




## Article

# The Role of Live-Streaming E-Commerce on Consumers' Purchasing Intention regarding Green Agricultural Products

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**Abstract:** Live-streaming e-commerce has boosted the marketing vitality and possibilities of green agricultural products. However, academic research on this emerging marketing method remains insufficient. To fill this literature gap, this paper examines whether live-streaming e-commerce has gained consumers' trust and strengthened their intention to purchase green agricultural products. On the basis of a literature review, in this paper, we establish an evaluation system for live-streaming e-commerce which includes information quality, system quality, service quality, telepresence, and social presence and assumes that high-quality live-streaming e-commerce will increase consumers' green trust and, thus, strengthen green purchase intention. Altogether, 726 valid questionnaires were collected, and structural equation modeling (SEM) and stepwise regression were used to analyze the data. The results demonstrate that the five aforementioned dimensions of live-streaming e-commerce quality that were used as criteria positively impact green trust. The findings provide suggestions for green-product companies on how to improve their live-streaming quality to enhance consumers' purchase intention to realize economic and social value.

**Keywords:** green agricultural products; live-streaming e-commerce; green trust; green purchase intention



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## 1. Introduction

Sustainable development is the actual need and inevitable choice of human future development, and food safety is related to the life and death of human society. Green agricultural products, which are environmentally friendly, recyclable, and high-quality [1,2], not only follow the principle of sustainable human development, but also avoid the problem of food insecurity. By vigorously developing green agricultural products, one can promote the coordination of human society, economy, and ecology, and lay a solid foundation for sustainable development. In order to achieve sustainable development and ensure food safety, the Chinese government proposed that “quality promotes agriculture, and greenness promotes agriculture” in the “No. 1 Central Document”. However, the market share of green agricultural products in China accounts for only 1% to 1.5% of the entire food market [3]. For consumers, in addition to price factors, insufficient understanding of green agricultural products and inconvenient purchase channels are the reasons for the low market share [4,5]. There is still a large consumer market to be tapped in China for green agricultural products.

Selling green agricultural products through live-streaming e-commerce is an emerging marketing method. According to the SOR framework [6], in the e-commerce environment, consumers are influenced by external stimuli and make purchases through their own internal evaluations. Existing research shows that consumers' purchase intentions of green agricultural products are usually based on trust [7–9]. How to use the emerging marketing method of live-streaming e-commerce as an external stimulus to generate trust

and purchase intention among consumers is a problem worthy of research and exploration. This is also the core research question of this study.

Before the era of e-commerce, the factors that affected purchase intention regarding green agricultural products could be summarized as product factors (e.g., price, brand image, etc.), consumers' personal factors (e.g., habits, knowledge, income, etc.), and social-situation factors (e.g., social norms, etc.) [10,11]. With the rise and generalization of e-commerce, e-commerce quality has emerged as another decisive factor influencing consumers' decisions to make green purchases [12–14]. Based on the D&M information systems (IS) model proposed by DeLone and McLean [15], it has been demonstrated that the information, system, and service quality (the updated IS success model) of e-commerce influences green purchases. High-quality information, systems, and services make consumers trust in e-commerce [16–19] and generate purchase intentions [7–9]. As a new form of e-commerce, although studies have pointed out that live-streaming e-commerce is characterized by virtual presence, including telepresence and social presence [8,20], there is still a lack of research on its impact on the purchase of green agricultural products.

This research will fill this academic gap and build on the extant research to explore how consumers can trust and purchase green agricultural products in the context of live-streaming e-commerce. This research adds telepresence and social presence from live-streaming e-commerce on the basis of an updated IS success model and theoretically defines the quality-evaluation framework of live-streaming e-commerce; we then propose that live-streaming e-commerce quality (LSECQ) affects green trust and, by extension, green purchase intention.

Based on the updated IS success model, this research takes information quality, system quality, service quality, telepresence, and social presence as the evaluation dimensions of live e-commerce quality in combination with the characteristics of live-streaming e-commerce. Based on the SOR framework, the five aspects of live-streaming e-commerce quality are used as external stimuli (S), namely, independent variables; green trust is used as organism assessments (O), namely, mediating variables; and green purchase intention is used as the response (R), the dependent variable of the research model. A survey was conducted from July 2020 to August 2020 among 726 volunteers. Structural equation modeling (SEM) and stepwise regression were used to analyze the collected data. The empirical analysis results reveal the factors that affect consumers' green consumption intention in live-streaming e-commerce, and we put forward targeted suggestions which can provide a theoretical basis for researchers and practitioners.

