed that the improvements in fit indices (CFI, TLI, and IFI) did not exceed 0.1, and the reductions in RMSEA and SRMR were less than 0.05, further confirming that common method bias was not substantial in this study.

Table 5. Results of Common Method Bias Test

Model	$\chi^2$	<i>df</i>	$\chi^2/df$	RMSEA	SRMR	CFI	IFI	TLI
Seven-factor model	363.209	231	1.572	0.031	0.0187	0.990	0.990	0.988
Eight-factor model	291.926	207	1.410	0.026	0.0154	0.994	0.994	0.992

## 5.2. Hypotheses tests

### 5.2.1 Main effect test

Regression analysis was conducted using SPSS 26.0 software to examine the impact of virtual streamers' source credibility—encompassing four dimensions: credibility, expertise, attractiveness, and similarity—on purchase intention. The results are presented in Table 6. Two estimation models were constructed for the dependent variable (purchase intention): Model 1 incorporated only control variables for regression estimation, while Model 2, building on Model 1, further integrated the core predictors hypothesized in this study—virtual streamers' source credibility—for estimation. Results indicated that Model 1 accounted for only 1% of the variance in purchase intention. In contrast, after the inclusion of virtual streamers' source credibility, the explanatory power of Model 2 significantly increased to 50.2%, demonstrating that the core predictors exhibit strong explanatory power for the dependent variable. Further analysis revealed that after controlling for variables including gender, age, education level, occupation, monthly income, and the most frequently used live streaming platform, virtual streamers' credibility ( $\beta=0.273$ ,  $t=7.895^{***}$ ), expertise ( $\beta=0.329$ ,  $t=8.584^{***}$ ), attractiveness ( $\beta=0.231$ ,  $t=6.085^{***}$ ), and similarity ( $\beta=0.231$ ,  $t=6.085^{***}$ ) all exerted significantly positive effects on purchase intention. These findings provide empirical support for H1a–H1b.

Table 6. Results of Main Effect Analysis

Model	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
<b>Control variable</b>				
Gender	0.056	1.361	0.040	1.372
Age	0.077	1.677	0.080	2.448*
Education	-0.004	-0.097	0.011	0.386
Occupation	-0.042	-0.910	-0.023	-0.719
Monthly income	0.036	0.877	0.058	1.979*
Frequently used platform	0.012	0.289	0.022	0.760
<b>Predicting variables</b>				
Trustworthiness			0.273	7.895*** (0.036)
Expertise			0.329	8.584*** (0.038)
Attractiveness			0.231	6.085*** (0.037)
Similarity			0.068	2.316* (0.033)
$R^2$	0.010		0.502	
$F$	1.005		60.023	

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Given that SEM can control measurement error through confirmatory factor analysis and estimate latent relationships among variables more precisely (Kline, 2015), a robustness test was further conducted using SEM in this study. The goodness-of-fit indices for the structural model include  $\chi^2=163.958$ ,  $df=125$ ,  $\chi^2/df=1.312$ ,  $CFI=0.996$ ,  $TLI=0.995$  and  $RMSEA=0.023$ . H1a-H1d in the research model were supported (see Table 7). Virtual streamers' trustworthiness, expertise, attractiveness, and similarity positively influence purchase intention.

Table 7. Model Estimates.

Path	Estimate	SE	CR	$p$
Trustworthiness → Purchase intention	0.281	0.039	7.264	***
Expertise → Purchase intention	0.335	0.045	7.490	***
Attractiveness → Purchase intention	0.222	0.044	5.090	***
Similarity → Purchase intention	0.081	0.036	2.248	0.025

### 5.2.2 Mediating effect test

The mediating role of swift trust was further examined using the PROCESS macro in SPSS 26.0, with the results presented in Table 8. The analysis revealed that the 95% confidence intervals for the indirect effects of trustworthiness, expertise, attractiveness, and similarity on purchase intentions through swift trust did not include zero. This finding provides additional support for H4a-H4d.

