

## Article

# How Do Fresh Live Broadcast Impact Consumers' Purchase Intention? Based on the SOR Theory

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**Abstract:** During the COVID-19 pandemic, fresh live broadcasting has been widely present in consumers' daily lives but has been scarcely examined in academic research. The major purpose of the current study is to examine how fresh live broadcast features (visibility, interactivity, and authenticity) impact consumers' willingness to buy through consumers' perceived value and perceived trust based on the stimulus–organism–response theory. A total of 307 Chinese webcast users participated in this study. The data were collected through an online questionnaire survey and analyzed by SPSS and Amos software. The findings discovered that the fresh live broadcast features positively impact consumers' perceived utility value and trust, and the visibility and interactivity enhance the perceived hedonistic value of consumers. Moreover, perceived value and perceived trust mediate between fresh live broadcast features and consumers' willingness to buy. This study emphasizes the important role of fresh live features and provides insight for fresh sellers to increase consumer willingness to buy based on the perspective of consumers' perceived value and trust.

**Keywords:** fresh live streaming; perceived value; trust; consumer purchase intention; stimulus–organism response



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## 1. Introduction

With the continuous development of information technology, live e-commerce is extensively used worldwide and has become an indispensable part of consumer life [1]. Online shopping has grown in popularity, especially since the COVID-19 breakout in December 2019, because of its benefits for long-distance social interaction and contactless purchases [2]. In contrast to the conventional online shopping model, webcasting's real-time visibility and interactivity can attract viewers and participants, giving customers a fresh purchasing experience [3]. Fresh products have a significant role in the sales market as a basic need in people's daily lives. During COVID-19, the fresh sales sector has gradually grown from an offline to a multichannel fresh e-commerce model [4]. When buying fresh items, buyers are more concerned with the quality and freshness of the goods. Traditional fresh e-commerce companies often show products to consumers through words and pictures, which creates consumer uncertainty [5], and promotes fresh shopping towards "fresh e-commerce + live broadcasting".

The pattern has evolved through the live broadcast platform; fresh sellers can display products, such as seafood, meat, fruit, etc., in an all-round way [6], so that consumers can see the appearance, quality, origin, and other information for the products [7]. Additionally, sellers connect with customers in real time and address their issues whenever necessary [8]. Therefore, the live broadcast of fresh e-commerce can allow consumers to understand the appearance, characteristics, and purchase process for fresh products in real-time, intuitively, and, in detail, further improve consumer trust and satisfaction [9]. However, there is less academic attention given to the "fresh e-commerce + live broadcast" model, despite its many benefits and frequent use in people's daily lives. Previous studies investigated the effect of live broadcasts on consumers' propensity to purchase cross-border products [10] and

how to increase consumer interaction on live broadcast platforms [11]. Few studies have concentrated on the effect of live broadcasting on consumers' willingness to purchase fresh products [9,12]. Compared with other products, consumers are more cautious about the purchase of fresh products. Fresh e-commerce live broadcasting combines a variety of media advantages, not only allowing sellers to deliver detailed and rich product information (such as production or procurement processes, instructions for use, etc.) in real time, but also allowing live streamers to communicate with consumers about their feelings and the appearance or smell of products [8,13]. The authenticity, visibility, and interactivity displayed in the live broadcast bring consumers closer to fresh products in space and time. Therefore, exploring how these live-streaming features affect consumers' willingness to buy fresh products is interesting.

In the consumer behavior research area, consumer perception, as an individual's internal cognitive state, has a positive role in forming purchase intention [14]. The stimulus–organism–response (SOR) theory [15] points out that an external stimulus (S) can affect individuals' behavioral responses (R) through individuals' internal cognitive state (O). Applying this theory is beneficial to investigate the influence of external factors on consumers' purchase intentions from the perspective of consumer perception [16]. Based on the SOR theory, live broadcast as an external stimulus also affects customers' cognitive reactions and further impacts their consumption attitude or behaviors [17]. Previous studies have identified the essential role of consumers' perceived value or trust on purchase intention in the e-commerce scene [18,19]. For example, Lin et al. [18] show that perceived value as a value judgment of consumers is believed to be an important factor that influences consumers to buy products through fresh e-commerce platforms. Xu et al. [19] believed that trust as an intermediary variable in the live broadcast environment affects consumers' willingness to buy. However, it is unclear how live broadcast features influence consumers' purchase intention of fresh products through perceived value and trust. To fill these gaps, the current study takes the SOR framework as our theoretical framework and explores how the characteristics of live broadcasting of fresh e-commerce (interactivity, authenticity, and visibility) [12,20] influence the purchase intention by perceived value and trust. Three research questions are focused on:

- How do live broadcast features such as visibility, interactivity, and authenticity impact consumers' perceived value and trust toward the fresh live broadcast?
- Do perceived utility, hedonic value, and perceived trust influence consumers' purchase intentions in fresh live broadcast scenarios?
- What are the most important factors in forming consumers' perceived value and trust and driving purchase intentions of fresh products?