The rest of this paper is organized as follows. Section 2 presents a literature review related to this study; based on the extant research, hypotheses are constructed. Section 3 introduces the research methodology used in the present study, including how the variables are measured and the data collected. In Section 4, the empirical results are presented. Finally, conclusions are given in Section 5.

## 2. Literature Review and Hypotheses

There are many potential factors affecting consumers' purchase behavior, including personal factors such as personal habits, lifestyle, and environmental knowledge [10,21], as well as situational factors such as price, social norms, and marketing messages [10]. For consumers' online purchase behavior, many researchers use the stimulus–organism–response (SOR) framework. The SOR framework was built by Mehrabian and Russell [6] and is often used to explain the relationship between the external stimuli received by the people (S) and inner organism assessments (O) and their responses (R). Based on SOR, Gil and Jacob [22] examined the relationships between green perceived quality, green satisfaction, green trust, and green purchase intention. Similarly, Ahmed, W. and Zhang, Q. [23] studied the relationship between e-commerce service quality and consumers' green psychology, including green trust and consumers' green purchasing behavior. In these studies, green trust is seen as inner assessments of consumers under external stimuli acting as a mediating factor to influence their purchase intention.

This research focuses on the role of live-streaming e-commerce in consumers' purchase intention toward green agricultural products. Based on the SOR framework, green trust will act as an intermediary inner assessment factor (O) to influence the effect of live-streaming e-commerce (S) on purchase intention (R).

### 2.1. Green Trust and Live-Streaming E-Commerce Quality

In the e-commerce context, trust refers to an optimistic attitude and expectation concerning the goodwill and ability of trading partners or platforms to fulfill their promised obligations [24,25]. Green trust attributes this positive attitude and expectation to capabilities and reliability in terms of environmental performance [26,27]. On this basis, in this study, we define green trust in the live-streaming e-commerce context as live-streaming viewers' optimism and positive expectations concerning the platform and sellers' capabilities related to the environmental reliability of the products and services that they provide. Green trust usually arises from the consumers' perceived quality and value before and during the purchase process [22,28,29]. Referring to the existing literature, green trust depends on the quality of live-streaming e-commerce.

The information quality, system quality, and service quality constitute the updated IS success model to measure e-commerce quality [30–34]. High-quality information content and design help convince online consumers that a website is trustworthy [35,36], thereby creating trust in the products sold on the website. In addition, the operating system's stability and operability are also important in the network environment. If the system is running well and is flexible and easy to operate, this will increase the user's confidence and trust [37]. For live-streaming e-commerce, service quality mainly refers to timely response to consumers' needs, which could earn trust by resolving disputes and ambiguity effectively [38].

**H1.** *Green trust is positively related to live-streaming e-commerce's information quality.*

**H2.** *Green trust is positively related to live-streaming e-commerce's system quality.*

**H3.** *Green trust is positively related to live-streaming e-commerce's service quality.*

As an emerging form of e-commerce, live-streaming e-commerce has its own uniqueness, but research on how the quality of its uniqueness affects consumers' trust is still rare. The main different feature of live-streaming e-commerce compared to traditional e-commerce is the virtual presence brought by live streaming. Virtual presence is used to describe the subjective feelings of being immersed in a virtual world similar to offline consumption scenarios [8,20,39]. Compared with other products, virtual presence through live-streaming e-commerce with green agricultural products is more obvious because the live streaming usually occurs in the farmland or production bases of agricultural products, providing immersive experiences and interaction for audiences [40,41]. Furthermore, virtual presence includes social presence and telepresence [39,42,43]. Through live-streaming e-commerce with agricultural products, consumers feel the warmth and kindness of the streamer's enthusiastic explanations, defined as social presence [44]. Simultaneously, live streaming in farmland can make consumers feel as if they are physically present in the middle of farmland, a phenomenon called telepresence [45,46].