Table 8. Mediating Effect Analysis Results

Path	Effect	BootSE	BootLLCI	BootULCI
Trustworthiness → Swift trust → Purchase intention	0.109	0.017	0.076	0.147
Expertise → Swift trust → Purchase intention	0.115	0.019	0.086	0.159

Attractiveness → Swift trust → Purchase intention	0.114	0.018	0.085	0.158
Similarity → Swift trust → Purchase intention	0.138	0.021	0.085	0.165

5.2.3 Moderating effect test

To test the moderating effect of platform reputation on the influence of virtual streamers’ source credibility (i.e., trustworthiness, expertise, attractiveness, and similarity) on swift trust, this study treated trustworthiness, expertise, attractiveness, and similarity as independent variables, swift trust as the dependent variable, and platform reputation as the moderating variable. As shown in Table 9 platform reputation moderates the effects of virtual streamers’ trustworthiness ( $\beta=0.248, t=6.939^{***}$ ), expertise ( $\beta=0.365, t=11.294^{***}$ ), and attractiveness ( $\beta=0.331, t=9.838^{***}$ ) on swift trust. However, platform reputation does not moderate the effect of virtual streamers’ similarity on swift trust ( $\beta=0.036, t=0.865$ ). This finding aligns with Xiao et al. (2025) proposition that virtual streamer anthropomorphism is a key factor in consumer acceptance. Combined with the study’s conclusions, in agricultural live streaming contexts, if a virtual streamer’s appearance design deviates from consumers’ perceptions and results in a strange image, consumers may experience aversion due to low similarity. In such cases, even a platform with high reputation struggles to effectively reverse the trust loss caused by low similarity.

Table 9. Results of Moderation Effect Analysis

Model	Model 1		Model 2		Model 3		Model 4		Model 5	
	$\beta$	<i>t</i>	$\beta$	<i>t</i>	$\beta$	<i>t</i>	$\beta$	<i>t</i>	$\beta$	<i>t</i>
Control variable										
Gender	0.06 8	1.938	0.04 1	1.270	0.03 8	1.146	0.06 2	1.650	0.04 1	1.543
Age	0.05 5	1.393	0.08 0	2.221*	0.06 8	1.815	0.04 4	1.035	0.06 3	2.141
Education	0.00 1	0.006	- 0.01 5	-0.460	0.00 1	0.008	- 0.01 3	-0.035	0.01 4	0.528
Occupation	- 0.02 0	-0.509	- 0.01 9	-0.527	- 0.02 1	-0.570	- 0.01 5	-0.345	- 0.02 6	-0.890
Monthly income	0.03 7	1.060	0.04 5	1.414	0.05 6	1.689	0.04 3	1.127	0.03 3	1.251
Frequently used platform	0.02 0	0.579	0.02 6	0.818	0.03 4	1.006	0.02 7	0.704	0.00 6	0.242
Predicting variables										
Trustworthines s	0.26 0	7.374*** (0.037)							0.24 0	7.70*** (0.032)
Expertise			0.36 7	11.4560** (0.032)					0.20 9	5.808** (0.036)
Attractiveness					0.32 3	9.681*** (0.033)			0.14 7	4.223** (0.034)
Similarity							0.10 5	2.375* (0.050)	0.01 6	0.539 (0.034)
Direct variable										
Swift trust									0.27 5	8.948** (0.030)
Moderating variable										

Platform reputation	0.38 7	10.817** (0.039)	0.39 4	12.167*** (0.035)	0.39 4	11.672** (0.037)	0.33 3	7.334** (0.050)	0.09 4	2.699** (0.038)
Interaction	0.24 7	6.911*** (0.019)	0.36 4	11.276*** (0.016)	0.33 0	9.835*** (0.017)	0.03 7	0.876 (0.026)	0.26 7	8.372** (0.018)
<i>R</i> <sup>2</sup>	0.269		0.394		0.347		0.155		0.600	
<i>F</i>	24.414		42.083		35.196		12.124		68.548	

\* *p*<0.05, \*\* *p*<0.01, \*\*\* *p*<0.001

To examine whether platform reputation moderates the effect of swift trust on purchase intentions, swift trust was treated as the independent variable, purchase intentions as the dependent variable, and platform reputation as the moderating variable. The moderating effect was tested using SPSS 26.0, with the results presented in Table 9. As shown in Table 9, the interaction term between platform reputation and swift trust ( $\beta=0.267$ ,  $t=8.372^{***}$ ) had a significant positive effect on purchase intentions, providing empirical support for H4.

