

Leveraging Short Video Platforms for Agricultural E-commerce: Enhancing Purchase Intent through Optimized Content

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Abstract

With the popularity and improvement of short video platforms, short video e-commerce live streaming (ELS) has emerged as a prevalent trend for promoting produce. Despite the widespread adoption of short video platforms and ELS, there remains a notable gap regarding the content of short video ELS, with many researches mainly emphasizing the path of ELS general development. Therefore, this study aims to optimize agricultural short-video ELS content, by identifying factors contributing to purchase intention and leveraging the advantages of short-video platforms. This study employs questionnaires, interviews, and the stability coefficient method to explore pathways for innovating agricultural ELS content. The results show that ELS scenes and anchor identity significantly affect purchase intention. Furthermore, an assessment of the hierarchical order of content elements has been established. Additionally, the interview findings indicate the significance of recognizing synergies between the benefits inherent in short video platforms and the content of agricultural ELS. This study can serve as a reference for ELS content optimization and have implications for agricultural ELS influence improvement.

Keywords: live streaming, purchase intent, content type, agriculture products

1. Introduction

Due to the rapidly advancing fields of science and technology, agricultural sales are no longer limited to traditional brick-and-mortar stores. Live streaming has become an essential part of the digital transformation of agriculture (Zeng et al., 2023). The new mode of ELS to help farmers is the main instrument in rural development. The emerging communication modes of short video and live streaming have begun to play an important role in the field of agriculture. Besides, Zhao et al. (2020) found that as an emerging social medium in the Internet era, short video platforms are favored by a large number of users because of their mobile, light dissemination, and social features. The short video platform of the ELS industry is developing rapidly, providing a new path for agricultural and rural development. For example, *TikTok*, an emerging ELS platform, sold a total of 2.83 billion units of agricultural specialties in September 2021-2022, and the number of e-commerce professionals related to agriculture and agricultural merchants has increased by 152% year-on-year. Therefore, the short-video platform ELS to sell produce has a huge market potential and promotes the rapid development of digitalization, which is conducive to injecting strong economic impetus into rural vitalization.

Currently, research on ELS to help agriculture is positioned in the primary stage. Existing research on ELS to help agriculture mainly explores the future development path of the new pattern of ELS (Li & Zhao, 2020), and discusses the sustainable development path of ELS (Deng, 2020; Guo & Qv, 2020). Besides, Xiong et al. (2021) analyze the relationship between consumer trust and the purchasing intention of products. To retain existing viewers and attract newcomers, streamers and fans often create a well-condensed summary of the streamed content (Song et al., 2021:1). Nevertheless, on the one hand, E-commerce Live Streaming (ELS) promoting agricultural products on short video platforms has gained attraction in recent years, there is a lack of existing research focusing on this field. On the other hand, there is a paucity of literature examining the content of short-video agricultural ELS, in terms of its influence on consumer purchase intention from the viewpoints of anchors, farmers, and consumers. Hence, to make up the current research gap, this research specifically discusses the impact of content in ELS enhancing agriculture on short video platforms, by examining opinions from different groups.

The remainder of the paper is structured as follows: Section 2 reviews relevant literature, Section 3 outlines methodologies, Section 4 assesses reliability using Cronbach's alpha and conducts interview content analysis, while Sections 5 and 6 present key findings, conclusions, suggestions, and future research directions.

2. Literature Review

2.1 E-commerce Live Streaming on Short Video Platforms

With the rapid development of short-video platforms such as *TikTok* and *Kuaishou*, ELS on short-video platforms has attracted much attention. In terms of rural anchors, short-video platforms lower the access threshold such as skills and qualifications needed for labor, to a certain degree, attracting some rural prosumers to engage in ELS. As the core of short video platforms is social, the connection between fans and anchors can affect the traffic of anchors. Head rural anchors whose digitalization practices start earlier have accumulated stable fan resources on platforms, but some tail anchors just emphasize extending working hours to realize the tilt of traffic, thus posing polarized performance for them (Ni & Liu, 2023). As for consumers, Jiao et al. (2023) explore the influence of short-video platform attributes on consumer behaviors to increase consumer stickiness, which enables short-video platforms to satisfy the needs of consumers. When it comes to ELS sales model innovation, given short-video platforms ELS, both Gu (2023) and Wang (2023) discuss the importance of ELS scenario construction in affecting purchase behaviors and empowering ELS innovation, which provides a reference for programming ELS content frame that close to consumers' preference. Therefore, studies of ELS on short-video platforms are emerging, which is beneficial for its vigorous development.

Moreover, short video platforms have the potential to promote the development of agricultural ELS. Zeng et al. (2023) propose that this trend is expected to accelerate due to several advantages offered by short-video platforms: visibility, interactivity, authenticity, entertainment, and convenience, which enable production bases of agricultural products to be shown directly to consumers through short-video platforms. Furthermore, researchers (Bai, 2021; Zeng et al., 2023) point out that short videos issued on short-video platforms have the potential to attract significant traffic, and the "short video + ELS" model has evolved into a well-established operational framework with stable customer bases, facilitated by the management of short video platforms. Through "short video + live streaming", the purpose of creating a closed-loop business of "entertainment - discovery - shopping - entertainment" can be achieved. At the same time, the profitability of short videos can be elevated while improving the stickiness of fans (Wu, 2023). As Jiang et al. (2022:1700) reveal, "the short-video marketing fever is gradually rising". The benefits of short-video platforms can incentivize more farmer anchors to engage in ELS on these platforms, consequently enhancing consumers' accessibility to information about agricultural products. Therefore, the characteristics of short-video platforms deserve to be researched, which can facilitate ELS from farmer anchors to attract more viewers.

