Content Matters! The Effects of TikTok (Douyin) Short Video Content on Flow Experience, Trust, and Purchase Intention From the Signaling Theory Perspective

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ABSTRACT

Short video commerce has become increasingly popular among consumers, creating a novel environment to reshape the consumer shopping experience. However, limited research have focused on the consumer shopping experience in the TikTok (Douyin) context. Combining stimulus-organism-response (S-O-R) model with the signaling theory, this study focuses on how the TikTok short video content attributes function as signals that can drive flow experience and trust, thus inducing buying behaviors. A survey of 322 Generation Y TikTok shoppers in mainland China was conducted. The results of the PLS-SEM study revealed that content diagnosticity, vicarious expression, online reviews, and authenticity significantly influenced the flow experience. However, online reviews and authenticity did not positively impact on consumer trust. Lastly, flow experience and trust were found to mediate the influence of short video content on purchase intention. These findings offer theoretical and practical insights, emphasizing the significance of short video content.

Keywords: TikTok; Short Video Commerce; Signaling Theory; S-O-R Model; Flow Experience; Trust; Social Media; Purchase Intention

INTRODUCTION

Over the past decade, social media has experienced exponential growth, driven by increasing internet penetration (Hanaysha, 2022). It represents an emerging media presence based on Web 2.0 and user relationships, providing vast space for user participation and introducing a new way for businesses to operate known as social commerce (s-commerce) (Antony, 2008; Kaplan & Haenlein, 2010). S-commerce, as defined by Stephen and Toubia (2010), encompasses "forms of internet-based social media that allow people to participate actively in marketing and selling of products in online marketplaces and communities." A common s-commerce models integrates commerce features into social networking sites (Xiao, Li, & Zhang, 2023). Examples include live streaming commerce and short video commerce on platforms like TikTok and KuaiShou (Barta, Belanche, Fernández, & Flavián, 2023; Zhao & Wagner, 2022). Notably, short video commerce is emerging as a primary shopping method for consumers and a new revenue opportunity for sellers (Sensor Tower, 2021).

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Short video commerce is becoming increasingly popular as it allows sellers to show their products in a personalized manner, utilizing the social and customization features of short videos (Zhang, Wu, & Liu, 2019). Globally, TikTok is one of the fastest-growing short video platforms (Statista, 2021), and it was the most downloaded app in 2021 (Sensor Tower, 2021). According to CNNIC (2022), by December 2022, the number of Chinese short video users had reached 1.012 billion, largely fuelled by the success of TikTok, known as Douyin in China. Other notable short video platforms in China include Foton, Jieyin, Volcano, and Xigua Video (CNNIC, 2022; Xiao et al., 2023). Among these, TikTok leads with 600 million users in China, holding a market share of over 45% (Scherr & Wang, 2021).

The introduction of short video commerce has significantly impacted online marketing, creating multiple opportunities for Chinese sellers to expand their markets and increase sales (Xiao et al., 2023). For instance, TikTok e-commerce transactions totaled RMB 1.41 trillion in 2022. Moreover, online statistics illustrate that TikTok sellers experienced a 500% growth in 2020 (Sensor Tower, 2021). As of December 2022, the number of TikTok sellers had surpassed 1.8 million (TikTok GMV, 2023). Despite the potential profitability of TikTok short video, consumer engagement on the platform doesn't always lead to the expected results (Chu, Deng, & Mundel, 2022). Industry surveys by Sensor Tower (2021) reveal that nearly 60% of sellers post short videos with high views but generate only 1-2% purchase rates. Furthermore, iResearch (2022) indicates the rising consumer demand, emphasizing the importance of enhancing the shopping experience by focusing on factors such as curiosity and enjoyment. This becomes crucial for short video commerce as sellers aim to present their products in a more engaging and exciting manner (Koetsier, 2020).

When examining shopping experiences within short videos, scholars have highlighted the importance of flow experience (Liu, Chu, Huang, & Chen, 2016; Zhao & Wagner, 2022). Flow is a suitable lens for understanding and analyzing the shopping experience of TikTok users (Suh, Cheung, Ahuja, & Wagner, 2017). Flow, defined as a state of total focus, control, and enjoyment during online shopping (Gao & Bai, 2014), is crucial for creating a commercially appealing website, as highlighted by (Carlson & O'Cass, 2011). Previous research has consistently shown that improving the flow experience is crucial for boosting purchase intentions in social media commerce (Liu et al., 2016; Liu, Zhang, & Chen, 2022). Investigating the drivers of consumer flow experiences becomes crucial in the development of social commerce. Yet, current research on the flow experience does not sufficiently address the TikTok user experience due to disagreements and inconsistencies regarding the conceptualization and antecedents applications of flow with new technologies (Triberti, Di Natale, & Gaggioli, 2021; Zhao & Wagner, 2022). Hoffman and Novak (2009) emphasized the importance of re-examining the antecedents and uses of flow with the introduction of new technology, employing a context-specific methodology. Given TikTok's distinct interaction behaviour, this study analyses the processes explicitly contributing to the user experience within the TikTok environment, aiming to extend flow theory in this specific domain.

Interestingly, unlike traditional e-commerce platforms where trust and security mechanisms are embedded (Reichheld & Schefter, 2000; Yeon, Park, & Lee, 2019), TikTok platform does not interfere with user content or address security and fraud issues (Tuncer, 2021). Consumers are now seek more accurate identification of information provided by sellers and relevant quality certifications (Yeon et al., 2019). As highlighted by Koller (1988), trust plays a crucial role in all uncertain business activities, with incomplete product information and information asymmetry being leading causes of uncertainty. Similarly, trust is likely a key factor influencing consumers' purchase intentions during short video shopping. Therefore, a

comprehensive study of this issue is necessary to provide practitioners with a better understanding of this topic.