#### 5.2.4 Moderated mediating effect

The study first employed Model 8 (moderated mediation model for the first half of the mediating path) in the PROCESS macro to test the moderating effect on the first-stage mediating path. As shown in Table 10, platform reputation significantly and positively moderated the mediating role of swift trust in the effects of trustworthiness, expertise, and attractiveness on purchase intention. However, the moderating effect was not significant in the mediating path of similarity on purchase intention.

Table 10. Results of Model 8 Moderated Mediation Analysis

Variable	Effect	BootSE	95% CI	Level	Effect	BootSE	95% CI
Trustworthiness	0.062	0.009	[0.045,0.081]	Low	-0.046	0.026	[-0.097, 0.004]
				Mean	0.182	0.023	[0.138, 0.229]
				High	0.223	0.028	[0.171, 0.279]
Expertise	0.078	0.010	[0.060, 0.099]	Low	-0.066	0.023	[-0.110, -0.022]
				Mean	0.221	0.025	[0.174, 0.271]
				High	0.273	0.031	[0.215, 0.335]
Attractiveness	0.079	0.010	[0.061, 0.099]	Low	-0.074	0.025	[-0.124, -0.027]
				Mean	0.216	0.023	[0.173, 0.261]
				High	0.269	0.028	[0.216, 0.325]
Similarity	0.011	0.013	[-0.015, 0.036]	Low	0.029	0.041	[-0.051, 0.111]
				Mean	0.069	0.028	[0.014, 0.124]
				High	0.077	0.034	[0.011, 0.143]

Second, this study employed Model 14 of PROCESS (where the latter half of the mediating model is moderated) to test the moderated mediating effect. As shown in Table 11, the 95% confidence intervals (CIs) of the indirect effects of trustworthiness (95% CI [0.045, 0.080]), expertise (95% CI [0.047, 0.084]), attractiveness (95% CI [0.046, 0.081]), and similarity (95% CI [0.0501, 0.099]) on purchase intention through rapid trust all excluded zero, indicating that the mediating paths from all dimensions to purchase intention through swift trust were statistically significant.

Table 11. Results of Model 14 Moderated Mediation Analysis

Variable	Effect	BootSE	95% CI	Level	Effect	BootSE	95% CI
Trustworthiness	0.062	0.009	[0.045, 0.080]	Low	0.001	0.015	[-0.029, 0.032]
				Mean	0.110	0.017	[0.078, 0.144]
				High	0.218	0.028	[0.164, 0.275]
Expertise	0.064	0.010	[0.047, 0.084]	Low	0.009	0.019	[-0.029, 0.045]
				Mean	0.121	0.018	[0.089, 0.157]
				High	0.234	0.029	[0.179, 0.291]
Attractiveness	0.063	0.009	[0.046, 0.081]	Low	0.007	0.0178	[-0.027, 0.043]
				Mean	0.118	0.017	[0.086, 0.152]
				High	0.228	0.027	[0.175, 0.283]
Similarity	0.073	0.013	[0.050, 0.099]	Low	0.003	0.180	[-0.033, 0.038]
				Mean	0.132	0.021	[0.094, 0.176]
				High	0.261	0.040	[0.187, 0.341]

The phased testing results of the two models show that platform reputation significantly moderates the mediating role of swift trust in the influence of trustworthiness, expertise, and attractiveness on purchase intention, fully validating H5a to H5c. For hypothesis H5d (platform reputation moderates the mediating role of swift trust in the influence of similarity on purchase intention), the test results indicate a partially established status: specifically, the influence of similarity on swift trust does not change significantly regardless of whether platform reputation is high or low; however, in the context of high platform reputation, the positive effect of swift trust on purchase intention is significantly enhanced.