2.2 Content of E-commerce Live Streaming and Produce Purchase Intention

Purchase intention is a complex interplay of various factors. Prior purchase intention studies tend to focus on ELS quality and consumers' purchasing behavior. Effective communication and active user participation (Qing & Jin, 2022), coupled with information quality encompassing aspects such as credibility, utility, and vividness, as well as interaction elements including responsiveness, real-time engagement, and empathy (Zhang et al., 2021), play pivotal roles in cultivating a gratifying shopping experience and stimulating purchase intent. These investigations elucidate the intricate mechanisms by which ELS quality impacts purchase intent, thereby contributing to the precise enhancement of ELS content quality.

Concerning consumers' purchasing behavior, Zheng et al. (2023) identify anchor characteristics and interactive entertainment as factors capable of exerting a positive influence. Likewise, the enhancement of flow can be achieved through both social presence (cf. Kreijns et al., 2022) and interactivity (Zheng et al., 2023). Hence, these researches underscore the importance of the connection and interaction between viewers and anchors within ELS contexts. Furthermore, impulse buying decisions have also been discussed. For example, Huang & Suo (2021) and Parsad et al. (2019) respectively recognize external influences such as price promotions and time pressure, along with intrinsic factors like personality traits, as prominent contributory factors. These findings furnish a comprehensive comprehension of the stimuli driving impulse purchases. Consequently, it is apparent that purchase behavior is influenced by ELS content, warranting a deeper investigation into the relationship between purchase behavior and specific ELS content. Overall, it is evident that compared to the burgeoning domain of the influence mechanism of ELS on consumer purchase intention, there exists a dearth of in-depth research and discourse on the impact of short-video ELS content on purchase intention.

For ELS on short-video platforms, the emergence of ELS contributes to a closer relationship between consumers and content creators on short-video platforms, forming a unique culture and language in each consumer community, which cultivates the short-video platforms to become a natural breeding ground for forming consumer communities (Ren et al., 2022). Besides, the impact of content, the KOL charisma, and an interactive evaluation of the ELS can give a shift in

the attitude of how consumers view the product (Wang et al., 2022). Many researches assert that content plays a crucial role in influencing purchase intention. For example, it is found that the attractiveness of ELS content is positively correlated with the attention and influence it can garner (Li, 2018) and content quality is influential on consumer viewing time, and content creation can help achieve sales conversion (Xie et al., 2022; Yang et al., 2022). However, information asymmetry become a prominent problem, in the context of ELS, as the result of physical isolation between sellers and buyers (Lu & Chen, 2021). Notably, anchor and ELS content can serve as information bridges to convey the quality and other attributes of the product to the consumer (Chen et al., 2023). Therefore, how to form connections between ELS content and consumer interest from perspectives of various stakeholders, is consideration has become the focus of short-video research and the urgent need to solve the problem.

Furthermore, in the context of comprehensively promoting rural vitalization and digital rural construction, agricultural ELS has emerged as a popular method for promoting produce. Selling agricultural products through ELS on short video platforms is already a very distinctive sales strategy that can significantly expand and increase the market potential for agricultural products (Li et al., 2023). Farmers of short-video platforms actively explore new models of agricultural product sales. Through ELS marketing, they have improved the circulation efficiency of rural produce and constructed a new model of agricultural sales and the industry chain of goods (Yuan, 2023). It can be seen that farmers are expected to take on a central role in agricultural ELS, underscoring the importance of enhancing their capacity to produce high-quality ELS content. Nevertheless, due to insufficient training and other environmental factors, ELS content produced by certain farmers often diverges from mainstream aesthetic standards or appears outdated. (Jia, 2021). Therefore, nurturing a cohort of well-educated, influential, and proficient young farmers who possess the capability to engage in ELS emerges as a pivotal task in the agenda of rural revitalization.

3. Methodology

3.1 Research Questions

Prior research has examined the distinguishing features of short video ELS compared to traditional ELS, investigated factors influencing purchase intention, and emphasized the significance of ELS content. This study argues that the agricultural ELS on short-video platforms is still in its nascent stage, presenting ample opportunities. However, current ELS studies rarely consider how to innovate the content of short-video ELS to stimulate consumers' purchasing intention. Therefore, taking *TikTok* as an example, this paper answers the following research questions:

- 1) What is the content of agricultural ELS on short video platforms?
- 2) What is the effect of this content on consumers' purchase intention?
- 3) How can agricultural ELS content be optimized to enhance purchasing intention?

By tackling the questions above, this study seeks to contribute to providing insights into leveraging short-video ELS platforms to innovate ELS marketing content, thereby augmenting consumer purchase intention.