The short video content attributes capture short video commerce's core values and critical features (Xiao et al., 2023). Hence, the investigation of short video commerce should shed light on how users process various information presented in short videos. As emphasized by Yeon et al. (2019), sellers are advised to effectively connect short video content with consumers' shopping experiences and product needs. However, most existing studies have concentrated on understanding the factors influencing user engagement (Yang & Lee, 2022; Zhao & Wagner, 2022) and addiction (Qin, Omar, & Musetti, 2022; Zhang et al., 2019) in short video applications. Few studies have explored short video content attributes that influence consumer purchase intentions (Du, Liechty, Santos, & Park, 2022; Zhao & Wagner, 2022). Hence, this study aims to address the following research questions:

1. Do TikTok short video content attributes (content diagnosticity, vicarious expression, online reviews, and authenticity) affect flow experience and trust among Gen-Y TikTok shoppers in China?

2. Do flow experience and trust mediate the relationship between content attributes and purchase intention?

The rest of this paper is structured as follows: Section 2 reviews related literature. Section 3 presents justifications for hypotheses. In Section 4, methodology of the study is delineated. Data analysis and findings are provided in section 5. Discussions are provided in Section 6. Finally, the implications and conclusion are discussed in Section 7.

LITERATURE REVIEW

Short Video Commerce

Short video commerce refers to sellers using short video content to promote and sell products or services online (Xiao et al., 2023). Users create short videos ranging from 15 seconds to 3 minutes and interact with others by liking, commenting and forwarding (Qin et al., 2022). Short video marketing focuses more on relaxed, fast, and interesting content and is better adapted to the characteristics of social media. In contrast, traditional marketing relies on conventional media, focusing on in-depth and comprehensive communication. Traditional marketing typically requires more time for production and distribution, making instant updates challenging (Zhao & Wagner, 2022).

TikTok has unique advantages over other social media platforms. In terms of format, TikTok allows users to create dynamic, audio-visual short videos of their daily activities and share these videos (Haenlein et al., 2020). Unlike Instagram, TikTok encourages closer, more informal connections with consumers, making the content feel relatable and enhancing trust in TikTok recommendations (Haenlein et al., 2020). As a result, TikTok as a more natural platform compared to YouTube, with content that is perceived as authentic and relevant (Wang, 2020). Additionally, TikTok displays product information in an entertaining and efficient manner, distinguishing itself from platforms like YouTube and Facebook (Haenlein et al., 2020). The immersive watching experience on TikTok allows users to seamlessly, one after

another, without interruption (Scherr & Wang, 2021). Consequently, users not only watch short videos on TikTok but also start shopping on TikTok (Wang, Paulo Esperança, & Wu, 2022).

Signaling Theory

Many TikTok items cannot be physically handled, resulting in information asymmetry between sellers and buyers regarding product quality (Hwang & Youn, 2023). According to Spence (1978), signaling theory provides conceptual guidance for addressing these information asymmetries. This theory has been extensively used in recent marketing research to explore how consumers utilize content attributes to evaluate a product, such as online reviews (Aureliano-Silva, Leung, & Spers, 2021), social popularity (Mou & Shin, 2018), and seller reputation (Xu et al., 2020). Hence, signaling theory offers the conceptual foundation for effective signals. In this study, content diagnosticity, vicarious expression, online reviews, and authenticity were adopted as content attributes for short videos to explore the impact of these cues on purchase intention.

S-O-R Framework

The S-O-R model (Mehrabian & Russell, 1974) identifies three sequential stages, explaining that environmental stimuli indirectly affect individual behavior but indirectly affect behavior through an individual's inner state, such as experience and perceptions (Bagozzi, 1986). Recent studies have elaborated the effects of context on human emotions and online behavior (Luqman, Cao, Ali, Masood, & Yu, 2017; Qin et al., 2022). For instance, platform environmental stimuli (e.g., information quality and system quality) can activate users' perceived enjoyment and feelings, driving their behavioral engagement with short video applications (Qin et al., 2022). Hence, higher quality online environmental features are more likely to evoke consumer emotions and lead to positive actions. Based on theoretical basis, four short video content attributes are constructed as stimuli, with flow experience and trust as an organism, and purchase intention as the responses.

Short Video Content Attributes and Flow Experience, Trust

Content Diagnosticity and Flow Experience, Trust

Content diagnosticity refers to the extent to which consumers gaining a better understanding or knowledge about a product by acquiring product-related information from a specific platform (Lee & Lee, 2022). The literature recognizes content diagnosticity as a crucial factor influencing the positive attitudes of consumers using social media (Chen, Lu, Wang, & Pan, 2019; Kay Byun, Ma, Kim, & Kang, 2021). Research has indicated that learning, exploration, perceived communication quantity and effectiveness are positively related to the flow state (Jiang & Benbasat, 2004). When a platform provides higher content diagnosticity, consumers are more willing and able to learn about and investigate product information, leading to increased concentration and the generation of a flow state (Jiang & Benbasat, 2004; Narwal & Nayak, 2020). Furthermore, trust reflects the quality of relationships between sellers and buyers, which can arise when consumers obtain more information from sellers, particularly about product quality or safety (Chen, Zhao, & Wang, 2022; Hsin & Wen, 2008). As enhanced product diagnosticity makes consumers feel more knowledgeable about the product (Jiang & Benbasat, 2004), it is expected to increase consumer trust in the product. Hence, it is reasonable to believe that consumers will generate a flow state and trust when TikTok provides rich and sufficient product information. Therefore, we hypothesize:

H1a: *Content diagnosticity is positively related to flow experience.*

H1b: *Content diagnosticity is positively related to trust.*

Vicarious Expression and Flow Experience, Trust

Vicarious expression refers to sellers providing consumers with an indirect product experience that enhances their understanding of the product (Li, Huang, Tan, & Wei, 2013). This concept originates from social learning theory (Chen et al., 2019). According to this theory, a high degree of vicarious expression allows readers to grasp an author's intense feelings, thereby influencing their pleasure experience through direct emotional contagion. Benlian, Titah, and Hess (2012) further suggest that a higher degree of vicarious expression facilitates consumers use non-sensory aids to understand the product's usage, enhancing their positive perception of the product's performance. Similarly, in line with social learning theory, online recommendation content can be conveyed through stories and narratives, enabling consumers to vividly experience the product and instilling confidence in their purchase decision (Chen et al., 2019). High levels of vicarious expression boosted customers' assessment of the usefulness of online information (Li et al., 2013) or reduce perceived risk (Klein, 1998), thus increasing trust. Given the unique context of TikTok, it is reasonable to believe that if short videos deliver product information in a vivid, interesting, or attention-grabbing way, consumers can experience the product's performance, leading to greater pleasure (such as a flow state) and a positive attitude towards the product (such as trust) (Lee & Lee, 2022; Li et al., 2013). Hence, we posit:

H2a: *Vicarious expression is positively related to flow experience.*

H2b: *Vicarious expression is positively related to trust.*

Online Reviews and Flow Experience, Trust

Online reviews are product evaluation created by consumers based on personal usage experiences (Chen & Xie, 2008). This study proposes that online reviews include three types: textual, image, and numerical ratings (Tran, 2020). Research shows that high-quality product image reviews are more visual and vivid, contributing to consumers' sensory and emotional satisfaction (Tran, 2020; Zhao, Xu, & Wang, 2019). Additionally, online reviews meet or even exceed consumers' expectations, reducing the risks associated with unfamiliar products or services. This captures the attention and trust of both existing and potential consumers (Kim, Ferrin, & Rao, 2008). Conversely, negative reviews can lead to distrust from the consumers' perspective (Lee, Park, & Han, 2008). Notably, 70% of consumers on the TikTok platform seek purchase advice through the review section (TikTok, 2022). From this, we can infer that various types of positive online reviews have the potential to induce a flow state in consumers and enhance trust perception. The hypothesis is formulated as follows:

H3a: *Online reviews is positively related to flow experience.*

H3b: *Online reviews is positively related to trust.*

Authenticity and Flow Experience, Trust

According to signaling theory, consumers rely on signals of a website's information authenticity to assess product reliability and whether it meets their expectations (Kim & Kim, 2020). In other words, these signals reduce ambiguity, enabling informed decision-making (Mavlanova & Benbunan-Fich, 2010). Both internal and external signals define the characteristics of a product (Olsen, Menichelli, Meyer, & Næs, 2011). Consequently, consumers can analyze product quality and generate opinions about its overall merits (Wells, Parboteeah, & Valacich, 2011). Additionally, signals play a crucial role in gathering information about experiential qualities, aiding customers in determining how well the product aligns with their needs (Hong & Pavlou, 2014). Thus, short videos on TikTok evince authenticity, resulting in the generation of a flow state and the formulation of higher perceptions of trust. Hence, we posit:

H4a: *Authenticity is positively related to flow experience.*

H4b: *Authenticity is positively related to trust.*

Flow Experience and Purchase Intention

In the existing literature, flow experience has been shown to positively affect purchasing intention has been fully proven, including antecedents, experiences, and consequences (Bilgihan, 2016; Zhao & Wagner, 2022). Specifically, consumers feel pleasure and enjoyment when experiencing a product impacts their willingness to purchase it (Chen, Hsu, & Lu, 2018). Thus, consumers' affective states are obtained through TikTok environment cues and finally influence their purchase intentions (Csikszentmihalyi, 2000; Zhao & Wagner, 2022). Therefore, the hypothesis is proposed as follows:

H5: *Flow experience is positively related to purchase intention.*

Trust and Purchase Intention

In the context of TikTok, trust involves feeling confident in the product description presented in the short video or in the credibility of the sellers (Wongkitrungrueng & Assarut, 2020). According to Priester and Petty (2003), trust in sellers increases the likelihood that consumers purchase decisions and ensures product acceptance. Some studies emphasize the critical role of product authenticity in establishing trust, significantly influencing consumers' willingness to make a purchase (Hampton-Sosa & Koufaris, 2005; Hong & Cha, 2013). Another study found that when consumers who trust sellers believe in the accuracy of the product representations (Qiu & Benbasat, 2005). Consumers trust that sellers will consider their individual needs and preferences by recommending suitable products (Priester & Petty, 2003). Therefore, when TikTok sellers minimizes consumers' uncertainty about the quality of a product, they may stimulate purchase intention. We, therefore, posit:

H6: *Trust is positively related to purchase intention.*

Mediating Effect of Flow Experience and Trust

According to Mehrabian and Russell (1974), the organism acts as a mediator between stimuli and an individual's reactions, consisting of cognition and affection. In particular, the organism acts as a mediator connecting stimuli and responses. Flow and trust are categorized as psychological states (Hong & Cha, 2013; Zhao & Wagner, 2022). According to SOR model, this study views flow experience and trust as essential components of the organism. Consequently, flow experience and trust are proposed as mediating factors between environmental cues and purchase intention (Liu et al., 2022).

The research reveals that flow experience significantly predicts purchase intention (Bilgihan, 2016), as platforms like TikTok provide consumers with more freedom, control, and participation, thereby enhancing their overall consumption experience, thereby significantly influencing purchase intention (Tuncer, 2021). Similarly, Liu et al. (2022) examined the effect of perceived online store attributes (interactivity, authenticity, and entertainment) on consumer responses (purchase intention), proposing that internal states of the consumer (pleasure and attitude) mediate this process. Based on these findings and the SOR model, this study proposes that flow experience mediates between the environmental cues of TikTok and consumer responses. Therefore, we posit:

H7a: *Flow experience mediates the relationship between content diagnosticity and purchase intention.*

H7b: *Flow experience mediates the relationship between vicarious expression and purchase intention.*

H7c: *Flow experience mediates the relationship between online reviews and purchase intention.*

H7d: *Flow experience mediates the relationship between authenticity and purchase intention.*