To address the research questions, this study focuses on consumer purchase of fresh products through live broadcast platforms and explains this phenomenon through empirical research. A total of 307 survey data were collected from live broadcast users who have experience purchasing fresh products in China. Descriptive statistics, structural model analysis, and mediating effects testing were performed by SPSS and Amos software. The following contributions were made to this study. First, this study combines the SOR theory to identify the role of visibility, interactivity, and authenticity characteristics in live broadcasting of fresh e-commerce in live marketing. Second, this study considers consumers' perception of live shopping for fresh products and examines its intermediary role between live broadcast characteristics and consumers' willingness to buy from the perception of value and trust. This helps researchers and business executives uncover the “black box” problem of consumer purchase decisions in live broadcasts. Next, we examine the perspective state of consumers from two aspects, utility value and hedonic value, for improving the fresh live broadcast scenario. Finally, this study provides some practical advice for sellers and fresh streaming platforms on how to use live streaming to fresh market products better effectively.

## 2. Theoretical Background and Hypothesis Development

### 2.1. SOR Theory

The stimulus–organism–response (SOR) theory was proposed by Mehrabian and Russell [15]. The model proposes that environmental incentives can stimulate an individual's inner and physical states, which in turn drive some behavioral reactions. The SOR theory has become one of the key theories for studying and interpreting user behavior, and has been widely used in the field of consumer behavior. According to Jacoby [21], when an individual is prompted by external circumstances (S) to elicit an emotional or cognitive reaction (O), this results in an inclination or avoidance of engaging in consumer behavior (R). Guo et al. [10] consider that the features of online live shopping, as an external stimulus factor, will also stimulate consumers to produce emotional or cognitive responses, which in turn will produce tendentious or avoidant consumption behaviors or willingness. Therefore, this study explores consumers' purchase intention in the context of live shopping for fresh products based on the SOR theory.

### 2.2. Live Streaming Features as Stimuli (S)

The first element, “stimuli”, refers to the external environmental factors during the purchase process [22]. Studies have shown that live streaming characteristics, as an environmental stimulus, can affect consumers' intrinsic perception and, in turn, consumers' willingness to behave [10]. Live broadcast features refer to the function of live broadcasting to achieve real-time interaction with the audience through technical means such as bullet screen text, sound, animation, and so on [23]. Compared with traditional e-commerce platforms, the scene of live broadcasting is more realistic. Through the live broadcast platform, sellers can introduce product information to customers from several characteristics so that customers can obviously understand the characteristics of products [8]. Related studies have divided live broadcast characteristics into several aspects, such as visibility, entertainment, interactivity, real-time, authenticity, etc. [12,24]. Based on previous studies and combined with the research background, this paper selects visibility, interactivity, and authenticity as the characteristics of live broadcasting of fresh e-commerce. Considering consumers' purchasing demand for fresh products, we exclude the entertainment factor of live streaming features in this study. Fresh products are a necessity in people's daily lives; compared with other products, consumers need faster and more convenient and practical purchasing experience [1]. In the fresh live broadcast scenario, the external environment can easily affect the consumer's cognitive state, and the characteristics of visibility, interactivity, and authenticity displayed by the live broadcast may affect the psychological state and reaction of the viewer. Therefore, we propose that the stimulating elements in fresh live broadcasting include the visibility, interactivity, and authenticity of live broadcasting.

### 2.3. Perceived Value and Perceived Trust as an Organism (O)

The second element, “organism”, refers to the intermediate state of emotion and cognition, which is a process of intervening in the relationship between stimuli and individual responses [25]. In the field of consumer behavior, perceived value is seen as an organic factor influencing consumer behavioral intent [26]. Perceived value refers to the standard used by users to measure the value contained in a product or service. It is the user's emotional preference and comprehensive evaluation of product quality, service, etc. [27]. In the live broadcast scenario, the perceived value can be described as the overall perception and evaluation of the goods or services involved in the live broadcast room by consumers based on the existing subjective impression when watching the live broadcast of the product [28]. Some scholars divide perceptual value into utility and hedonic value [29]. Studies have shown that consumers tend to be based on functional value (e.g., convenience) and hedonic value (e.g., fun) in the online shopping process [30].

The degree to which a product or service fulfils its intended utility is referred to as “utility value”. When the customer demand that encourages shopping travel is satisfied, utilitarian shopping value is recognized [31]. When consumers find the products they

are looking for in less time, less money, and less effort, they perceive strong practical value in their shopping [32]. Hedonistic value refers to the feelings of entertainment, emotion, surprise and pleasure experienced during the shopping process [33]. Hedonistic value is often correlated with the degree of pleasure experienced by consumers during the purchase process [34]. In the live broadcast room, sellers can interact with consumers in an interesting way to attract consumers' viewing and participation and improve consumers' enjoyment [35].