3.2 Questionnaire

3.2.1 Questionnaire Design

The questionnaire comprises three sections: basic information, preference of platform types, and preference of ELS content. To explore the potential profitability of agricultural ELS on short video platforms, this study investigates participants' platform preferences, when engaging with ELS and short videos related to helping agriculture. Additionally, to investigate strategies for diversifying content to enhance sales, researchers draw references from Cheng & Chen (2023). Employing grounded theory, they investigate influencing factors of consumers' purchase in ELS from a perspective of traditional culture. They categorize original interview data into 7 principal categories and 19 subcategories, which enlightens the influencing factors selection of this study. The purpose of this study is to optimize agricultural ELS from a perspective of content, suggesting it has intersections with the study of Cheng & Chen whose perspective is traditional culture. Hence, this study selects five of the seven principal categories as the core observed variables of this questionnaire: regional culture, anchor image, cultural narrative, and live scenario. Based on the connotation of subcategories and the core observed variable, eleven out of nineteen subcategories are selected as subdivision-influencing elements, thereby giving deeper insight into viewers' preferences and attitudes towards agricultural ELS content.

3.2.2 Data Collection

Boparai et al. (2018) think that a questionnaire is a commonly used data collection method and is a very crucial part of the research. Additionally, questionnaire surveys are a useful method that reduces the research budget and can be used in the systematic collection of information. Therefore, this study used the Questionnaire Star to create the questionnaire and sent the questionnaire online. The research collected a total of 258 questionnaires. The questionnaire is made up of

multiple choice and a five-point *Likert* scale ranging from “strongly disagree (1)” through “neutral (3)” to “strongly agree (5)”. To encourage and reward participation, the participants were given electronic red envelopes.

Concerning sampling methodology, this study uses a random sampling method by sending the questionnaire on the WeChat group and Weibo, so that samples with various characteristics can be gained. All the participants were of Chinese nationality; 49.61% of them were female; 50.39% of them were male; 70.93% of them were aged 15-30; the vast majority of participants (83.92%) preferred to use short-video platforms to watch agricultural short videos and ELS.

3.2.3 Data Analysis and Evaluation

The study employs SPSS software to conduct analysis and validation of missing data and outliers, ensuring the derivation of reliable and effective conclusions. Besides, this study utilizes validity analysis to examine the scientific rationale of the *Likert* scale item design.

The questionnaire is a means of collecting information in writing or the form of correspondence, i.e., the investigator compiles questions or forms on the survey items, distributes or mails them to the persons concerned, requests them to answer, and then collects them for collation, statistics, and research (Zheng, 2014). The online distribution of questionnaires is modern technological computerization and has the advantage of being more convenient than postal questionnaires. Firstly, the data can be computerized immediately. Besides, removing the effort of data input and the possibility of human error at the time of input is greatly significant to collecting and analyzing data.

3.3 Interview

3.3.1 Data Sources

Given that the subjects of agricultural ELS are broadly categorized into three roles: ELS operator, anchor, and consumer, this paper is scheduled to select interviewees who are related to these three roles. This study contacts those informants unknown to researchers who post their experiences on the Internet and eventually secures the cooperation of 8 interviewees (Table 1). Particularly, three of them are college students, who have experience in going to villages and selling produce on *TikTok* ELS, thereby providing a novel evaluation of ELS content from youngsters' perspective.

Table 1. Interviewee information

Interviewee Number	Age	Gender	Occupation	Relevant Experience
A	20	Male	Student	1) Engages in orchestrating agricultural ELS programming on <i>TikTok</i> . 2) Recommends agricultural ELS for his family and friends.
B	20	Male	Student	1) Contributes to the production of agricultural ELS content on <i>TikTok</i> , garnering significant attention. 2) Watches agricultural ELS.
C	20	Female	Student	1) Plays an active role in agricultural ELS initiatives on <i>TikTok</i> .
D	21	Female	Student	1) Sells produce via ELS channels on <i>TikTok</i> during volunteering activities in underdeveloped areas.
E	51	Male	Farmer	1) Sells produce via ELS channels on <i>TikTok</i> .
F	49	Female	Farmer	1) Sells produce via ELS channels on <i>TikTok</i> .
G & H	28	Female	Workers of an agricultural ELS on <i>TikTok</i>	1) Participates in developing agricultural ELS programming on <i>TikTok</i> . 2) Makes purchases of agricultural produce through ELS platforms on <i>TikTok</i> .

3.3.2 Interview Design

The interviews are semi-structured, with four common focused areas (content particularity of agricultural ELS on *TikTok*,

factors that will be considered when operating ELS, content that can build and improve consumer trust in the produce, and consumers' attitude towards ELS content). Studies made by Park & Lin (2020) and Chen et al. (2023) are referred to, when this research designs interview content. To adapt to the interviewees' time, two of the interviewees answered the questions in text form and one of them answered through *Tencent Conference*, lasting about half an hour. All interviewees were asked to respond to the questions in as much detail as possible, enabling researchers to ask questions in depth, thereby giving a more comprehensive understanding of the attitudes of interviewees with different identities towards agricultural ELS content.

4. Results

Based on the questionnaire and interview data, this article will conduct a comprehensive analysis in four key areas: feasibility, the Content of Agricultural ELS on Short Video Platforms, consumers' purchase intention, and ELS Content optimization, as evidenced by specialized research in renowned professional journals.