### 5.3. Asymmetric analysis

#### 5.3.1 Data calibration

This study employed the fsQCA method with the aim of revealing how the six antecedent conditions, namely credibility, expertise, attractiveness, similarity, swift trust, and platform reputation, combine to influence consumers' purchase intention by identifying multiple equivalent configurations. Firstly, referring to the research of Ragin (2008), the data from the 7-point Likert scale were calibrated into fuzzy membership values ranging from 0 to 1. In the specific calibration process, the 95th percentile was set as the threshold for full membership, the 5th percentile was set as the threshold for full non-membership, and the mean value of each variable was taken as the crossover point.

#### 5.3.2 Analysis of sufficient conditions

Before conducting the standard fsQCA analysis, this study, by referring to existing research methods, first carried out a necessity test on the antecedent condition variables. With the purchase intention set as the outcome variable, an examination was made to determine whether credibility, expertise, attractiveness, similarity, swift trust, platform reputation, and their negative aspects were necessary conditions. The consistency coefficients of each antecedent variable were all lower than 0.9, which indicated that no single variable constituted a necessary condition for the purchase intention. Therefore, this study further examined the combined effects of the antecedent variables through a sufficiency analysis.

#### 5.3.3 Analysis of sufficient conditions

The process of fsQCA analysis involves the following three steps: First, a truth table was constructed, with the purchase intention being set as the outcome variable and the six antecedent conditions being set as the condition variables. Second, the truth table was simplified. Referring to the research of Fiss (2011) and Ragin (2008), the consistency threshold was set at 0.8, and the frequency threshold was set at 3. Configurations that covered more than 75% of the cases were retained. The analysis results (as shown in Table 12) indicate that the overall consistency is 0.928, which is higher than the minimum standard of 0.75. Moreover, the consistency of each antecedent configuration exceeds 0.75, confirming that all five configurations are sufficient conditions for enhancing the purchase intention. Further analysis reveals that:

Table 12. Configurations of Antecedent Variables for Purchase Intention

Antecedent conditions	Purchase intention				
	1	2	3	4	5
Credibility	●	●	●	●	
Expertise	●	●		●	●
Attractiveness	●	●	●		●
Swift trust		●	●	●	●
Similarity			●	●	●
Platform reputation	⊗		⊗	●	●
Raw coverage	0.450	0.525	0.334	0.449	0.476
Unique coverage	0.108	0.047	0.010	0.021	0.047
Consistency	0.942	0.958	0.960	0.962	0.965
Solution coverage	0.712				
Solution consistency	0.928				

● Condition present/High levels, ● Large circles represent core conditions while small circles represent peripheral conditions, ⊗ Condition absent/Low levels.

5.3.4 Configurations for Purchase Intention

(1) Results of fsQCA

This study identified five distinct configurational paths driving consumer purchase intention through fsQCA (see Table 9). Each path forms a unique mechanism of action through multivariate combinations of core elements, as follows:

First, the differentiated embedding of necessary conditions. Attractiveness is embedded as a necessary condition in Paths 1, 2, and 5, highlighting the core influence of virtual streamers’ visual symbols on consumers’ sensory experiences and corroborating the logic in embodied cognition theory that visual cues trigger emotional identification. The combination of trustworthiness and expertise forms cognitive streamers in Paths 1 and 4, indicating that consumers’ trust construction in agricultural live streaming begins with a dual evaluation of “trustworthiness–expertise,” which theoretically corroborates the “cognitive–emotional” dual-path model in technology trust theory. Swift trust serves as a key mediating variable in Paths 2, 3, and 4, reflecting the characteristics of consumers’ dynamic trust construction based on short-term interaction in instant consumption scenarios and aligning with the contextual application logic of trust dynamics theory.

Second, the compensatory effects of platform reputation and technological trust. Paths 1 and 3 exhibit a compensation mechanism of “streamer capability substituting for platform endorsement”: As a core dimension of technological trust, virtual streamers’ trustworthiness mitigates perceived risk to compensate for lacking platform reputation, offering a lightweight trust-building pathway for emerging live streaming platforms. Conversely, Path 5 demonstrates a reverse compensation logic, where platform reputation compensates for insufficient virtual streamer credibility through the signaling functions of institutional trust (quality guarantees, dispute resolution, regulatory norms), reflecting a coevolutionary mechanism between institutional and technological trust.