Trust refers to the degree of consumers' confidence in the products and sellers on TikTok. Literature evidence indicates that trust can play a mediating role in the social media context (Hong & Cha, 2013; Hsin & Wen, 2008; Liu et al., 2022). Supporting this notion, Bao and Huang (2018) establish the significant role of social trust as a mediating construct between information quality and purchase intention. In essence, trust is cultivated through cues embedded in a virtual environment and, in turn, stimulates consumer behaviors (Alalwan et al., 2019). Based on the above, trust is proposed as the mechanism that connects the environmental cues of TikTok to purchase intention. Accordingly, this study hypothesized that:

H8a: *Trust mediates the relationship between content diagnosticity and purchase intention.*

H8b: *Trust mediates the relationship between vicarious expression and purchase intention.*

H8c: *Trust mediates the relationship between online reviews and purchase intention.*

H8d: *Trust mediates the relationship between authenticity and purchase intention.*

Figure 1: Research framework
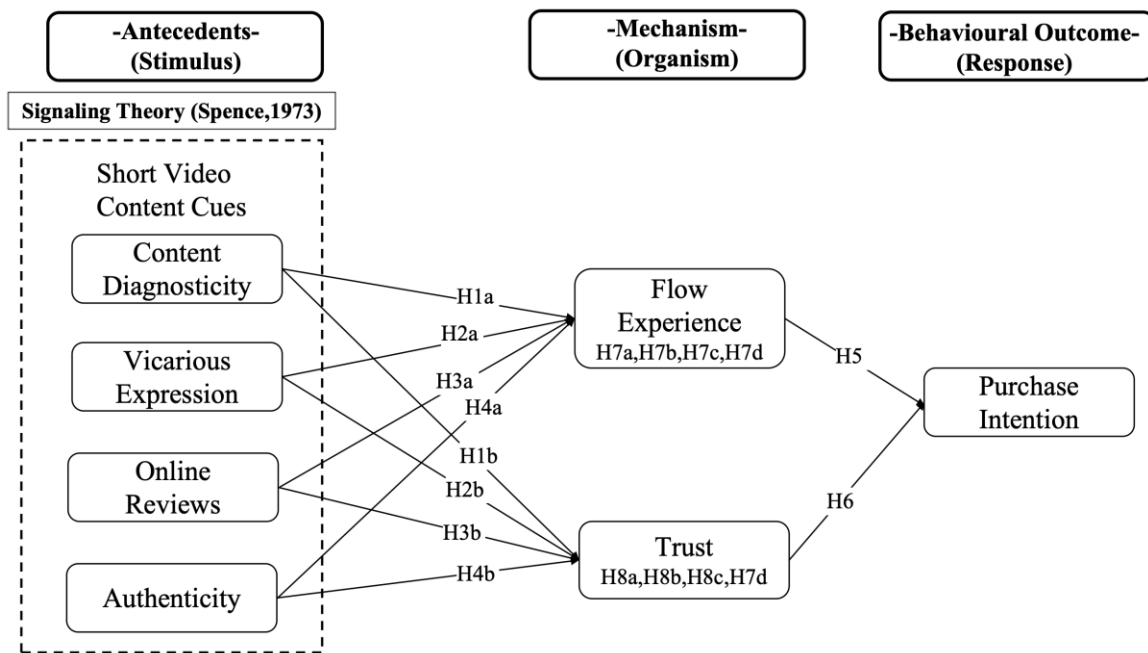
RESEARCH METHOD

To ensure reliable data, a purposive sampling technique was applied. The study targeted Gen-Y TikTok viewers in China, born between 1981 and 1996 (Brosdahl & Carpenter, 2011). The questionnaire was developed using the Wen Juan Xing platform (https://www.wjx.cn/) and utilized to collect data from April 2023 to May 2023 through social media platforms, including WeChat shopping groups, QQ shopping groups, and Little Red Book shopping groups. This method increased the likelihood of capturing users from the target population (Zafar et al., 2020). Notably, criteria were created to assess respondent eligibility; respondents had to be Chinese individuals born between 1981 and 1996 (i.e., Gen Y) with shopping experience after watching short videos on TikTok in the last three months. Over one month, 336 responses were collected, with 322 being deemed valid and usable. The majority of the respondents were women (56.2%), aged 31 to 35 (47.2%), holding a bachelor's degree (66.8%). Nearly half were employed in the private sector (46.9%) , with a similar proportion having completed undergraduate studies (66.8%) (refer to Table 1).

Instrument and Measurement

All the operationalized instruments were modified to fit the TikTok context, employing a five-point Likert scale. Demographic information was collected in the first section of the questionnaire. Table 2 shows that both content diagnosticity and vicarious expression constructs were measured using three items each adapted from Li et al. (2013). Online reviews were measured based on items developed by Zhang, Zhao, Cheung, and Lee (2014), and items for authenticity were adapted from Wu and Hsu (2018) as well as Lee, Lee, and Choi (2020). Flow experience was assessed using the scale from Chen and Lin (2018), while trust was measured using the Liu's et al. (2022) scale. Finally, three items were modified from Wang, Yeh, and Liao (2013) were used to assess purchase intention.

Table 1: Demographic profile (n=322)

Demographic Profile	Category	Frequency (n=322)	Percent (%)
Gender	Male	141	43.8%
	Female	181	56.2%
Age	26-30 years old	124	38.5%
	31-35 years old	152	47.2%
	36-42 years old	46	14.3%
Education	Undergraduate degree	215	66.8%
	Graduate Degree	73	22.6%
	Postgraduate degree	34	10.6%
Occupation	Employee - Government sector	96	29.8%
	Employee - Private sector	151	46.9%
	Self-employed	27	8.4%
	Student	45	14%
	Others	3	0.9%
Monthly income	Below RMB 5000	42	13%
	RMB 5001–7000	37	11.5%
	RMB 7001–11000	113	32%
	RMB 11001–13000	83	25.8%
	Above RMB 13001	57	17.7%

RESULTS

To assess the measurement and structural models of the research framework, this study used partial least squares structural equation modeling (PLS-SEM) (Memon et al., 2021). To make this evaluation, we used the Smart PLS 4 software (Gao et al., 2023). In comparison to other techniques, the PLS method has high predictive accuracy in complex models, does not require normal variance in data, and can be employed with small samples (Cheah, Nitzl, Roldan, Cepeda-Carrion, & Gudergan, 2021). The PLS method comprises two main components: the measurement model, which assesses validity and reliability, and the structural model, which tests hypotheses through path analysis (Becker, Cheah, Gholamzade, Ringle, & Sarstedt, 2023; Tuncer, 2021).