4.1 Reliability Analysis

To evaluate the reliability of the instrument, this investigation applied *Cronbach's alpha*, utilizing SPSS for the analysis. A coefficient surpassing 0.8 is indicative of superior reliability, whereas a value above 0.7 is deemed acceptable. Should the coefficient exceed 0.6, it suggests that while the scale retains some utility, it may benefit from modifications. Coefficients falling below 0.6 recommend a comprehensive redesign of the scale to enhance its reliability.

Table 2. Regional culture Cronbach reliability analysis

Name	Correction term total correlations (<i>CITC</i>)	α coefficient with deleted terms	Cronbach α coefficient
Dialects	0.546	0.903	0.833
Local specialties	0.771	0.687	
Customs	0.778	0.683	

Table 2 delineates the outcomes, revealing a reliability coefficient of 0.833 that exceeds the minimum threshold of 0.8, thereby denoting a permissible level of reliability for the dataset and the higher quality of data reliability. Furthermore, the analysis of the “ α coefficient of deleted item” indicates that the omission of any singular item does not yield a marked amelioration of the reliability coefficient, implying the necessity for retention of all items. Additionally, the “*CITC* value” illustrates a correlation exceeding 0.4 among the assessed items, further confirming the satisfactory reliability of the data. Additionally, it shows that there is a good correlation between the analysis items, and the reliability level is good. In essence, with the reliability coefficient value surpassing 0.8, the dataset's reliability is substantiated, comprehensively indicating that the reliability quality of the data is high and reinforcing the adequacy of the dataset's reliability for the study.

Table 3. Anchor identity Cronbach reliability analysis

Name	Correction term total correlations (<i>CITC</i>)	α coefficient with deleted terms	Cronbach α coefficient
leading cadres	0.566	0.435	0.662
Internet celebrity or star	0.361	0.720	
Local farmers	0.511	0.523	

Given the data presented in Table 3, it is apparent that the reliability coefficient value is 0.621, exceeding the 0.6 threshold and showcasing an acceptable level of reliability in the research data. Furthermore, the analysis of the “ α coefficient of deleted item” reveals that removing any item does not result in a significant increase in the reliability coefficient, indicating that all items should be retained. Additionally, the “*CITC* value” demonstrates a correlation greater than 0.4 between the analysis items, further substantiating the satisfactory level of reliability in the data. Consequently, the dataset's demonstration of a reliability coefficient above the 0.6 threshold corroborates the satisfactory reliability quality, endorsing the dataset's reliability as adequate for this study.

Table 4. Culture narrative Cronbach reliability analysis

Name	Correction term total correlation (<i>CITC</i>)	α coefficient with deleted terms	Cronbach α coefficient
Background Story	0.856	0.862	0.917
Historical allusions	0.827	0.884	
Positive example	0.815	0.895	

Seeing Table 4, the reliability coefficient stands at 0.917, exceeding the threshold of 0.9, thus underscoring the excellent reliability quality of the research data. Regarding the “ α coefficient of the deleted item”, it is noteworthy that the reliability coefficient does not undergo a notable surge upon the deletion of any item, indicating that the retention of all items is advisable. For “*CITC* value”, the *CITC* value of analysis items is greater than 0.4, indicating that there is a good correlation between analysis items and a good reliability level. In summary, the reliability coefficient value of the research data is higher than 0.9, revealing that the data reliability quality is high and can be utilized for further analysis.

Table 5. ELS scene Cronbach reliability analysis

Name	Correction term total correlation (<i>CITC</i>)	α coefficient with deleted terms	Cronbach α coefficient
Production Scenario	0.644	-	0.781
Natural Scenario	0.644	-	

The reliability coefficient attains a value of 0.781 surpassing the benchmark of 0.7, thereby affirming the robust reliability quality of the research data based on Table 5. In terms of the “*CITC* value”, it is obvious that the *CITC* values associated with the analysis items exceed 0.4, revealing a robust correlation among the analysis items and an excellent level of reliability. Therefore, the reliability coefficient value of the research data exceeds 0.8, confirming its high-reliability quality and suitability for further analytical exploration.

In summary, the *Likert* Scale encompasses four distinct dimensions: regional culture, anchor identity, cultural narrative, and ELS scene. The alpha coefficient values for these dimensions all surpass the 0.6 threshold, with the minimum value recorded at 0.662. This exceeds the benchmark, denoting a commendable degree of reliability and substantiating the research data’s authenticity and dependability.

4.2 Validity analysis

This research embraces a rigorous validity analysis approach to ascertain the plausibility and substantiation of quantitative data, leveraging the methodology of factor analysis. At the heart of this endeavor lies the utilization of structural validity, a pivotal aspect within the broader validity analysis framework. It is one of the core links of validity analysis, focusing on the corresponding relationship between the measured items and the measured variables.

Within the realm of structural validity analysis, Exploratory Factor Analysis (EFA) emerges as a preeminent tool. Through the application of EFA, this research delves into the intricacies of the items, examining their factorial structure to ascertain whether the empirical correspondences between items and variables align with theoretical anticipations. The items of the questionnaire are expected to have 4 factors (dimension). The 44 numbers obtained from the cross-loading of factors and items are referred to as “factor loading coefficients” (Factor loading coefficients indicate the degree of correlation between analysis items and factors.).