Moreover, perceived trust is also seen as an essential factor influencing consumer perception and emotion. Perceptual trust is the degree to which an individual is willing to act in accordance with the opinions and actions of others because of their trust [36]. In the online retail environment, increasing trust between online sellers and consumers is critical to building a good buying and selling relationship between them [37]. From the perspective of social interaction and information exchange, the interaction between users and merchants through the live broadcast platform can enable users to generate an interactive feedback signal, which can produce a powerful psychological cue to users that in turn increases their trust in merchants [38]. Perceived trust denotes to the degree of consumer trust in the product recommended by the anchor while watching the fresh live broadcast. In the field of live buying research, perceived trust also plays a critical role in consumers' online purchasing behavior. Studies have shown a significant correlation between perceived trust and consumers' willingness to buy in live streams [19]. In summary, based on the live broadcast scenario of fresh e-commerce, we believe that the user's organism state includes perceived value and perceived trust.

#### *2.4. Consumer Purchase Intension as Response (R)*

The final element, "response", refers to attitudes and behavioral intentions based on cognitive and emotional responses [39]. Approach and avoidance behaviors or intentions can be seen as reactive elements [40]. In the field of marketing, many scholars adopt the willingness to buy [41,42] to explore consumer behavior intentions in online contexts. Purchase intention refers to the probability that a consumer will purchase a product or service [43] and has an essential impact on the actual purchase behavior of consumers. The willingness of consumers to purchase online is one of the topics of extensive study in the online retail field [19]. With the emergence of live shopping models in recent years, researchers have started investigating the effects of live broadcasting on consumers' readiness to buy in combination with various backgrounds [44,45]. For instance, Sun et al. [44] constructed theoretical models from the perspective of information technology visibility and explored how live broadcasting affects the purchase intentions of social commerce consumers. Xu et al. [45] discussed consumers' purchase intentions on cross-border e-commerce live streaming platforms from the perspective of information transparency. In this study, the willingness to buy refers to the willingness of consumers to buy fresh products from sellers through live streaming. In summary, this study examines consumers' willingness to purchase in the context of live streaming of fresh e-commerce.

#### *2.5. Impact of Live Streaming Characteristics on Perceived Value and Perceived Trust*

Visibility refers to the visual accessibility of a website or live interface that is very attractive to live stream users [41]. The visibility of fresh live broadcasting is mainly reflected in the visualization of the sales process and information exchange of fresh product scenes. Consumers can instantly watch vivid live streams, the process of selling agricultural products, and product-related bullet screen exchange information [46]. The live screen, which is more thorough than the images and videos that are shown in the conventional fresh e-commerce platform, presents fresh products to customers from various angles. A previous study found that good visibility can increase the sense of virtual touch and presence and trust in online shopping [47]. In the fresh live broadcast scenario, visibility has an important impact on the formation of consumer cognition. Therefore, the visibility

in the live broadcast of fresh food affects the consumer's emotional response and cognitive response, so the following hypotheses are proposed:

**H1a.** *The visibility of fresh live broadcasting is positively related to the perceived utility value of consumers.*

**H1b.** *The visibility of fresh live broadcasting positively influences consumers' perceived hedonic value.*

**H1c.** *The visibility of fresh live broadcasting is positively related to consumers' perceived trust.*

Interactivity, as an important element of online communication [48], refers to the extent to which people are allowed to exchange information [49]. In the live streaming scenario, interactivity plays a crucial role in building a good relationship between buyers and sellers, as it helps to achieve high-quality communication [20]. In this study, interactivity can represent both the exchange of information between the host and the user or the interaction among users. In the live broadcast room of fresh e-commerce, the seller can interact with consumers at any time to exchange product-related information. At the same time, users can also communicate with each other through the live broadcast platform to understand the purchase experience of products [1]. In the webcast environment, users interact with the anchor and other users in real-time by sending bullet screen information. From the perspective of social interaction, this relaxed and convenient way of communication attracts a large number of young users who are willing to share their viewing or purchasing feelings in the webcast room, thus generating a sense of pleasure and enhancing the intimacy and trust between consumers and anchors [25]. Therefore, interactivity may affect the cognitive and emotional state of consumers in the live broadcast, so the following hypotheses are proposed:

**H2a.** *The interactivity of fresh live broadcasting is positively related to the perceived utility value of consumers.*

**H2b.** *The interactivity of fresh live broadcasting is positively related to consumers' perceived hedonic value.*

**H2c.** *The interactivity of fresh live broadcasting is positively related to consumers' perceived trust.*

Authenticity is a person's assessment of the validity of the information on the network that the person can access to analyze the qualities of internet information content [50]. The live broadcast process is live and instantaneous, without camera switching. It is a complete presentation of the entire shopping scene and goods, enhancing the consumer's sense of presence and approaching the actual purchase scene in people's daily lives. This makes it superior to traditional online shopping [11]. As the main form of social media, live streaming of fresh e-commerce can provide useful information related to the product or brand and relevant content about the product's origin production process [51]. Because live streaming is based on reality, it offers a better online buying experience and a greater sense of value than traditional media [37]. In addition, fresh e-commerce can improve consumer trust by displaying the appearance characteristics of fresh products from different perspectives through live broadcasting and answering consumers' questions in real-time [9]. This study proposes the following hypotheses:

**H3a.** *The authenticity of fresh live broadcasts is positively related to the perceived utility value of consumers.*

**H3b.** *The authenticity of fresh live broadcasting is positively related to the perceived hedonistic value of consumers.*