Finally, the breakthrough in practical paradigms of typical paths. Path 1 achieves a unique coverage of 10.8% through the minimal element combination of “trustworthiness · expertise · attractiveness,” validating a lightweight operational model of “aesthetic experience priority”—when the visual appeal of virtual streamers reaches a threshold, it can surpass the constraints of swift trust, similarity, and platform reputation, providing a low-input, high-conversion practical pathway for resource-constrained small and medium-sized farmers.

(2) Configurational combination types of influencing factors of purchase intention

① Path 1: Technology trust-dominated type

This path establishes a dual-drive model centered on “cognition–experience”: perceived risk is reduced by publicizing quality inspection reports and visualizing growth environments, thereby enhancing trustworthiness;

consumer decision-making efficiency is improved through professional knowledge dissemination, such as nutrient composition analysis and planting technology popularization; and sensory experiences are enhanced via rural-style image design to boost product attractiveness. These three elements synergistically form a technology trust triangle, effectively substituting for the institutional trust function of platform reputation—particularly suitable for emerging platforms or resource-constrained farmers. In practice, low-cost trust-building systems can be constructed through scenario-based information displays (e.g., field live streaming), professional content embedding (e.g., auto-replies with agricultural science knowledge), and localized image design (e.g., regional characteristic virtual avatars).

#### ② Path 2: Swift trust-driven type

This path establishes an immediate conversion mechanism of “cognition foundation–experience acceleration”: cognitive trust is built on trustworthiness and expertise, while attractiveness is enhanced through dynamic visual designs (e.g., product demonstration actions) to shorten the trust-building cycle, precisely meeting the marketing needs of time-sensitive products like fresh agricultural produce. Operational strategies should focus on trust acceleration tools such as quality visualization (e.g., dynamically displaying quality inspection marks), instant access to professional knowledge (e.g., expert Q&A pop-up windows), and reduced decision-making costs (e.g., flash purchase privileges), forming a complete closed-loop of “information input–experience reinforcement–behavioral conversion” to satisfy consumers’ trust-building requirements in short-term decision-making scenarios.

#### ③ Path 3: Symbolic identity-triggered type

Rooted in social identity and embodied cognition theories, this path strengthens social identity through group symbols such as “fellow villagers” and “homemade,” thereby enhancing information trustworthiness and swift trust; it constructs embodied cognitive schemas using regional visual elements like dialect emojis and folk gestures to boost attractiveness and similarity. This approach is particularly suitable for region-specific non-standard products, such as handicrafts and specialty foods. Symbolic interaction strategies should be employed, including production process transparency (e.g., live streaming manufacturing), user-generated content (e.g., community curator programs), and cultural symbol embedding (e.g., dialect-based communication combined with regional clothing design), to achieve emotional connection and purchase intention conversion through symbolic resonance.

#### ④ Path 4: Systemic synergy-optimized type

This path embodies a systemic logic of “institutional endorsement–technological empowerment–cultural adaptation”: platform reputation is leveraged as a carrier of institutional trust, information trustworthiness is enhanced through smart agriculture data displays (e.g., growth cycle monitoring), trust conversion is accelerated via a trust-point system (e.g., priority purchase rights redemption), and technological alienation is reduced by integrating regional cultural elements (e.g., ethnic clothing). Tailored for agricultural cooperatives in the brand upgrading phase, a five-in-one framework should be constructed, encompassing the technological layer (data visualization), institutional layer (official endorsement partnerships), cultural layer (localized image design), mechanism layer (trust-point system), and service layer (customized benefits), to achieve multi-dimensional trust synergy.

#### ⑤ Path 5: Institutional trust-empowered type

This path reveals the compensation mechanism of platform institutions for streamer capabilities: platform reputation mitigates information trustworthiness deficits through three functions—signal certification (e.g., agricultural assistance green labels), risk buffering (e.g., express refund combined with quality insurance), and normative constraints (e.g., knowledge interaction mechanisms). Designed for newly onboarded farmers, this approach requires implementing a “platform leveraging + emotional bonding” strategy: initial trust is established through platform traffic portals (e.g., Pinduoduo’s loving agricultural assistance zone), professional cognition is strengthened via knowledge Q&A interactions (e.g., coupon-unlocking mechanisms), and perceived similarity is enhanced by visualizing farmer images in labor scenarios (e.g., work scene presentations), forming a rapid trust-building model empowered by institutional trust.