Table 6. Validity analysis of influencing factors of consumers’ purchase intention in live content

Items of the Questionnaire	Factor loading coefficient				Communalities
	Factor 1	Factor 2	Factor 3	Factor 4	
Dialects	0.327	0.749	-0.292	0.187	0.788
Local specialty	0.019	0.902	0.138	-0.218	0.880
Custom	0.117	0.888	0.144	-0.194	0.861
Leading cadre anchor	-0.015	-0.195	0.116	0.843	0.762
Internet celebrity or star anchor	0.341	-0.009	-0.347	0.658	0.669
Natural scenario	-0.061	0.184	0.870	-0.034	0.796
Production scenario	-0.131	-0.084	0.867	0.194	0.813
Positive example	0.899	0.060	-0.125	0.110	0.839
Historical allusions	0.901	0.125	-0.089	0.118	0.848
Background story	0.929	0.166	0.009	0.061	0.894

Items of the Questionnaire	Factor loading coefficient				Communalities
	Factor 1	Factor 2	Factor 3	Factor 4	
Local farmer anchor	0.156	-0.066	0.448	0.727	0.757
Eigenvalue (before rotation)	3.380	2.503	2.062	0.963	-
Variance Explained (%) (before rotation)	30.723%	22.759%	18.745%	8.753%	-
Cumulative Variance Explained (%) (before rotation)	30.723%	53.482%	72.226%	80.979%	-
Eigenvalue (after rotation)	2.763	2.293	1.991	1.860	-
Variance Explained (%) (after rotation)	25.121%	20.848%	18.104%	16.906%	-
Cumulative Variance Explained (%) (after rotation)	25.121%	45.969%	64.073%	80.979%	-
<i>KMO</i> value			0.722		-
Bartlett's Test of Sphericity			1589.088		-
<i>df</i>			55		-
<i>p</i>			0.000		-

Note: If the numbers in the table have colors: blue indicates that the absolute value of the load factor is greater than 0.4, and red indicates that the common degree (common factor variance) is less than 0.4.

Seeing Table 6, firstly, the items of the questionnaire do not have the issue of mistaking one thing for another, but the item of local farmer anchor has the issue of not clear entanglement and should be paid attention to.

Secondly, the communalities value reflects the proportion of variance of 11 questionnaire items that can be explained by factor1, 2, 3, and 4. Notably, the commonality indices associated with all research items surpass the threshold of 0.4, suggesting a robust explanation of individual item information by the extracted common factors. This signifies a heightened degree of correlation between the items and their underlying factors, with minimal information attrition. Such a finding constitutes a robust testament to structural validity, underlining the rationale behind the item design and its efficacy in mirroring the essence of latent variables with precision.

Thirdly, the *Kaiser-Meyer-Olkin (KMO)* Measure of Sampling Adequacy serves as a pivotal criterion in assessing the suitability of data for factor analysis. However, the *KMO* value of this study is 0.722, which is greater than the common standard of 0.6, indicating that the data has good appropriateness for factor analysis, that is, there is enough common variation among the variables in the data to enable effective factor extraction.

Fourth, these results reveal that the four factors account for 25.121%, 20.848%, 18.104%, and 16.906% of the total variance, respectively, indicative of their varying degrees of explanatory power. Notably, the cumulative variance explanation rate post-rotation surpasses the conventional benchmark of 50%, achieving an impressive 80.979%. This substantial figure underscores that collectively, these four factors encapsulate an overwhelming majority (80.979%) of the information contained within the original data, signifying efficient information extraction. This robust outcome not only validates the efficacy of the factor analysis but also attests to robust structural validity, as the study's information is comprehensively and accurately captured.

In summary, these comprehensive results concordantly affirm the soundness of the questionnaire's research design and the robust structural validity validated through exploratory factor analysis. Moreover, the information on the research items can be effectively extracted, and the data is suitable for factor analysis, and the extracted factors can better explain the variation of the original data.

4.3 The Content of Agricultural ELS on Short Video Platforms

Using ELS on a short video platform to sell agricultural products is an option to boost the sales of agricultural products as well as the financial gains of players in the agriculture industry (Zeng et al., 2023). Through observing agricultural ELS on *TikTok*, this study explores whether the influence factors in a previous study (Cheng & Chen, 2023) also appear in ELS on short-video platforms. The analysis reveals that scenarios, farmer identity, internet celebrities and stars, and local specialties are more prevalent in ELS compared to other factors. Each of these elements possesses a unique appeal that can attract diverse customers and stimulate their willingness to make purchases.

Through ELS marketing, they have improved the circulation efficiency of rural produce and constructed a new model of agricultural sales and the industry chain of goods (Yuan, 2023). By visually presenting the productive process, and effectively explaining the value of the produce by the producer, the agricultural ELS can enhance the purchase rate. In a word, farm anchors on short video platforms serve as a novel and efficient approach to promoting agricultural product sales. Interviewees A, D, and E offered their perspectives in interviews.