**H3c.** *The authenticity of fresh live broadcasting positively relates to consumers' perceived trust.*

## 2.6. Impact of Perceived Value and Perceived Trust on Consumers' Purchase Intension

Perceived value plays an essential role in maintaining a good relationship between merchants and consumers, but it also impacts on customers' willingness to buy [26]. In



an online retail environment, consumers' perceived value of an online store can lead to actual purchasing behavior [52]. Numerous studies have shown that two dimensions of perceived value influence consumers' willingness to buy: perceived utility and hedonic values [53]. Consumers' perceptions of practicality, ease, and cost savings during the purchase process serve as indicators of utility value. Since fresh products are practical products that people must buy daily, consumers pay great attention to practical values such as the convenience of fresh products [54]. Through the fresh e-commerce live broadcast platform, the convenience of purchasing methods and the improvement of shopping efficiency bring practical value to consumers, improving consumer satisfaction and enhancing purchase desire. Perceived hedonic value mainly emphasizes the subjective experience of pleasure, surprise, and relaxation consumers receive during shopping [55]. The pleasure generated by live streaming in the consumption process promotes consumers' impulsive purchasing behavior [56]. Therefore, through the fresh e-commerce live broadcast platform, the functional value and hedonic value perceived by consumers are conducive to the formation of purchase willingness, so the following assumptions are made:

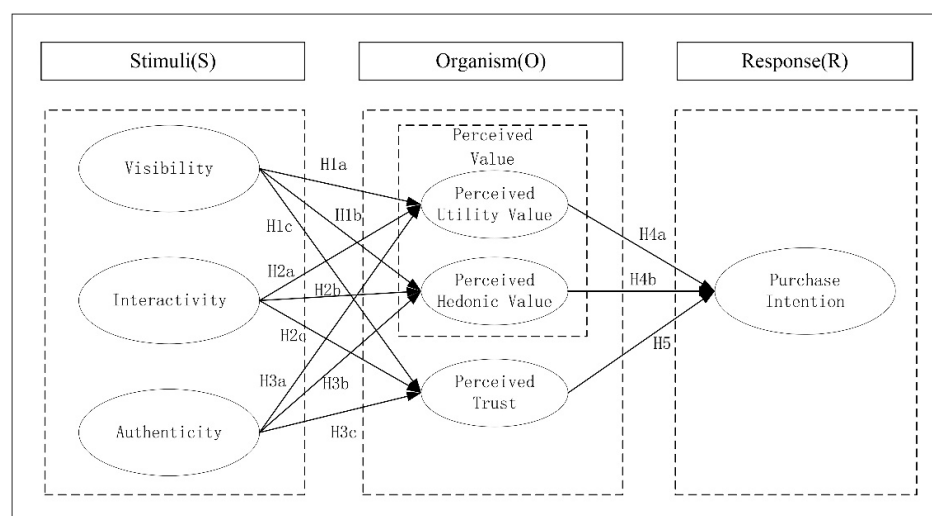
**H4a.** *Consumers' perceived utility value is positively related to purchase intentions.*

**H4b.** *Consumers' perceived hedonic value is positively related to purchase willingness.*

In online buying research, perceived trust is a key factor influencing consumers' online behavior [57]. Numerous studies have confirmed the positive effects of perceived trust on online purchase intentions [5,58,59]. For example, Xu et al. [19] highlight the critical role of trust in consumers' live shopping intentions. The results show that trust plays an intermediary role in the anchor's quasi-social relations and professionalism and consumer willingness to buy, respectively. In the live broadcast scenario of fresh e-commerce, the anchor relies on professional skills to directly present commercial information such as fresh agricultural product brands, product details, prices, and promotion methods to consumers. Thus, consumers believe that the information in the live broadcast is better than that of traditional fresh e-commerce text and image information in the platform is more trustworthy, increasing their willingness to buy [18]. Therefore, the following hypothesis is made:

**H5.** *Consumers' perceived trust is positively related to purchase intentions.*

In summary, this study combines SOR theory to establish a structural equation model, assuming that the visibility, interactivity, and authenticity of live broadcasting have an impact on perceived value and perceived trust, thereby influencing consumers' willingness to buy, as shown in Figure 1.



**Figure 1.** Proposed study model.

### 3. Methodology

#### 3.1. Sampling and Data Collection

Data for the study were collected using a questionnaire. Questionnaire collection was carried out through the data collection platform “credamo”. The questionnaire was divided into three parts. First, considering that “fresh e-commerce + live broadcasting” was a relatively new marketing model, we set up a screening question to facilitate the exclusion of respondents who had not been exposed to live broadcasting or had not purchased fresh products through live broadcasting platforms. Secondly, there was a survey of the respondents’ basic situation, including name, age, education level, income, and time spent browsing live broadcasts. Finally, there is the measurement of the potential variable of fresh live shopping. Through a presurvey, some of the statements were fine-tuned to form a final questionnaire.