Live-streaming e-commerce's virtual-presence features are also crucial in generating green trust among consumers [8,47]. The live streaming of agricultural products allows viewers to witness the picking, digging, and processing of agricultural products through a computer screen to understand production methods. The resulting telepresence and social presence allow consumers to immerse themselves in a virtual world that resembles an offline consumption setting [8,20], thereby reducing consumers' uncertainty and psychological distance between themselves and merchants, which enhances consumer trust [46,48–50]. Accordingly, in this research, we propose the following hypotheses:

**H4.** *Green trust is positively related to live-streaming e-commerce's social presence.*

**H5.** *Green trust is positively related to live-streaming e-commerce's telepresence.*

In summary, this research advocates adding social presence and telepresence to the dimensions of live-streaming e-commerce quality evaluation, combined with information quality, system quality, and service quality in the updated IS success model, to jointly determine how the quality of live streaming affects the generation of consumer trust in green agricultural products.

## 2.2. Green Trust and Green Purchase Intention

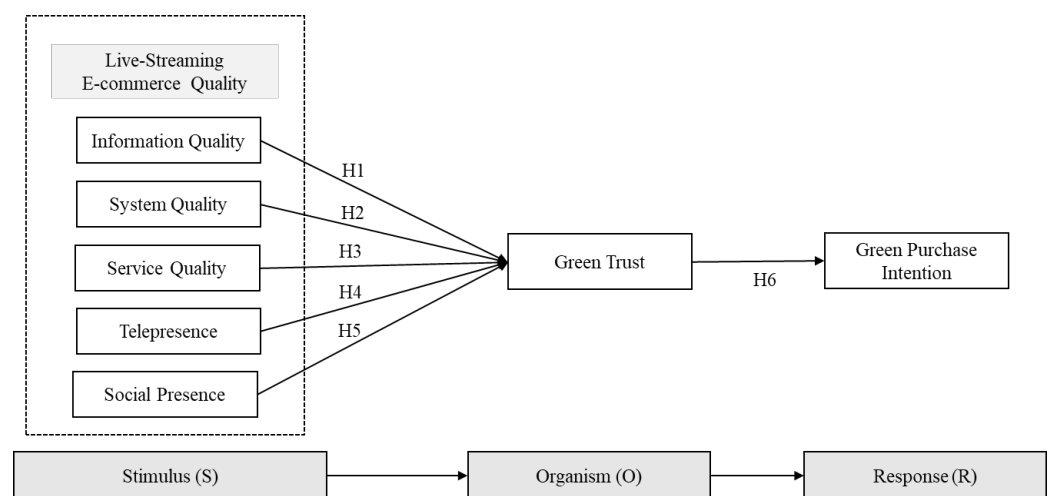
Green purchase intention has evolved from common purchase intention, adding the internal motivation of consumers for environmental protection [51]. Trust is seen as an economically meaningful social relationship [52] and it plays an important role in the decision-making process for purchasing green products [53]. A lack of trust and confidence in green claims and characteristics attributed to products is a significant barrier to the purchase of green products [10]. Many existing studies have proved that trust influences purchase behavior regarding green products. Yin et al. [54] indicated that Chinese consumers' intent to purchase green foods is affected by the degree of trust in green food. Lam et al. [28] pointed out the positive impact of green trust on green purchase intention and proposed that green trust mediates consumers' green perceived value and green purchase behavior. Gil and Jacob [22] put green trust into the SOR framework and indicated the mediation effect of green trust between green perceived quality and purchase intention. Chen et al. [55] empirically proved that consumers' trust plays an important role in their willingness to purchase green-labeled food products.

The current study suggests that green trust positively affects consumers' purchase of green products. Thus, the following hypothesis is proposed:

**H6.** *Green purchase intention in live-streaming e-commerce is related positively to consumers' green trust.*

## 2.3. Research Model

On the basis of the theoretical exploration presented above, we propose that LSECQ affects green trust. LSECQ includes information quality, system quality, service quality, telepresence, and social presence. Green trust can also lead to green purchase intention. The research model is presented in Figure 1 below.



**Figure 1.** Research model.

### 3. Methodology

#### 3.1. Measurements of Variables

An online questionnaire survey was distributed to collect data and test the research model. The questionnaire's content and measurement items were originally developed based on a literature review, then modified by marketing experts to fit this study's purposes. The survey questionnaire investigated respondents' demographic characteristics, such as age, gender, income, knowledge of green agricultural products, and purchase experiences with green agricultural products. The questionnaire's main measurement items are provided in Table 1.