1) *Farmers' ELS has the potential to transport consumers virtually to the site of agricultural production, offering a*

more direct view of the process, or allowing farmers to demonstrate cultivation techniques. Such approaches increase consumer confidence in both the product and the live stream, consequently enhancing purchase intention. (Interviewee A)

2) In the process of helping farmers live streaming, I found that the appearance of farmer anchors could attract more viewers, and the number of people in the direct broadcast room at that time exceeded a new high. (Interviewee D)

3) As a farmer anchor, discussing product origins is natural for us, as these products are nurtured by our hands, and we are intimately acquainted with every step of their production. Not only does ELS educate consumers about the product's journey but it also expands their worldview. (Interviewee E)

Using various content marketing channels is an effective way to boost user visits, promote sales amount, increase conversion rate, and attract new followers (Wang et al., 2020). Internet celebrities amplify their influence through their shows and promotions on social networking sites, which can improve viewers' willingness to pay for produce. Celebrity endorsement proves to be particularly advantageous for e-commerce retailers engaged in agricultural ELS, allowing them to attract greater traffic from content platforms, especially when lacking established brand goodwill.

Nevertheless, as evidenced by the data presented in Table 2, this research shows that the utilization of celebrity anchors to assist farmers in ELS for agricultural purposes is minimal. Given that celebrities promote hundreds of brands within ELS, this could not provide sufficient brand communication and form impressive brand experiences (Mao et al., 2022). Furthermore, Zhu et al. (2021) indicated that anchors' professional abilities affect consumers' purchasing behavior. Consequently, Interviewee F offers insights into the types of anchors.

1) I believe that an anchor's attractiveness and professionalism will have a direct impact on the viewing experience and retention rate of viewers. An excellent anchor needs to have personal charisma and professionalism, and be able to establish a good interactive relationship with viewers and provide valuable information and advice. (Interviewee F)

In recent years, it has been prevalent to see leading cadres selling local specialties in ELS. For instance, a primary-level cadre of Shanyang county sells produce such as fungus in ELS. In just two hours 810,000 people were watching, more than 6,200 transactions, and sales of 254,000 yuan (Kong et al., 2023). This can be called primary-level cadre live streaming e-commerce (PCLE). In PCLE, virtual gifts, bullet comments, and tipping during ELS have emerged as novel forms of interaction with leading cadre anchors. In some PCLE, political engagement revolves around a self-promotion narrative, often directed by the local government through an entrepreneurial plan. Some countries tended to cooperate with top-tier e-commerce platforms (e.g., *TikTok*) which offered logistics and after-sales services. Additionally, PCLE enabled viewers to buy products at affordable prices (Zhao & Wu, 2023). Moreover, the government assumes the role of ensuring order within the dynamic ELS markets, safeguarding the rights and interests of all stakeholders to advance the progress of ELS initiatives aimed at aiding farmers. In conclusion, governmental involvement in agricultural ELS can instill trust and cultivate relationships between producers and consumers.

4.4 The Effect on Consumers' Purchase Intention

Thanks to technology constraints in the past few decades, many online e-commerce merchants only present product information to consumers in plodding forms, such as graphics and text. Displaying more comprehensive, realistic, and live product information, and a sensory experience is not conducive to promoting purchase. However, ELS sales are gradually changing this situation (Peng et al., 2021:3). The identity of the anchors, ELS scenarios, cultural narratives, and local specialties serve as key parameters for examining the content elements favored by consumers. The outcomes of the metric clustering are illustrated in Figure 1.

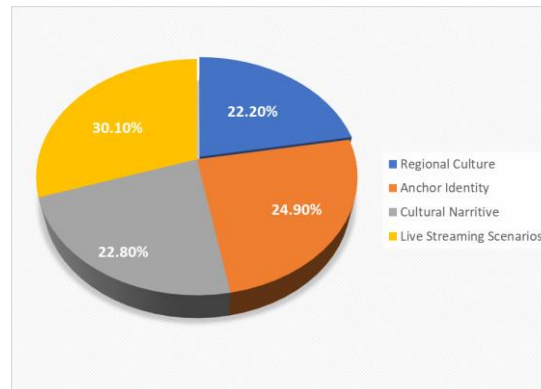


Figure 1. Four variables about consumers' purchase intention

The investigation into the second research query employed a consumer-oriented questionnaire, utilizing a *Likert* scale for assessment. Results derived from this analysis (see Figure 1) indicate a significant correlation between anchor identity and ELS scenarios with purchase intention, accounting for 24.90% and 30.10%, respectively. The impact of regional culture appears to be less pronounced, hinting at a potential lesser degree of viewer interest in this dimension. Nonetheless, the overall distribution among the four categories remains fairly even. This indicates that consumers are more attentive to the anchor's identity and the live broadcast setting when watching live streaming aimed at supporting farmers, which is more conducive to enhancing consumers' purchase intention. To make the data more accurate and representative, this article conducted semi-structured interviews with people with different identities.

In the formal interview, one of the interview questions was: which factor do you think is relatively more likely to affect consumers' willingness to buy?

In the rapidly evolving landscape of new media, it is imperative for leaders to transcend traditional administrative tasks such as issuing directives and paperwork approvals. They are called to step out of the confines of their offices, actively participate in field operations, delve into the digital domain, and execute concrete actions that contribute positively to societal welfare. Regarding factors related to ELS content, interviewees A, B, and D articulated that products endorsed by former anchors or prominent leaders instill a sense of trust due to the perceived professional credibility of these individuals. Consequently, this trust factor influences their purchasing decisions.