A total of 450 questionnaires (excluding presurvey results) were collected in this survey, excluding those who had not participated in live fresh shopping, the response time was too short, or the answer options were exactly the same. After the questionnaire, 307 valid questionnaires were finally obtained, giving a recovery rate of 68%, which met the sample size requirements in the field of live broadcast research [5,10].

#### 3.2. Measurements

The scale items used in this study were appropriately adjusted on the basis of consulting the relevant literature to adapt to the current live broadcast scenario of fresh products. The design formed a total of 21 questions with seven variables: visibility, interactivity, authenticity, perceived value (practical value and hedonic value), perceived trust, and willingness to buy. Among them are Visibility Reference [41], Interactive Reference [17], Authenticity Reference [50], Perceptual Value Reference [57], Perceptual Trust Reference [5], and Purchase Intention Reference [19]. All projects were measured using the 7-point Rickett scale, ranging from “1 = strong disagreement” to “7 = very agreeable”. The questionnaire items can be seen in Supplementary Materials Table S1.

### 4. Data Analysis Results

#### 4.1. Descriptive Statistics

The total 307 questionnaires were valid; 205 women and 102 men accounted for 66.78% and 33.22%, respectively. Some male users who do not have experience purchasing fresh products were excluded from the current study. Thus, the female samples are more than the male samples. The results corroborate a Chinese report which indicates that female consumers are more numerous than male consumers in the fresh e-commerce platform [60]. The reason may be that women take more responsibility for food preparation and purchasing work than men in Chinese families. At the education level, more than 85.01% of the samples reached a bachelor’s degree or above, and 57.98% of the samples were between the ages of 20 and 30, and 63.84% of the samples had an average monthly income of more than RMB 5000 (yuan). Most people spend 1–3 h a day on the Taobao or Douyin live streaming platforms. The descriptive statistics of our survey sample are shown in Table 1.

**Table 1.** Sample descriptive statistics.

Characteristics	Categories	Frequency	Percentage (%)
Gender	male	102	33.22
	female	205	66.78
Age (years)	Less than 20	15	4.89
	20–30	178	57.98
	31–40	96	31.27
	41–50	10	3.28
	More than 50	8	2.64

**Table 1.** *Cont.*

Characteristics	Categories	Frequency	Percentage (%)
Education level	Secondary school or below	11	3.58
	Junior college	35	11.40
	Bachelor's	215	70.03
	Master's	39	12.70
	Ph.D.	7	2.30
Incomes (RMB)	Less than 2000	40	13.03
	2001–5000	71	23.13
	5001–8000	87	28.34
	8001–11,000	60	19.54
	Above 11,000	49	15.96
Frequency of viewing live streaming content (per day) (hours)	Less than 1	60	19.54
	1–3	187	61.51
	3–5	48	15.64
	5–7	8	2.61
	More than 7	4	1.30

#### 4.2. Measurement Model Analysis

We used Cronbach's  $\alpha$  coefficient to test the reliability of potential variables. As can be seen from Table 2, Cronbach's  $\alpha$  values of each latent variable in this study ranged from 0.766 to 0.876, and the combined reliability values were between 0.769 and 0.875, both greater than 0.70. The Cronbach's  $\alpha$  of the entire sample data reached 0.944, which has good reliability for measuring variables. For analysis using SPSS 26.0 software, the factor load of each project on its potential variables was determined by the factor analysis method. Loads of each factor are greater than 0.70, and the mean-variance extraction value (AVE) of each latent variable is greater than 0.5, indicating that the measurement of each variable has good convergence. In addition, we employ the multitrait–multimethod matrix method to assess the validity of the difference. The study of Henseler et al. [61] recommends using the HTMT standard to evaluate discriminant validity in variance-based SEM. They point to the strict standard of HTMT threshold of 0.850 and the free standard of 0.900 discrimination distinguishing validity. As can be seen from Figure 2, the HTMT results in this study are all less than 0.850, and the discriminant validity is established.

**Table 2.** Analysis of reliability and validity.

Latent Variable Name	Code	Factor Load	Cronbach's Alpha	Composite Reliability	AVE
Visibility (V)	V1	0.847	0.834	0.838	0.634
	V2	0.734			
	V3	0.804			
Interactivity (I)	I1	0.751	0.766	0.769	0.525
	I2	0.709			
	I3	0.714			
Authenticity (A)	A1	0.735	0.796	0.796	0.566
	A2	0.767			
	A3	0.754			
Perceived Utility value (PUV)	PUV1	0.838	0.876	0.875	0.701
	PUV2	0.842			
	PUV3	0.831			
Perceived Hedonic value (PHV)	PHV1	0.760	0.846	0.849	0.652
	PHV2	0.819			
	PHV3	0.842			
Perceived Trust (PT)	PT1	0.760	0.817	0.810	0.587
	PT2	0.749			
	PT3	0.788			
Purchase Intention (PI)	PI1	0.752	0.810	0.810	0.588
	PI2	0.756			
	PI3	0.791			



	V	I	A	PUV	PHV	PT	PI
V							
I	0.620						
A	0.750	0.749					
PUV	0.749	0.703	0.769				
PHV	0.588	0.620	0.573	0.508			
PT	0.763	0.813	0.81	0.741	0.620		
PI	0.783	0.756	0.784	0.757	0.677	0.783	