**Table 1.** Measurement items.

Abbr.	Measurement Item	References
<b>Live-Streaming E-Commerce Quality (LSECQ)</b>		
Information Quality (InQ)	InQ1	In the green agricultural product live stream, the details about green agricultural products are correct.
	InQ2	In the green agricultural product live stream, the details about green agricultural products can be trusted.
	InQ3	In the green agricultural product live stream, there are no errors in details about green agricultural products.
	InQ4	In the green agricultural product live stream, the source of green agricultural product content is dependable.
	InQ5	In the green agricultural product live stream, the streamer who displays the green agricultural product details is credible.
System Quality (SyQ)	SyQ1	Anyone who is interested in the live room can enter the live room.
	SyQ2	Even if many people enter the live room at the same time, there will be no delays or errors.
	SyQ3	The audience can enter the live-streaming room that they are interested in at any time without time or place limitations.
	SyQ4	After entering the live room, the audience can carry out any operation they are interested in without any inconvenience.
	SyQ5	The live-streaming e-commerce platform allows audiences to watch video and hear sound with no stuck phenomenon.
Service Quality (SeQ)	SeQ1	The streamer's response time to audience questions is acceptable.
	SeQ2	The streamer is very happy to communicate with me.
	SeQ3	The streamer can provide relevant information on my inquiry in a timely manner.
	SeQ4	The streamer's response is closely related to my problems and requests.
	SeQ5	The anchors can answer my questions and requests in time.
Telepresence (TP)	TP1	While watching the green agricultural product live stream, I was totally immersed in the world that the live stream created.
	TP2	While watching the green agricultural product live stream, it seems that I have really seen the products.
	TP3	The production environment for green agricultural products that I watched through live streaming felt like an immersive experience.
	TP4	The details on the green agricultural products on the live stream felt very real to me.
	TP5	The green agricultural product live stream created a new world for me, and the world suddenly disappeared when the live stream ended.

[34,39,47,56–58]

Table 1. Cont.

Abbr.	Measurement Item	References
Social Presence (SP)	SP1	While watching the green agricultural product live stream, I was totally immersed in the world that the live stream created.
	SP2	While watching the green agricultural product live stream, it seems as if I really have seen the products.
	SP3	The production environment for the green agricultural products that I watched through live streaming felt like an immersive experience.
	SP4	While watching the green agricultural product live stream, there was a sense of personness in the live room.
	SP5	While watching the green agricultural product live stream, communication with the streamer made me feel at ease.
<b>Green Trust (GT)</b>		
GT1	I trust the sellers of green agricultural products through live streaming.	
GT2	I believe that the green agricultural products provided in the live stream are produced to high standards.	
GT3	The green agricultural products presented during the live stream will fulfill their commitments and guarantee environmental safety.	[59–61]
GT4	The eco-friendly reputation of the green agricultural products presented during the live stream is commonly trustworthy.	
GT5	While watching the green agricultural product live stream, I felt that the environmental performance was generally dependable.	
<b>Green Purchase Intention (GPI)</b>		
GPI1	I will consider purchasing green agricultural products through live streaming.	
GPI2	Purchasing green agricultural products through live streaming has many advantages.	
GPI3	I think it is a good choice to purchase green agricultural products through live streaming.	[62]
GPI4	Along with other options, I will give priority to purchasing green agricultural products through live streaming.	
GPI5	I will advise my friends and acquaintances to purchase green agricultural products through live streaming.	

### 3.2. Data Collection and the Sample

The survey started on 10 July 2020 and ended on 20 August 2020. Altogether, 800 volunteers were recruited to take the questionnaire survey, and they were invited to join our WeChat (China's largest social networking app) chatting groups. First, volunteers were required to watch live streams of green agricultural product sales through the network links, which were mainly from Taobao.com live and Douyin.com. After watching the live streams, they were asked to answer the online questionnaire. Altogether, 726, or 90.75%, answered the questionnaires, and these answers went through a series of statistical analyses using SPSS 24.0 and AMOS 23.0.