## 6. Conclusions and Discussion

### 6.1. Conclusions

Firstly, this study uncovers the multidimensional mechanisms of virtual streamers’ source credibility in the context of agricultural live streaming, which diverges significantly from the emotion-driven theoretical frameworks in mainstream literature. Liu et al. (2025) posited that virtual streamers stimulate purchase intention through emotional resonance, yet this conclusion does not fully account for the specificity of agricultural product markets—when consumers engage with fresh agricultural products, quality evaluation dilemmas stemming from information asymmetry (Wang et al., 2024) render virtual streamers’ source credibility (trustworthiness, expertise, attractiveness, similarity) a decisive factor in decision-making. The study reveals that these dimensions do not directly influence purchase intention but instead form a causal chain by enhancing consumption experience quality, establishing a

contextual influence pathway of “source characteristics–experience quality–purchase intention” and addressing a critical research gap in trust-building mechanisms for agricultural live streaming.

Secondly, swift trust plays a significant mediating role between virtual streamers’ source credibility and purchase intention. Compared with the static trust model proposed by Chen et al. (2024), this study innovatively introduces the dynamic construct of “swift trust,” which precisely aligns with the time-sensitive demands of agricultural live streaming—given the rigid constraints of fresh agricultural products’ perishable nature on transaction efficiency (Li et al., 2023a), consumers must complete trust formation within extremely short interactions. The research confirms that features such as virtual streamers’ professional knowledge presentation (e.g., origin traceability explanations) and similarity cultivation (e.g., dialectal expressions) can accelerate trust formation and convert it into purchase decisions, upgrading the “gradual accumulation” model of traditional trust theory to an “instant activation” model. This contextual deconstruction of trust formation speed provides a new temporal dimension perspective for trust research in high-frequency, short-cycle live streaming.

Thirdly, platform reputation exhibits not only a significant moderating effect but also a distinct moderated mediating effect. This study transcends the technological attributes (i.e., media richness) framework emphasized by Sun et al. (2024), by revealing the dual role of platform reputation as an institutional trust carrier: On one hand, platform reputation directly amplifies the positive impact of swift trust on purchase intention, acting as a “trust amplifier.” On the other hand, it enhances the overall indirect effects of trustworthiness, expertise, and attractiveness on purchase intention through swift trust, establishing a “moderated mediation pathway.” Crucially, for the similarity dimension, while platform reputation does not moderate the initial link (similarity → swift trust), it still significantly boosts the latter stage (swift trust → purchase intention), resulting in a strengthened indirect effect overall. While echoing Li et al.’s (2023) trust priming theory, these findings further demonstrate that platform reputation is not merely an external trust source; it actively optimizes micro-level trust transmission pathways. This provides a significant cognitive upgrade for understanding e-commerce platforms’ roles in live streaming—shifting their perception from mere technological tools to essential trust infrastructure.

Finally, the fsQCA results uncover five distinct configurational paths triggering high purchase intention, involving combinations of trustworthiness, expertise, attractiveness, similarity, platform reputation, and swift trust. Departing from research paradigms by Gong & Sun (2025) and Hu & Ma (2023) that focus on single elements like linguistic style or emotional expression, this study uses fsQCA to identify five high-purchase-intention configurations encompassing multivariate combinations of source credibility (trustworthiness, expertise, attractiveness, similarity), platform reputation, and swift trust. These paths include both “high trustworthiness + high platform reputation”-dominated institutional trust types and “strong similarity + swift trust”-driven emotional resonance types, embodying the core idea of equifinality from a complexity theory perspective (Alboqami, 2023). This finding not only confirms the significant configurational dependency of virtual streamers’ influence mechanisms but also constructs an integrated analytical framework incorporating antecedent conditions, mediating mechanisms, and moderating variables, providing a methodological breakthrough to address the dilemma of isolated factor research in live streaming and advancing the field’s paradigm shift from linear to systemic thinking.