**Figure 2.** HTMT analysis.

#### 4.3. Structural Model

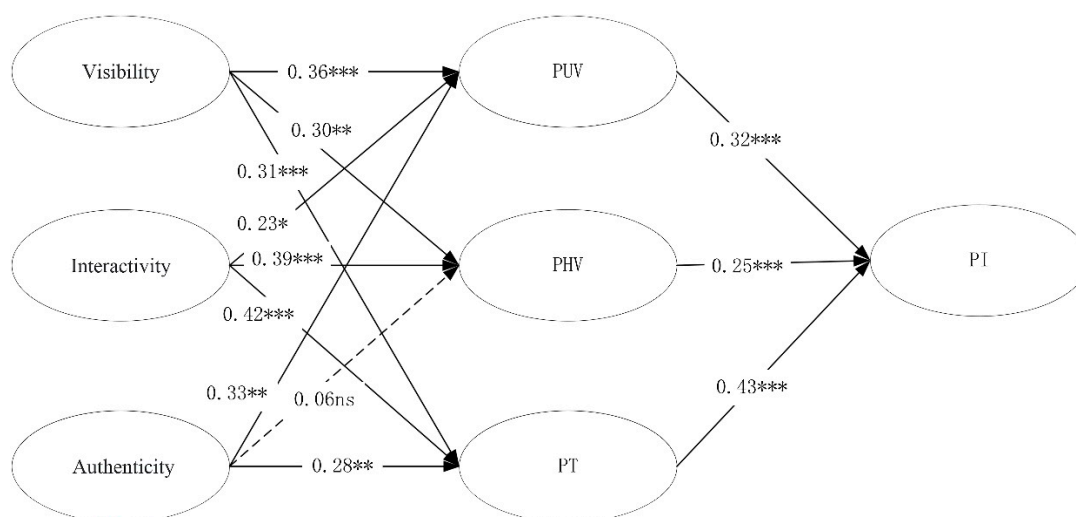
We used AMOS 24.0 to estimate the significance of path coefficients and proposed relationships. In AMOS, we evaluated structural models using fit criteria from CMIN/DF, GFI, RMSEA, SRMR, CFI, NFI, and AGFI. Most of the criteria exceeded the specified thresholds: CMIN/DF = 1.469, GFI = 0.928, RMSEA = 0.039, SRMR = 0.039, CFI = 0.977, NFI = 0.933, and AGFI = 0.905.

Path coefficient estimates, model hypothesis, and variance explanations are shown in Table 3 and Figure 3. The results showed that 11 of the 12 hypotheses (H1a, H1b, H1c, H2a, H2b, H2c, H3a, H3c, H4a, H4b, H5) were supported with  $p$ -values less than 0.05. The visibility in the live broadcast is positively correlated with the perceived utility value ( $\beta = 0.423$ ,  $p < 0.001$ ), the perceived hedonic value ( $\beta = 0.302$ ,  $p < 0.01$ ), and the perceived trust ( $\beta = 0.316$ ,  $p < 0.001$ ), that is, support for H1a, H1b and H1c. Interactivity in live broadcasts was positively correlated with perceived utility value ( $\beta = 0.304$ ,  $p < 0.05$ ), perceptual hedonic value ( $\beta = 0.437$ ,  $p < 0.001$ ), and perceived trust ( $\beta = 0.471$ ,  $p < 0.001$ ), that is, support for H2a, H2b and H2c. Authenticity in live broadcasting was positively correlated with perceived utility value ( $\beta = -0.441$ ,  $p < 0.01$ ) and perceptual trust ( $\beta = -0.313$ ,  $p < 0.01$ ), i.e., support for H3a and H3c. In addition, the results of the study show that perceived utility value ( $\beta = 0.244$ ,  $p < 0.001$ ), perceived hedonic value ( $\beta = 0.219$ ,  $p < 0.001$ ), and perceived trust ( $\beta = 0.382$ ,  $p < 0.001$ ) positively affect the purchase intention of fresh e-commerce live broadcasts, that is, support for H4a, H4b and H5. However, the effect of authenticity in the live feature on perceived hedonic value is not significant ( $\beta = 0.063$ ,  $p > 0.05$ ). Therefore, H3b was rejected.

**Table 3.** Summary of path analysis results.

			Estimate	Standardized Estimate	S.E.	C.R.	<i>p</i>	Test Result
PUV	<—	V	0.423	0.356	0.1	4.244	***	H1a supported
PHV	<—	V	0.302	0.298	0.103	2.935	**	H1b supported
PT	<—	V	0.316	0.314	0.081	3.917	***	H1c supported
PUV	<—	I	0.304	0.231	0.117	2.59	*	H2a supported
PHV	<—	I	0.437	0.390	0.126	3.459	***	H2b supported
PT	<—	I	0.471	0.423	0.101	4.677	***	H2c supported
PUV	<—	A	0.441	0.332	0.148	2.976	**	H3a supported
PHV	<—	A	0.063	0.056	0.152	0.416	0.677	H3b not supported
PT	<—	A	0.313	0.279	0.12	2.612	**	H3c supported
PI	<—	PUV	0.244	0.322	0.061	3.975	***	H4a supported
PI	<—	PHV	0.219	0.246	0.056	3.906	***	H4b supported
PI	<—	PT	0.382	0.427	0.082	4.686	***	H5 supported

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .



Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , ns: not significant.

**Figure 3.** Results of the structure mode.

As shown in Figure 3, compared with other live broadcast features, the coefficients of visibility on perceived utility value, interactivity on perceived hedonic value, and trust are greatest. The coefficient of perceived trust on consumers' purchase intention is stronger than the coefficients of perceived utility and hedonic value on consumers' purchase intention.

#### 4.4. Mediating Effects

This study further explores the mediating role of perceived value and perceived trust in the influence of live broadcast characteristics (visibility, interactivity, and authenticity) on consumers' live purchase intentions of fresh e-commerce. We used PROCESS in SPSS for multimediation analysis. Table 4 shows the mediation results. Table 4 shows that the visibility, interactivity, and authenticity of live broadcasting have a significant indirect impact on consumers' purchase intentions of live e-commerce through perceived value and trust. The 95% confidence interval (CI) bootstrap for these results does not include 0.

**Table 4.** Intermediary test of perceived value and perceived trust.

	Total Effects			Indirect Effects		
	$\beta$	T Value		$\beta$	Bootstrap 95% CI	Zero Included?
V→PI	0.601	14.630 **	V→PUV→PI	0.154	0.030–0.339	No
			V→PHV→PI	0.103	0.052–0.183	No
			V→PT→PI	0.126	0.049–0.231	No
I→PI	0.589	12.914 **	I→PUV→PI	0.173	0.059–0.342	No
			I→PHV→PI	0.115	0.060–0.191	No
			I→PT→PI	0.142	0.040–0.268	No
A→PI	0.618	14.154 **	A→PUV→PI	0.169	0.042–0.346	No
			A→PHV→PI	0.110	0.059–0.191	No
			A→PT→PI	0.134	0.038–0.263	No

Note: \*\*  $p < 0.01$ .

## 5. Discussion and Conclusions

This study's primary purpose is to investigate the effect of live streaming features on consumers' propensity to purchase fresh products. Visibility, interactivity, and authenticity in live broadcasting considerably enhance the perceived utility value and perceived trust of customers, while visibility and interactivity enhance the perceived hedonic value of consumers. Additionally, perceived value and perceived trust positively influence consumers' propensity to purchase.

First, the study shows that the visibility and interactivity of live broadcasting are conducive to increasing consumer perceived value and trust. Additionally, visibility has an important impact on the formation of consumers' utility value perception. According to the theory of flow experience [62], when consumers are attracted to the items in front of them, they ignore other information, thus increasing consumer perceived value. Compared with the traditional web shopping mode, the visual performance displayed by live broadcasting brings consumers a three-dimensional visual experience [44]. The product details are displayed in this process, which brings convenience to consumers and enhances consumers' trust. In addition, the interactivity of live streaming can help enable two-way real-time communication between sellers and consumers [63]. Through effective communication, fresh enterprises can adjust and give feedback on time according to consumer needs, which can help consumers purchase fresh and safe fresh products and improve users' practical value perception in the fresh live broadcast scenario. The result also shows that interactivity has a greater impact on the perception of hedonistic value than visibility. The interactive marketing provided by live broadcasting breaks the limitations of traditional fresh e-commerce in transmitting product information, thus marketing fresh products in a more vivid and interesting way, and improving the user's sense of hedonic value. Meanwhile, the real-time online interaction of live broadcasts of fresh products enriches product information, allows users to fully and truly understand the products they purchase, and improves users' trust in fresh products.

Second, the results indicate that authenticity is conducive to enhancing consumer perception of utility value and perceived trust. Consistent with previous studies [12], the results of our study also confirmed the important role of authenticity in fresh live streaming. Live broadcasting uses related technologies to directly connect consumers with products, maximizes the restoration of product information, and provides users with a sense of reality [38]. Owing to the virtual nature of the network, consumers do not have direct access to products when shopping online. Through live broadcasting, sellers can show consumers the details of the product in an all-around way, reducing the uncertainty of product purchase and increasing consumer trust. At the same time, through the detailed introduction of the product by the anchor and the sharing of the shopping experience of other viewers in the comment area, the shopping needs of consumers for the practicality of fresh products are met, and the practical value perception is enhanced. However, the result

reveals that authenticity has no significant effect on the perceived hedonistic value in the context of the fresh live broadcast. Unlike other types of goods, fresh products are necessary for people's lives. Because of the COVID-19 pandemic, people care more concerning the safety and freshness of food [64]. Thus, the authenticity shown in live broadcasts makes consumers think more of some practical information related to the product rather than experiencing a pleasant feeling.