Structural equation modeling (SEM) using AMOS 23.0 was used as the statistical tool to examine the measurement and structural model. Because we used a complex model with a mediating variable in this study, SEM was more suitable. SEM can account appropriately for the correlations between dependent variables, whereas considering the independent variables as independent in systems of regression equations may result in overstatement of the unique effect of each one [63]. In this approach, the model fit algorithms, correlated regression coefficients, and correlated residuals are generated as standard output. A critically important assumption in the use of this method is that the data are multivariate and normally distributed. Therefore, the Skewness and Kurtosis test for normality was employed to determine the distribution of each variable. Accordingly, Skewness values were between  $-1.307$  and  $-0.341$  and Kurtosis values were between  $-0.978$  and  $0.687$ ; these are both well within the acceptable threshold of  $\pm 2$ , so that it can be concluded that the data are normally distributed [64].

Among the sample from which data were collected, 91% were under 40 years old, 42% were male, and 58% were female. The respondents' demographic characteristics are presented in Table 2 below.

**Table 2.** Respondents' characteristics.

	Characteristics	Frequency	Percentage
Age	18–25 years old	182	25.1
	26–35 years old	236	32.5
	36–45 years old	242	33.3
	Older than 45 years old	66	9.1
Gender	Male	305	42.0
	Female	421	58.0
Income	Less than RMB 2000 per month	58	8.0
	RMB 2000–5000 per month	189	26.0
	RMB 5000–10,000 per month	261	36.0
	RMB 10,000–15,000 per month	175	24.1
	More than RMB 15,000 per month	43	5.9
Knowledge of green agricultural products	None	37	5.1
	Not much	153	21.1
	General	232	32.0
	Know well	240	33.1
	Know very well	64	8.8
Access to green agricultural products	Internet media	346	60.1
	Recommended by relatives and friends	256	44.4
	Store promotion recommendation	298	51.7
	TV, newspapers, and other media	289	50.2
Purchase times via live-streaming e-commerce	0–2 times	65	9.0
	3–5 times	225	31.0
	6–10 times	218	30.0
	11–20 times	131	18.0
	Over 20 times	87	12.0
Do you have experience shopping online for green agricultural products?	No	428	59.0
	Yes	298	41.0
Do you have experience shopping online for green agricultural products via live-streaming e-commerce?	No	630	86.8
	Yes	96	13.2

## 4. Results

### 4.1. Measurement Model

To check for common method bias, we conducted Harman's one-factor test using the guidelines from Podsakoff et al. [65]. The results from an exploratory factor analysis (EFA) indicated that the first factor explained 24.2% of the variance; this is less than 40%, suggesting that common method bias overall was not a serious problem in the current study. According to Nunnally [66], Cronbach's  $\alpha$  values should be greater than 0.7 to verify reliability. As shown in Table 3, the reliability values in this study, gauged using SPSS24.0, all exceeded 0.8, indicating good internal consistency. The validity analysis found that the Kaiser–Meyer–Olkin (KMO) value was 0.918, which exceeds the standard of 0.8 [67]. Therefore, this study is suitable for factor analysis.

**Table 3.** Construct reliability and validity.

Construct	Item	Factor Loading	CR	Cronbach's Alpha	AVE
Information Quality (InQ)	InQ1	0.766	0.901	0.899	0.645
	InQ2	0.828			
	InQ3	0.770			
	InQ4	0.754			
	InQ5	0.890			
System Quality (SyQ)	SyQ1	0.779	0.870	0.869	0.572
	SyQ2	0.739			
	SyQ3	0.711			
	SyQ4	0.763			
	SyQ5	0.788			
Service Quality (SeQ)	SeQ1	0.728	0.886	0.884	0.608
	SeQ2	0.769			
	SeQ3	0.784			
	SeQ4	0.832			
	SeQ5	0.782			
Telepresence (TP)	TP1	0.863	0.891	0.887	0.623
	TP2	0.815			
	TP3	0.639			
	TP4	0.848			
	TP5	0.761			
Social Presence (SP)	SP1	0.738	0.863	0.861	0.558
	SP2	0.830			
	SP3	0.696			
	SP4	0.724			
	SP5	0.741			
Green Trust (GT)	GT1	0.764	0.898	0.896	0.639
	GT2	0.859			
	GT3	0.749			
	GT4	0.831			
	GT5	0.787			
Green Purchase Intention (GPI)	GPI1	0.859	0.879	0.877	0.594
	GPI2	0.740			
	GPI3	0.698			
	GPI4	0.790			
	GPI5	0.757			

CR, composite reliability; AVE, average variance extracted.