Common Method Bias Test

Prior to employing the PLS method, it is crucial to examine common method variance (CMV) in the obtained data. The Harman-Single Factor test was used for this purpose (Jakobsen & Jensen, 2015), and the largest variance explained by a single factor was 31.7% (<40 percent) (Fuller, Simmering, Atinc, Atinc, & Babin, 2015). Subsequently, the full collinearity approach proposed by Kock and Lynn (2012) was applied. Table 2 illustrates that the full collinearity (VIF) values for each latent variable are below 3.3 (between 1.024 to 1.733) (Kock & Lynn,

2012). Hence, the results from both methods suggest that there was no issue with common method bias.

Reflective Measurement Model

Several metrics are reported in the assessment of the reflective measurement model (Cheah, Memon, Chuah, Ting, & Ramayah, 2018). First, this study verifies the construct's reliability. Cronbach's α, rho_A, and composite reliability (CR) values were all exceeded 0.70, meeting the threshold value (Hair, Hollingsworth, Randolph, & Chong, 2017) (see Table 2). Second, the convergent validity of the measurement is confirmed by the items' outer loadings and average variance extracted (AVE) (Fornell & Larcker, 1981; Hair, Ringle, & Sarstedt, 2011). As presented in Table 2, all items had outer loadings over 0.4, and all construct had AVE values above the recommended 0.50 threshold. Finally, the Heterotrait-Monotrait (HTMT) ratio was used to confirm that the discriminant validity of all constructs was below the 0.85 threshold (Henseler, Ringle, & Sarstedt, 2015), demonstrating satisfactory discriminant validity (Table 3).

Table 2: Construct reliability, convergent validity

Construct	Loading
Content Diagnosticity (CD) [α =0.781; rho_A = 0.781; CR =0.873; AVE = 0.696; Full Collinearity = 1.586]	
CD1: The content of the short videos on TikTok helped me familiarize myself with the products.	0.838
CD2: The content of the short videos on TikTok helped me evaluate the products.	0.822
CD3: The content of the short videos on TikTok helped me understand the performance of the products.	0.842
Vicarious Expression (VE) [α =0.738; rho_A = 0.738; CR =0.851; AVE = 0.657; Full Collinearity = 1.609]	
VE1: By watching this video, I can feel what the spokesperson is trying to say about the product and her usage experience.	0.799
VE2: By watching this video, I can imagine what the spokesperson is trying to say about the product and her usage experience.	0.842
VE3: By watching this video, I can envision what the spokesperson is trying to say about the product and her usage experience.	0.789
Online Reviews (OR) [α =0.859; rho_A = 0.859; CR =0.905; AVE = 0.704; Full Collinearity =1.024]	
OR1: The arguments of these online reviews on TikTok are convincing.	0.798
OR2: The arguments of these online reviews on TikTok are persuasive.	0.856
OR3: The arguments of these online reviews on TikTok are good.	0.856
OR4: The arguments of these online reviews on TikTok are strong.	0.844
Authenticity (AU) [α =0.839; rho_A = 0.853; CR =0.885; AVE = 0.606; Full Collinearity = 1.201]	
AU1: I believe the relationships that have developed through TikTok short video are genuine.	0.807

AU2: I believe the people, events, and things within TikTok short video experience are genuine.	0.802
AU3: I believe the atmosphere within TikTok short video is genuine.	0.749
AU4: I believe the activities within TikTok short video environment are genuine.	0.802
AU5: TikTok short video is a communication channel that allows more authentic communication between spokesperson and me.	0.728
Flow Experience (FE) [α =0.856; rho_A = 0.857; CR =0.903; AVE = 0.699; Full Collinearity = 1.556]	
FE1: When watching a short video on TikTok, I do not realize how time passes.	0.839
FE2: When watching a short video on TikTok, I often forget the work I must do.	0.859
FE3: Watching a short video on TikTok gives me a temporary escape from the real world.	0.831
FE4: When watching a short video on TikTok, I am not distracted easily by other things.	0.814
Trust (TR) [α =0.768; rho_A = 0.774; CR =0.852; AVE = 0.590; Full Collinearity = 1.330]	
TR1: I believed that the spokesperson was trustworthy.	0.788
TR2: I believed that the product information provided by the spokesperson was true.	0.755
TR3: I believed that the products recommended by the spokesperson were of high quality.	0.793
TR4: I trusted that the products I would receive would be the same as those shown on the short video.	0.734
Purchase Intention (PI) [α =0.827; rho_A = 0.827; CR =0.897; AVE = 0.743; Full Collinearity = 1.733]	
PI1: I plan to pay for products on TikTok in the future.	0.862
PI2: I intend to purchase products on TikTok in the future.	0.855
PI3: I predict I would buy products on TikTok in the future.	0.869

Structural Model

Following the five-step structural model is administered. The collinearity issue is examined using inner VIF. All the VIF values of the exogenous constructs are well below the threshold of 3.33 (from 1.055 to 1.742) (see Table 4), suggesting that there was no issue with inner collinearity in this study (Diamantopoulos & Siguaw, 2006).

Then, the bootstrapping technique (5000 resampling) was adopted to assess the path coefficients (Ringle, Becker, Cheah, & Sarstedt, 2022). As shown in Table 4, content diagnosticity was showed to be the strongest predictor of flow experience (β=0.234, p<0.01), supporting H1a. Similarly.