## 6.2. Theoretical Contributions

Firstly, drawing on the source credibility theory, the impact mechanism of virtual streamers’ source credibility—encompassing credibility, expertise, attractiveness, and similarity—on purchase intention in the context of agricultural live streaming is explored in depth, thereby expanding the research boundaries in the field of virtual streamers. An emotional perspective has been predominantly adopted in existing studies, which focus on the lack of emotional connection of virtual streamers and investigate how to enhance endorsement effectiveness through emotional compensation (Zhou et al., 2025). In contrast, this study shifts to a cognitive perspective, with a focus on exploring the enhancing effect of virtual streamers’ technical reliability advantages on endorsement effectiveness. Additionally, a multi-dimensional measurement framework for virtual streamers’ source credibility is developed based on the source credibility theory. This not only enriches the research perspectives on virtual streamers within agricultural live streaming scenarios but also provides a more comprehensive theoretical basis for the measurement of virtual streamer characteristics.

Secondly, this study uncovers the internal mechanism through which the source credibility of virtual streamers influences consumers’ purchase intentions in agricultural live streaming, thereby demystifying the “black box” between these two constructs. Although the mediating role of trust between virtual streamers and consumers has been validated by Liu et al. (2025), no refined classification of trust types has been conducted in their work. Given the characteristic of rapid trust formation between consumers and virtual streamers in live streaming scenarios, swift trust is introduced as a mediating variable in this study. The mediating role of swift trust between virtual streamers’ source credibility and consumers’ purchase intentions is further analyzed in depth. This clarification of the internal pathway

through which virtual streamers' source credibility affects purchase intentions provides a new theoretical perspective for understanding the operational mechanism of virtual streamers.

Finally, the boundary conditions for research on virtual streamers are refined in this study. Platform reputation is incorporated into the research framework, through which not only the moderating role of platform reputation between swift trust and purchase intention is validated, but also the moderating mechanism of platform reputation on the mediating effect is uncovered. The limitations of existing research are addressed by this finding. Existing studies have predominantly focused on virtual streamers' appearance design (Sun et al., 2024) and the characteristics of their behind-the-scenes controllers (Hu & Ma, 2023). In contrast, by incorporating platform characteristics into the analytical framework, this study adds new theoretical insights to the boundary conditions for virtual streamer research. Furthermore, valuable theoretical references are provided for the practical operation and management of platforms.

### 6.3. Managerial Implications

This study provides significant practical implications for the application of virtual streamers in live streaming for agricultural assistance within the context of rural revitalization. Firstly, the usage end and the development end should collaborate and jointly enhance the source credibility of virtual streamers. The research has revealed that the source credibility of virtual streamers (including credibility, expertise, attractiveness, and similarity) has a significantly positive impact on purchase intention. Therefore, when rural revitalization administrators apply virtual streamers in live streaming for agricultural assistance, they can focus on the four aspects of credibility, expertise, attractiveness, and similarity. For instance, by collaborating with authoritative agricultural institutions or scientific research institutes, they can provide expert endorsements for virtual streamers, thereby enhancing their credibility. Developers can incorporate more agricultural knowledge into the interaction scripts of virtual streamers to improve their professionalism. At the same time, based on the cultural characteristics of rural areas and the images of farmers, they can design attractive appearances for virtual streamers. Moreover, through details such as language and behavior, they can enhance the similarity with farmers, thus narrowing the psychological distance between virtual streamers and consumers.

Secondly, development institutions and live streaming platforms should collaborate and optimize their efforts to jointly strengthen the establishment of swift trust. Swift trust serves as a mediator between the source credibility of virtual streamers and purchase intention. Therefore, developers and live streaming platforms need to focus on how to establish consumers' trust in virtual streamers within a short period. On the development side, the accuracy of information transmission by virtual streamers can be enhanced. This can be achieved by ensuring that virtual streamers are capable of accurately answering consumers' questions, thus improving the interactive experience. As for the platform side, a positive feedback mechanism can be established. This mechanism encourages consumers to evaluate the performance of virtual streamers, thereby creating a word-of-mouth effect. Meanwhile, big data can be utilized to analyze consumers' preferences, and appropriate virtual streamers can be pushed in a targeted manner, which helps to increase the willingness of consumers to watch the live streams and make purchases.