The convergence validity was measured by confirmatory factor analysis (CFA) using the factor loading, combined reliability (CR), and average variance extracted (AVE) methods. According to Fornell and Larcker [68], each dimension's factor loading should be greater than the threshold value of 0.5, the structural reliability (CR) of each dimension should be greater than the threshold value of 0.7, and the average variance extracted (AVE) values should be greater than the threshold of 0.5. All data in this study met or exceeded these criteria, thereby indicating structural convergence and validity.

Pearson's correlation coefficient was used to determine discriminant validity. As indicated in the correlation coefficient matrix in Table 4, the square root of the AVE for each dimension was greater than each dimension's correlation coefficient. Therefore, all dimensions of this study are fully discriminant, thereby indicating good discriminant validity.



**Table 4.** Correlations between constructs.

	1	2	3	4	5	6	7	8	9
1. InQ	0.803								
2. SyQ	0.350	0.756							
3. SeQ	0.368	0.357	0.780						
4. TP	0.239	0.407	0.377	0.789					
5. SP	0.276	0.418	0.414	0.339	0.747				
6. GT	0.575	0.544	0.507	0.411	0.475	0.799			
7. GPI	0.317	0.309	0.307	0.267	0.299	0.553	0.771		
8. EC	0.096	0.106	0.090	0.067	0.156	0.228	0.265	0.738	
9. HC	0.031	0.112	0.071	0.026	0.073	0.207	0.202	0.378	0.716

#### 4.2. Structural Model

In this study, we used AMOS for SEM analysis to verify Hypotheses 1–6. The results of the research model's goodness-of-fit (GFI) indicators show that the overall GFI is acceptable ( $\chi^2 = 966.491$ ,  $df = 544$ ,  $p = 0.000$ ,  $GFI = 0.935$ ,  $AGFI = 0.925$ ,  $NFI = 0.936$ ,  $IFI = 0.971$ ,  $TLI = 0.968$ ,  $CFI = 0.971$ ,  $RMSEA = 0.033$ ), as indicated in Table 5.

**Table 5.** Test of model fit.

	$\chi^2$	df	$\chi^2/df$	SRMR	GFI	AGFI	NFI	IFI	TLI	CFI	RMSEA
Suggested			1~3	<0.05	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	<0.08
Actual	966.491	544	1.777	0.037	0.935	0.925	0.936	0.971	0.968	0.971	0.033

Table 6 depicts the full path diagram of the SEM and the results. According to Hair et al. [69], a coefficient of determination value ( $R^2$ ) above 0.2 is viewed as relatively high and acceptable [69]. In this study, the  $R^2$  values for green trust and green purchase intention were 0.551 and 0.310, respectively, indicating that the SEM results are acceptable.

**Table 6.** Structural model results (hypothesis testing).

Hypothesis	Causal Path	Estimate	SE	CR	$p$	Path Coefficient	$R^2$	Results
H1	InQ → GT	0.316	0.033	9.488	***	0.351		Supported
H2	SyQ → GT	0.228	0.037	6.177	***	0.342		Supported
H3	SeQ → GT	0.166	0.034	4.814	***	0.184	0.551	Supported
H4	TP → GT	0.090	0.030	2.963	**	0.105		Supported
H5	SP → GT	0.160	0.036	4.445	***	0.168		Supported
H6	GT → GPI	0.674	0.050	13.537	***	0.557	0.310	Supported

Significance levels: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ .

The structural model analysis results indicate that all path coefficients are statistically significant. Information quality (InQ, path coefficient = 0.351,  $p < 0.001$ ), system quality (SyQ, path coefficient = 0.342,  $p < 0.001$ ), service quality (SeQ, path coefficient = 0.184,  $p < 0.001$ ), telepresence (TP, path coefficient = 0.105,  $p < 0.001$ ), and social presence (SP, path coefficient = 0.168,  $p < 0.001$ ) all exerted a significant positive effect on green trust (GT). Accordingly, the results support H1–H5. In addition, green trust (GT, path coefficient = 0.557,  $p < 0.001$ ) exerted a significant positive effect on purchase intention (GPI), thereby supporting H6.