Table 3: Assessment of HTMT criterion

	1	2	3	4	5	6
AU						
CD	0.218					
FE	0.482	0.548				
OR	0.582	0.486	0.599			
PI	0.300	0.591	0.576	0.414		
TR	0.159	0.426	0.288	0.286	0.633	
VE	0.423	0.648	0.613	0.672	0.582	0.424

Note: HTMT < 0.85 (Henseler et al., 2015)

vicarious expression (β=0.186, p<0.01), online reviews (β=0.218, p p<0.01), and authenticity (β=0.209, p<0.01) all demonstrated a significant positive impact on flow experience, supporting H2a, H3a, H4a. Moreover, content diagnosticity (β=0.225, p<0.01), vicarious expression (β=0.190, p<0.01) were shown to affect trust positively, supporting H1b and H2b, online reviews (β=0.052, p=0.459) and authenticity (β=-0.026, p=0.708), contrary to the hypothesis, did not significantly influence trust; therefore, H3b and H4b were rejected. Additionally, there was a positive relationship of flow experience (β=0.388, p<0.01) and trust on purchase intention (β=0.419, p<0.01), supporting both H5 and H6.

Overall, 40.1% of variance in purchase intention was explained by flow experience and trust. To determine the significance of each path, the effect size ($f2$) was determined (Sullivan & Feinn, 2012) (refer to Table 4). Effect size can be classified as small (0.02), medium (0.15), or large (0.35) according to the criteria established by Cohen (2013). Table 4 revealed flow experience ($f2$=0.238) and trust ($f2$=0.277) exhibited a medium effect on purchase intention. Additionally, four predictors of flow experience with a small effect size were identified, content diagnosticity ($f2$=0.066), vicarious expression ($f2$=0.035), online reviews ($f2$=0.045), and authenticity ($f2$=0.054). Regarding trust, content diagnosticity ($f2$=0.043) and vicarious expression ($f2$=0.026) show small effect size, while online reviews ($f2$=0.002) and authenticity ($f2$=0.001) have trivial effect sizes.

Lastly, the endogenous Q2 values, which range from 0.076 to 0.293, confirm the predictive relevance of the model as they are all greater than zero (Geisser, 1975). Additionally, the predictive relevance of the endogenous constructs was evaluated using the PLSpredict method created by Shmueli et al. (2019). Table 5 shows that, except for PI1, the PLS model for purchase intention has lower RMSE and MAE values than the linear model (LM). As a result, purchase intention exhibited medium predictive potential (Shmueli et al., 2019).

Table 4: Results of the structural model

Hypothesis	Std. Beta	Std.Error	t-value	p-value	Results	VIF	R^2	f^2	Q^2
H1a: Content Diagnosticity -> Flow Experience	0.234	0.051	4.617	0.000	S	1.372	0.396	0.066(S)	0.271
H2a: Vicarious Expression-> Flow Experience	0.186	0.060	3.105	0.002	S	1.632		0.035(S)	
H3a: Online Reviews-> Flow Experience	0.218	0.060	3.597	0.000	S	1.742		0.045(S)	
H4a: Authenticity -> Flow Experience	0.209	0.053	3.943	0.000	S	1.345		0.054(S)	
H1b: Content Diagnosticity ->Trust	0.225	0.077	2.940	0.003	S	1.372		0.043(S)	
H2b: Vicarious Expression -> Trust	0.190	0.073	2.610	0.009	S	1.632	0.146	0.026(S)	0.076
H3b: Online Reviews -> Trust	0.052	0.071	0.741	0.459	NS	1.742		0.002(T)	
H4b: Authenticity -> Trust	-0.026	0.069	0.375	0.708	NS	1.345		0.001(T)	
H5: Flow Experience -> Purchase Intention	0.388	0.039	9.929	0.000	S	1.055	0.401	0.238(M)	0.293
H6: Trust -> Purchase Intention	0.419	0.047	8.947	0.000	S	1.055		0.277(M)	
Notes: *p < 0.05; **p < 0.01;									

Table 5: Assessment of PLS predict

		PLS		LM		PLS-LM		
	Q²predict	RMSE	MAE	RMSE	MAE	RMSE	MAE	Predictive power
PI1	0.184	0.667	0.535	0.679	0.533	-0.012	0.002	Medium
PI2	0.186	0.662	0.513	0.664	0.514	-0.002	-0.001	
PI3	0.210	0.648	0.529	0.665	0.536	-0.017	-0.007	
Note: PI (purchase intention); RMSE (Root mean squared error); MAE (Mean absolute error)								

Assessment of Mediating Effect

By bootstrapping the indirect impact, the mediation analysis is examined using the mediation analysis approach of Nitzl, Roldan, and Cepeda (2016) (Table 6). The results show flow experience significantly mediates the relationship between short video content attributes toward purchase intention. Content diagnosticity (β=0.091, $p<0.01$), vicarious experience (β=0.072, $p<0.01$), online reviews (β=0.084, $p<0.01$), and authenticity (β=0.081, $p<0.01$) were all significant at $p<0.01$. Therefore, H7a, H7b, H7c, and H7d are thus supported. Similarly, trust is also observed to mediate the relationship between content diagnosticity (β=0.094, $p<0.01$) and vicarious experience (β=0.080, $p<0.05$) on purchase intention, supporting H8a and H8b. However, the findings indicate that the moderating effect of trust between online reviews (β=0.022, p=0.466) and authenticity (β=-0.011, p=0.711) toward purchase intention are rejected, therefore, H8c and H8d were not supported.