Thirdly, live streaming platforms should attach great importance to reputation building and empower rural revitalization through the driving force of trust. Platform reputation not only positively moderates the influence of swift trust on purchase intention but also strengthens the mediating role of swift trust between the source credibility of virtual streamers and purchase intention. Therefore, live streaming platforms can participate in rural public welfare activities or rural revitalization projects to establish a positive image. Meanwhile, a mechanism for handling consumer feedback and complaints should be established. By promptly addressing issues and improving consumer satisfaction, the platform reputation can be enhanced.

Finally, farmers should consider their own situations and comprehensively utilize the factors influencing purchase intention to enhance purchase intention through various paths. For small-scale farmers with limited resources, the trust of consumers can be enhanced by showcasing the production environment of agricultural products, designing a pastoral-style live streaming interface, and improving the professionalism of interactive scripts. For farmers dealing with fresh agricultural products, they can broadcast the real-time monitoring footage of the products, provide services such as automatic question answering and freight insurance, so as to boost consumers' confidence in making purchases. Farmers of agricultural products with regional characteristics can incorporate identity recognition symbols like "fellow villagers" and "homemade" into the live streaming, and set bullet comment commands of "hometown codes" to strengthen the emotional connection. Agricultural cooperatives can collaborate with smart agriculture service providers to display the growth environment of agricultural products during live streaming. Meanwhile, virtual streamers can be set to automatically reply with professional knowledge, thus enhancing the brand image. For newly registered farmers, they can take advantage of services provided by the platform, such as green certification, express return and exchange, and quality insurance, to reduce consumers' concerns and quickly establish trust. Through the above strategies, farmers can effectively utilize the resources of virtual streamers and live streaming platforms to improve the sales performance of agricultural products and contribute to rural revitalization.

#### 6.4. Limitations and Future Research

Firstly, this study employs regression analysis and fsQCA on cross-sectional self-report data to investigate how virtual streamers' source credibility influences purchase intention in agricultural live streaming. Future research could conduct field experiments in collaboration with agricultural live streaming platforms, manipulating virtual streamers' source credibility in real live streaming scenarios and observing differences in consumer purchase behavior through random grouping to strengthen causal inference. Additionally, future studies may integrate qualitative methods by selecting rural areas with distinct cultural characteristics (e.g., ethnic minority settlements, regions preserving traditional farming culture) to reveal the complex mechanisms of cultural factors in virtual streamers' influence on consumer decision-making through in-depth interviews and longitudinal case analyses, providing more targeted theoretical foundations for developing differentiated agricultural live streaming strategies.

Secondly, the present study focuses primarily on consumers' purchase intentions after their first exposure to agricultural live streaming via virtual streamer; however, long-term changes in consumer behavior have not been explored. Questions such as whether consumers will rewatch live streaming following their initial viewing and whether they will retain purchase intentions in subsequent viewings remain unanswered. Future research could analyze changes in consumers' behavior post-initial viewing through longitudinal surveys, with the long-term impact of live streaming on agricultural assistance comprehensively evaluated and deeper insights provided for the sustained application of virtual streamer. Furthermore, grounded in the source credibility theory, the present study emphasizes analyzing the impact of virtual streamers' credibility, expertise, attractiveness, and similarity on purchase intentions within the context of agricultural live streaming. Future research could further incorporate additional potential influencing factors—such as the perishability of agricultural products—to more thoroughly uncover the driving mechanisms behind consumers' purchase intentions in agricultural live streaming, thereby enriching the research framework in this domain.

Finally, this study primarily centered on the medium form of live streaming for agricultural assistance. However, in reality, various other medium forms such as short videos and social media posts are also widely used in rural areas to facilitate the sales of agricultural products. Different medium forms may have differential impacts on consumers' psychological states and purchase intentions. Future research could expand to a multi-media scenario, conduct a comparative analysis of the differences in consumers' behavioral intentions under different medium forms, and provide theoretical basis and practical guidance for rural areas to select the optimal combination of media.

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