1) *Anchor identity serves as a prime mechanism to enhance consumers' willingness to purchase. Despite having potentially lower educational levels, Farmer Anchors effectively resonate with consumer emotions. (Interviewee A)*

2) *Leaders inherently evoke trust among people. When cadres utilize ELS to promote local products, they are leveraging their integrity and, by extension, the local government's credibility to vouch for product quality, rendering these products more trustworthy to consumers. (Interviewee B)*

3) *It is unequivocally true that farmers possess the most profound knowledge of their products. (Interviewee D)*

Likewise, Interviewees A and E expressed a predisposition towards purchasing products endorsed by anchors, contingent upon the alignment of these products with their preferences and needs or if they discerned notable advantages stemming from the anchor's recommendation.

1) *I especially like parsnips, so I would choose to buy parsnips over any other produce when I watch an ELS of Helping Farmers. Secondly, I will be very happy to buy them if the offers given by the anchor are attractive enough to me. (Interviewee A)*

2) *For example, the Double Eleven shopping festival is the most discount, therefore, consumers will receive coupons and other ways to buy products. (Interviewee F & G)*

In addition to examining ELS content-related factors, this study explored whether the language used by anchors impacts consumers' purchase intent. Respondents A, F, and G acknowledged that the inclusion of historical references related to agricultural products by anchors during live streams can enhance consumers' readiness to make purchases.

1) *The 'Help Agriculture' initiative serves as a key motivator for my purchases of aid-related agricultural products. For instance, anchors enrich live streams by weaving in cultural narratives that include the history and traditions associated with the products, enhancing my understanding of the product's backstory and fostering a deeper connection with agriculture. (Interviewee C)*

2) *In our ELS sessions focused on selling chickpeas for farmers, our team endeavors to share the product's backstory, aiming to evoke emotional resonance among consumers. (Interviewee A)*

Therefore, combining the results from the questionnaire and interview, consumers would take the identity of the anchor first, the reason is that consumers perceived value similarity helps them judge whether the broadcasters are trustworthy or not, as the principle of similarity attraction states that people trust those who have attitudes similar to theirs (Lu & Chen, 2021:2). Subsequently, within the context of ELS, the scenario emerges as the second most influential factor, while cultural narrative holds the third stance in shaping consumers' purchasing intentions.

4.5 Optimization of ELS Content

ELS is used to demonstrate how products are created and used, to show different perspectives of products, to answer customer questions in real time, and to organize live activities that entertain and encourage customers to buy on the spot (Lu et al., 2018:466).

Table 7. Analysis of influencing factors of consumers' purchase intention in live content

Influence factor	Final score (μ)	Standard deviation (σ) (Retain three decimal places)	RCV (Retain three decimal places)	Weight (Retain three decimal places)
Production scenario	4.48	0.65	6.892	0.157
Natural scenario	4.07	0.73	5.575	0.127
Local farmer anchor	3.97	0.80	4.963	0.113
Leading cadre anchor	3.81	0.88	4.330	0.098
Background story	3.31	0.95	3.484	0.079
Local specialty	3.41	1.02	3.434	0.076
Historical allusions	3.25	0.99	3.283	0.075
Custom	3.41	1.05	3.248	0.074
Positive example	3.18	1.00	3.180	0.072
Internet celebrity or star anchor	2.84	0.91	3.120	0.071
Dialects	2.67	1.03	2.592	0.059

Combining the *Likert* scale and stability coefficient method (Peng, 2021), this study ranks the importance of the factors mentioned in the questionnaire that affect purchasing intention. According to the calculation, Table 7 is obtained. By ranking the proportion weight of each factor, factors in order of importance (greatest to least) are as follows. Notably, production and natural scenarios, local farmer anchor, and leading cadre anchor exert a substantial influence on purchase intent; thus, prioritizing these elements in agricultural ELS content creation is essential.

The survey included a question about whether presenting a scene from the production environment, such as displaying the harvesting or packaging of agricultural goods, enhances product trust and stimulates impulsive buying. Our analysis revealed that scenarios depicting the production process received the highest average scores, indicating consumers' preference for informed purchasing decisions rooted in a clear understanding of the product's origin rather than spontaneous urges. Additionally, regional specialties and traditions are equally impactful. Notably, this evaluation demonstrates that dialects have the least influence on consumer decisions through this method.

Additionally, the anchor, who plays the central role in ELS, can mobilize users' emotions by communicating with them in real time, thereby enhancing their immersive experience and influencing their subsequent behaviors (Cao et al., 2022). The engagement between the host and the consumer can alleviate the fatigue resulting from extended periods of ELS.

1) *To mitigate consumer fatigue in agricultural ELS, we engage in interactive sessions, featuring performances related to local culture by our versatile team members or inviting villagers to sing about local traditions. (Interviewee A)*

2) *To maintain viewer engagement during live streams, we introduce elements of suspense and surprise, like unexpected deals, time-limited offers, and mystery guests, to pique the audience's curiosity and anticipation. (Interviewee B)*

Throughout the process of assisting farmers during live streams, this study asserts that anchors have the capability to

establish a robust emotional bond with consumers. According to the interview, it is relevant to Cao et al.'s (2022) argument that during the real-time engagement of live interactions, consumers' levels of emotional connection change with the different stimuli and interactions. ELS shopping constructs a more three-dimensional and fully simulated consumption scenario, which can bring buyers a highly immersive and high-presence shopping experience (Chen et al., 2022). In conclusion, to alleviate consumer shopping fatigue, anchors should engage with live chat comments and incorporate engaging activities or games with viewers promptly.