Table 6: Assessment of mediating effect

Hypothesis	Std. Beta	Std.Error	*t*-value	*p*-value
H7a: Content Diagnosticity -> FE -> PI	0.091	0.022	4.126	0.000
H7b: Vicarious Expression-> FE -> PI	0.072	0.025	2.902	0.004
H7c: Online Reviews->FE -> PI	0.084	0.026	3.268	0.001
H7d: Authenticity -> FE -> PI	0.081	0.022	3.691	0.000
H8a: Content Diagnosticity -> TR -> PI	0.094	0.035	2.699	0.007
H8b: Vicarious Expression-> TR -> PI	0.080	0.033	2.426	0.015
H8c: Online Reviews-> TR -> PI	0.022	0.030	0.730	0.466
H8d: Authenticity -> TR -> PI	-0.011	0.029	0.371	0.711
Notes: *p < 0.05; **p < 0.01; FE (Flow experience); TR(Trust); PI (Purchase intention)				

DISCUSSIONS

Combining the signaling theory of Spence (1978) and S-O-R model (Mehrabian & Russell, 1974), this study focused on the roles of TikTok short video content attributes in formulating flow and trust states among mainland Chinese, consequently leading them to purchase on TikTok.

Factors that Influence Flow Experience and Trust

The first research question aimed to examine the drivers of TikTok short video attributes influencing consumers' flow experience and trust. The findings reveal that content diagnosticity has the highest path coefficient score and greatest effect size towards flow experience and trust (H1a and H1b supported). This underscores that content diagnosticity is an essential attribute for enhancing flow experience and trust perception when watching short videos on TikTok. In the increasingly competitive landscape of short video content, providing rich diagnostic information helps consumers understand various features and benefits of a product. This engagement fosters trust and makes short video shopping both enjoyable and confidence-inspiring, as affirmed by Yang and Lee (2022).

Next, the vicarious expression positively affects both flow experience and trust (H2a and H2b supported). This result suggests that consumers manage their vicarious experiences, prompting sellers to enhance their focus on how information is presented. A vivid product display helps consumers comprehend and accept information, engaging multiple sensory channels and evoking pleasure and satisfaction (Yang & Lee, 2022). This is consistent with the findings of Lee and Lee (2022) that short video content is more effective in conveying relevant information and is more likely to gain more confidence from consumers.

Apart from that, both online reviews and authenticity positively influence flow experience (H3a and H4a was supported), aligning with findings from previous studies (Tran, 2020; Zhao et al., 2019). Online reviews offer consumers quick access to valuable information, effectively mitigating the impact of information asymmetry and enhancing the overall shopping experience (Chen & Xie, 2008). Particularly for individuals familiar with a brand, strongly negative reviews draw attention to short video content. Similarly, consumers' perceived authenticity is related to the feelings and cognitions generated while watching the short video. For example, realistic scenarios or authentic portrayals of people, events, and stories contribute to this perception (Wu & Hsu, 2018). Thus, consumer perceived authenticity plays a crucial role in creating enjoyable experiences and fostering positive psychological states (e.g., flow state) (Reisinger & Steiner, 2006).

The finding that online reviews do not significantly affect trust contradicts the findings of previous studies (Boo & Busser, 2018; Tran, 2020) (H3b rejected). This inconsistency may arise from two reasons. Firstly, the proliferation of fake online reviews has left consumers perplexed due to the sheer volume and lack of consistency on TikTok (Hong, Xu, Wang, & Fan, 2017; Xiao et al., 2023). Secondly, Kim, Han, and Jun (2020) suggest that products with a mix of positive and negative reviews garner more trust from consumers compared to those with solely positive reviews. However, the latest reports indicate that some reviews might be excessively positive may raise doubts about their authenticity (TikTok GMV, 2023). Furthermore, the results of this study indicate that authenticity does not significantly impact trust (H4b rejected). Koo (2016) argues that certain short videos may be edited to appear appealing or contain fictionalized content, prompting some consumers to question the authenticity of depicted scenes, products, or events (Chakraborty, Kapoor, & Ilavarasan, 2020).

The Mediating Role of Flow Experience and Trust

The second research question relates to the mediating role of flow experience and trust. The results affirm that the relationships between content diagnosticity, vicarious expression, online

reviews, and authenticity, and purchase intention are mediated by flow experience (H7a, H7b, H7c, and H7d supported). These TikTok short video content attributes indeed are effective signals trigger flow experience, which in turn, lead to purchase intention. Regarding the mediator role of trust, it is significant only for the path from content diagnosticity and vicarious expression to purchase intention path (H8a, H8b supported) while not significant for online review and authenticity to purchase intention (H8c, H8d rejected).

Jiang and Benbasat (2004) propose that when sellers provide detailed information about a product's features, consumers' perceptions of its performance and user experience are enhanced, thus increasing their confidence in purchase intentions. Similarly, Benlian et al. (2012) revealed that increased vicarious expression helps users to envision using the product, leading to greater enjoyment and confidence. In practice, the users who have an enjoyable experience on TikTok are always those who can receive more easy-to-understand online product information.

This study found that positive online reviews led to flow but not trust, rendering flow a significant mediator, while trust was not. Online review was reported to make the consumers pay more attention to the product and then generate positive feelings, supporting earlier findings (Kim et al., 2008; Zhao et al., 2019). Trust does not mediate online reviews to purchase intention may be due to the fact that some sellers on social media (i.e., TikTok) used fake reviews and other harmful competitive tools in order to improve their product's popularity or attack other competitors (Yang, Liu, Dong, & Li, 2023). The compromised review quality does not enhance trustworthiness of online reviews, and therefore does not affect purchase decision.

Moreover, the mediating effect of flow experience between authenticity and purchase intention was found to be significant. This finding aligns with that of Reisinger and Steiner (2006), who reaffirmed that consumers' perception of authenticity significantly impacts their enjoyment. Against our expectations, the mediating effect of trust was not significant. This could be due to the fact that the atmosphere, activities, and relationships of most TikTok short videos are seen as less genuine; consumers' perceptions alternate between reality and the virtual worlds (Wu & Hsu, 2018). This perceived lack of authenticity may undermine trust and subsequently influence purchase intentions on TikTok.