Third, the study finds that perceived value and trust help develop consumers' willingness to buy, and the impact of perceived trust is greater [65]. Previous research has shown that perceived practical value and hedonic value positively affect consumers' willingness to buy [17]. The host usually incorporates entertainment elements in the live broadcast room to create a pleasant atmosphere, enhancing the live broadcast's appeal and the consumer's willingness to buy. However, unlike previous studies [66], the perceived utility value in this study has a greater impact on the willingness to buy than the perceived hedonic value because consumers' demand for fresh products is more inclined to pursue practicality. The results of our study indicate that rather than a pleasant shopping experience, consumers prefer to buy fresh products of good quality, reasonable price, and high-cost performance on the live broadcast platform.

Moreover, in the current study, compared with the perceived value, the perceived trust in the live broadcast scenario of fresh e-commerce has a greater impact on consumers' willingness to buy. Prior studies have shown that perceived trust plays a key role in consumer purchases of fresh products [18]. Similarly, in the fresh live broadcast scenario, the anchor can introduce the origin and product characteristics of the fresh product in detail through the live broadcast platform. This makes how consumers feel about the product more intuitive and thus generates enough trust to enhance their willingness to buy.

Finally, the study also shows that in the live broadcast scenario of fresh e-commerce, the live broadcast features cannot directly promote the consumer's willingness to buy, and the perception of value and trust plays an effective intermediary role. According to SOR theory, in the process of online shopping, external stimuli make consumers feel the body and finally stimulate consumers' willingness to act. In the live broadcast scenario of fresh e-commerce, we find that perceived value, especially practical value, and the formation of perceived trust are crucial to promoting consumers' willingness or behavior to buy. In fact, fresh products are a necessity for people's daily lives and are more practical and convenient to purchase. At the same time, people are increasingly pursuing food health and the quality of fresh products, so trust has become particularly important [4]. In short, the visibility, interactivity, and authenticity presented by the fresh e-commerce live broadcast platform give consumers a higher sense of value and trust. These further promote consumers' willingness to buy.

## 6. Research Implications

The significance of this study is that it enriches research concerning live broadcast of fresh e-commerce and expands the basis of SOR theory. Empirical results show that in the context of live broadcasting of fresh e-commerce, live broadcast features can indeed increase the overall perceived value and trust of consumers, thereby increasing consumers' willingness to buy. The conclusions of this study provide the following insights for fostering the long-term growth of the "fresh e-commerce + live broadcast" paradigm.

First, this study proves the key position of the live broadcast model in fresh e-commerce, and the study found that in the fresh e-commerce live broadcast scenario, the product is through the anchor. The introduction of detailed information and the communication among viewers about the product experiences, etc., allow consumers to experience live broadcast visibility, interactivity, and authenticity. Therefore, fresh sellers should accelerate the construction of live broadcast platforms and enhance consumers' multisensory experience by optimizing the relevant technologies of live broadcasting.

Second, live streaming features allow consumers to perceive higher value, promoting their willingness to buy. The visibility, authenticity, and interactivity conveyed by live

broadcast of fresh foods help consumers perceive value, especially its practical value. Therefore, fresh sellers can carefully introduce valuable information such as product quality, place of origin, and storage methods in the live broadcast room through relevant training or by hiring professional anchors to help form a high-value experience for consumers and promote the formation of their consumption willingness or behavior.

Finally, live streaming features can boost consumer trust by boosting their willingness to buy. Because of the virtual nature of the network, trust plays an irreplaceable role in internet shopping. Similarly, merchants should strive to build consumer trust in fresh purchases. The establishment of trust can be reflected in many aspects, such as the interaction between consumers and anchors, the quality and cost performance of products, and whether the size and scale of the actual arrival are consistent with those introduced in the live broadcast. These factors can affect the consumer's sense of trust in shopping on the fresh live broadcast platform, affecting their willingness to buy.

## 7. Limitations and Further Research

Our study has some limitations. First, the respondents were Chinese customers of live-streaming platforms. Based on the characteristic of live broadcasting, we investigated the elements influencing consumers' propensity to purchase fresh products. Owing to the impact of cultural differences, the universal applicability of the conclusions given in this publication merits additional research. In the future, the conclusions of our paper can be confirmed in different cultural contexts or comparative cross-cultural investigations in order to verify the validity of our model. Second, this research focuses on consumers who have purchased fresh products using live-streaming platforms. Because they have a certain understanding of live shopping and have personally experienced the purchase of fresh products, this characteristic was helpful in carrying out this study. However, it does not distinguish between consumer types in detail, such as men and women, who may have different behaviors for live shopping for fresh products. Future research could consider segmenting consumer types to understand in more detail the purchasing behavior of various types of consumers. Third, this study did not consider the impact of price factors on consumers' willingness to buy. The "fresh e-commerce + live broadcast" model reduces the store cost for merchants, but to ensure that the products maintain their fresh quality, transportation and storage need to have timeliness, which also increases the logistics and preservation costs of fresh e-commerce. Especially in the current era of the epidemic, consumers give more consideration to the price of products while paying attention to the food's freshness. In the future, price may be a crucial element influencing consumers' online purchases of fresh food, the price factor of the fresh live broadcast room can be considered on the basis of relevant literature and theories to expand the current research.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/su142114382/s1>, Table S1: Questionnaire item.

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