## 5. Conclusions and Implications

### 5.1. Empirical Findings and Discussion

For this paper, we collected raw data by conducting a structured survey of live-streaming e-commerce users from China, and we analyzed the collected data via structural

equation modeling. The empirical results prove that the research model proposed in this study based on the SOR framework is reliable and all the hypotheses were supported. That is, the quality of live-broadcast e-commerce (S) stimulates consumers to generate green trust (O) and then generate green agricultural product purchase intention (R).

Based on the updated IS model, this paper highlights the characteristics of live-broadcast e-commerce, plus telepresence and social presence, to build a quality evaluation system for live-streaming e-commerce. The empirical results prove that the information quality, system quality, and service quality of e-commerce in the updated IS success model [30] positively affect consumers' generation of green trust. This is consistent with most studies focusing on the role of traditional e-commerce [31,34,36,37]. More importantly, the role of telepresence and social presence, as unique aspects of live-streaming e-commerce, was also proved by the empirical results. Consumers feel as if they are in the farmland or orchard through live-streaming e-commerce, which makes the attributes of green agricultural products more vivid and clear. Through the streamer's explanation, consumers can feel warmth and enthusiasm. These virtual presence features of live streaming are crucial in simulating consumers' trust in green agricultural products. Although scholars have demonstrated the role of telepresence [45,46] or social presence [44,47] in live-streaming e-commerce, we combined them with information quality, system quality, and service quality to build an evaluation system for the quality of live-streaming e-commerce, and we empirically proved the positive effect of green trust.

The empirical results also show that green trust is significantly positively correlated with green purchase intention, which is consistent with the findings of Nuttavuthisit and Thogersen [70]. Consumers' understanding of green products is still narrow and superficial. When consumers have to make choices, if there is a lack of trust in the green products sold, their willingness to purchase green products will be reduced. Through live-streaming e-commerce, consumers can have a more in-depth and vivid understanding of the advantages of green agricultural products; this can stimulate their green trust, which can promote consumers' purchase intention [71].

## 5.2. Implications and Limitations

This paper defines the evaluation dimension of live-streaming e-commerce quality, which has not received enough research attention. The empirical results demonstrate that improvements in live-streaming e-commerce quality will promote the formation of green trust, thus affecting green purchase intention. This indicates that when employing live-streaming marketing, green agricultural product enterprises should pay special attention to information, system, and service quality, as well as telepresence and social presence. The authenticity and accuracy of live-streaming e-commerce information, the system's stability, and timely service and response are all related to live-streaming quality. Therefore, the streamer should try to understand green agricultural products as much as possible, publicize the green agricultural products' characteristics, and display the products vividly to strengthen consumers' awareness of green agricultural products.

In addition, telepresence mainly generates an "immersive" feeling for consumers, which requires that the live streaming of green agricultural products be as close as possible to the origin or original ecological environment to improve the sense of telepresence. Social presence is achieved mainly through various methods to stimulate consumers' enthusiasm so that they participate in the interaction of live streaming. These also require a high degree of cooperation between the streamer, the live-streaming platform, and the green agricultural product enterprises involved. Through live streaming, consumers can not only find spiritual satisfaction but also truly feel the green agricultural products' environmental and health value.

On the other hand, multi-party participants should strive to guide green purchases in live broadcasts to form normal, benign, and multi-frequency consumption. A responsibility mechanism must be established, strict control of green agricultural products' quality must be carried out in accordance with the government's industry standards, and a clear

punishment system must be implemented for producers and operators who use live-streaming platforms for “false marketing” and “false propaganda”.

This study has some limitations. First, we studied the formation of green purchase intention in live-streaming e-commerce. In reality, a gap exists between purchase intention and purchase behavior. Second, green consumption behavior is a complex process of psychological and behavioral interaction affected by multiple factors, such as the green products’ price and quality. However, due to limitations in models and variables, this paper does not cover these factors.

The following research directions could be pursued in the future. First, green consumption behavior generated by live-streaming e-commerce could be compared with green consumption behavior originating in traditional marketing channels to find a more effective way to promote green-related purchasing. Second, green products’ related variables can be placed into the empirical analytical model for further exploration.

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