THEORETICAL IMPLICATIONS

This study makes several significant contributions to the existing literature. First, this study extended the application of S-O-R in a novel research context, aiming to better comprehend the mechanism of purchase intention on TikTok. Despite the growing popularity of short video commerce, research on this topic is still in the early stages. Previous studies have predominantly focused on factors influencing user engagement (Yang & Lee, 2022; Zhao & Wagner, 2022) and addiction (Qin et al., 2022; Zhang et al., 2019) in short video applications. However, these investigations have certain limitations. For instance, the economic value of short video commercials have not been fully explored and require further attention. Furthermore, only a handful of studies have investigated the specific attributes of short video content that influence consumer purchase intention (Du et al., 2022; Zhao & Wagner, 2022). Consequently, based on SOR theory within the unique context of TikTok, this study identifies the important role of short video content attributes in shaping the consumer shopping experience, thus enhancing the current body of literature.

Second, this research aims to expand the signaling theory by formulating a new research model in the context of TikTok. Signaling theory posits that signals, originating from seller behavior, convey information about the seller or unobservable product qualities (Meents & Verhagen, 2018). According to this research, TikTok users' emotional states such as flow and trust while watching short videos arise from evaluating or experiencing specific content attributes (i.e., signals). As a result, these signals are highly predictive and serve as essential source of information in the consumer decision-making process (Xiao et al., 2023). To date, limited studies have explored short video content attributes influencing consumers' shopping experiences (Zhai, Yin, Li, Wang, & Yang, 2022). Conversely, several studies have shown that the characteristics of social media spokespersons play a significant role in consumers' final purchasing decisions (Masuda, Han, & Lee, 2022). By addressing these gaps, this study contributes to signaling theory by highlighting the importance of short video content attributes as signals in TikTok shopping contexts.

Third, this study adds to the limited research integrating the SOR framework with signaling theory. The signaling theory helps explain how stimuli and the organism interact within the TikTok context. Moreover, SOR helps to understand the operation of flow experience and trust mechanisms in response to signaling elements and their impact on purchase intention. This study finds the mediation effect of short video content attributes as effective signals influence purchase intention via flow experience and trust, following the S-O-R model. Consequently, this empirical finding significantly enhances the current literature on flow experience within the TikTok environment. Despite significant advancements studying flow experience in the online environment (e.g., Kim, 2022; Liu et al., 2016; Bilgihan, 2016), the applicability of these findings in the TikTok context remains unclear. Therefore, the current study extends its investigation to underscore the critical role of content diagnosticity, vicarious expression, online reviews, and authenticity in shaping flow experience and trust.

MANAGERIAL IMPLICATIONS

These findings have significant implications for short video marketers. First, the highest coefficient value of content diagnosticity indicates that most TikTok users assess the product based on detailed information. Therefore, this study recommends that short video marketing should encompass comprehensive product information to heighten levels of content diagnosticity, including product raw materials, usage instructions, size, place of production, design and technology, application scenarios, target audience, and price. For instance, a short video recommending a smartwatch with low diagnostic content might say, "Believe me, this smartwatch is amazing!" a highly diagnostic content example would be: "This smartwatch is designed with advanced health and fitness features, uses Harmony OS 2.0 system, the titanium version comes with a 1.43-inch AMOLED display, the memory is 768M, and is suitable for athletes.

Vicarious expression is another important attribute to increase the flow experience and trust during shopping. Many current marketers present highly professional product information without carefully considering the user understanding degree from a need's perspective. Hence, the marketers should focus on delivering product information in a way that is easily comprehensible to consumers. This involves using less jargon in product introductions to avoid ambiguous concepts for consumers. In addition, marketers can create an immersive shopping experience by offering multiple angles and 360° rotation views of products. This approach not

only enhances the consumer's experience and trust but also increases their likelihood of making a purchase.

High-quality online product reviews that are visual and vivid enhance consumers' sensory and emotional satisfaction, who will invest more attention in watching short videos. Therefore, short video marketers should make two types of efforts. First, they should diversify the types of product reviews to allow consumers to assess product quality more clearly. This can be achieved by combining text, images, and ratings, and by responding promptly to harmful or inaccurate reviews to provide more comprehensive feedback. Second, ensure the quality of online reviews. Marketers can invite product experts to comment and allow users to write honest or negative reviews, which will help marketers continuously improve their videos or product quality. Hence, online reviews serve as strong content cues that help consumers eliminate information asymmetry, generate flow experience, and ultimately lead to purchase behavior.

Furthermore, authenticity significantly impacts the flow experience and has a relatively high path coefficient. Thus, content should be presented authentically and reliably to bridge the gap between reality and imagination. This approach not only enhances the consumer's experience and trust but ultimately increases their willingness to make a purchase. For instance, if a consumer perceives the lipstick's appearance in the video as genuinely authentic, without the use of filters, as genuinely authentic, it enhances the product's perceived value. This authenticity can contribute to creating a positive impression, ultimately influencing the consumer's decision to make a purchase.

Lastly, platforms can use the information from this study to recognize the significant benefits of short video commerce for retailers and the country. Consequently, platforms should offer content training programs to retailers, empowering them to enhance their competitiveness in formulating effective online marketing strategies.

FUTURE RESEARCH DIRECTIONS

The current study has limitations that should be studied further in future studies. First, because TikTok is the most popular short video platform in the location where the sample was taken, this study was confined to that platform. Future research can investigate the platform's influence on shopping by applying the same model to various platforms.

Second, although this study identified subdimensions of the short video content attributes from existing literature, this could introduce bias. Therefore, future research should employ mixed-method techniques, including in-depth interviews, experiments, and questionnaires, should be used in future studies to identify any missed short video content attributes (e.g., the watch frequency, the visual content viewership, and ratings) that might influence flow experience, trust, and purchase intention of users who were shopping via the TikTok short video.

Third, since all respondents were Gen-Y TikTok viewers from mainland China, the findings of this study may not be universally applicable to other nations due to cultural variations. Consequently, future research could contribute to the existing literature by exploring short video commerce in diverse cultural contexts.

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