5. Discussions

5.1 Interpretations of Results

For the first research question, this study discovers that elements of production scenarios, farmer identity, internet celebrities and stars, and local specialties are extensively applied by ELS operators. Viewers may be curious about how the products are produced and unfamiliar with the farmer anchors, because of their low popularity. That is, by employing real reflection of production scenarios and sincere farmer anchors, the sellers can enhance viewers' freshness to the ELS and trust in the products. Moreover, celebrity anchors play roles in making up for the deficiency in the popularity of farmer anchors, which can attract more attention from viewers. Not surprisingly, local specialties are appropriate to be sold in agricultural ELS, on account of their regional characteristics.

In terms of the second research question, through analyzing questionnaire data and answers from interviewees, this paper proposes that anchor identity and ELS scenario have a significant influence on purchase intention. Specifically, anchor identity occupies the largest proportion (28.24%), supporting the view that anchor characteristics are subconsciously prioritized by viewers when watching ELS (Fei et al., 2021). Low preference for regional culture may be attributed to the insufficient promotion of local culture, which contributes to viewers' lack of understanding about it.

Finally, when it comes to the third research question, this research provides the importance ranking of 11 elements to innovate agricultural ELS content. Because the proportion of the four categories is quite average, the stability coefficient method is used to reveal the importance ranking of the 11 elements, which strongly supports and supplements Figure 1. It is found that production scenario, natural scenario, local farmer anchors, and leading cadre anchors are important influencing factors, highlighting that viewers may prefer agricultural ELS showing the original growing environment of produce and tend to buy produce supported by authorities. Particularly, natural scenario mainly refers to idyllic scenery. The preference for it indicates that urban residents, in the fast-paced and high-pressure environment of modern society, yearn for rusticity. Additionally, operators in interviews reveal that it is necessary to combine local specialties with customs in agricultural ELS. However, through the results of questionnaires, local specialties, and customs may have a relatively minor impact on consumer purchases. As such, there are deviations between ELS operators and viewers, which cause gaps between ELS content and viewers' preferences, affecting purchase intention. Taken together, ELS operators should have a comprehensive understanding of viewers' preferences, accurately optimizing and simply ELS content, to effectively improve purchase intention.

5.2 Implications

This study contributes to the literature in several ways. First, this study bridges the deviations of content preferences between operators and viewers, through interviews and questionnaires towards operators and viewers. Moreover, this research presents the ranking of the importance of the elements in ELS content, that enable ELS operators to optimize ELS content, accurately improving purchase intention. Much of the previous literature has mainly focused on general problems and corresponding solutions (Jia, 2021; Xie, 2022), but little has been focused on content and anchors. Thus, this study fills the gap by identifying and extracting contributing factors to consumers' attitude shift in ELS content.

Second, this study bridges the gap in the existing agricultural literature by investigating consumers' preferences for ELS content. This study demonstrates the remarkable influence of anchor identity and ELS scenarios in agriculture. Although previous studies reveal that short video platforms are promising and vital tools in agricultural product marketing (Zhao et al., 2020; Wu, 2023), little has been accomplished to explore their roles in an agricultural ELS setting. This study empirically investigates the issue of agricultural ELS content on short video platforms, considering short video platforms as tools that can attract diverse traffic for ELS. Through interviews, this study finds that short-video platforms have a more varied audience and better effect on produce sales, compared with platforms like *Taobao*. Therefore, this study enhances the current understanding of the role of short-video platforms in agricultural ELS.

Third, the results of this study yield practical insights for ELS stakeholders. In light of operators and anchors, anchor identity ought to be valued as the findings suggest that anchors' performances have an impact on consumers' trust and attitude towards the produce. For instance, leading cadre anchors have public trust but limited experience and preparation time, consequently making boring content. Internet celebrities or star anchors have the professional ability

but the consumer base probably is restricted to fans. Farmer anchors lack professional ability but are familiar with produce and usually have interesting personalities. Moreover, as the result shows, farmers can motivate consumers by reducing consumers' uncertainty about produce. Operators therefore are advised to hire farmer anchors. Also, anchors should be explicit about detailed information about the product, and then conveying to viewers.

Lastly, this paper uncovers that, for agricultural ELS selling local specialty, local customs are frequently used, but contribute to limited promotion. As Chen et al. (2023) propose, engaging and entertaining strengthen consumers' memory points, simultaneously maintaining attention to the product. Thus, the limited impacts on purchase intent are attributed to the rigid mode of integrating local customs into ELS. When programming ELS content, operators and anchors are expected to give particular consideration to culture narrative, exploring more possibility of infusing the ELS with characteristic culture. For example, interviewee A said that they sold produce in the context of Miao culture. Likewise, interviewee B mentioned that telling background stories of produce enabled them to draw consumers' attention and achieve great success. Therefore, strategically utilizing cultural narrative to back up the produce can spur consumers' purchase intention.

6. Conclusion

Given the rapid development of digitalization, increasing the sales of produce is not only about traditional sales methods but also about using short videos to sell produce. The ELS provided by short video platforms is more convenient, network traffic is higher and the audience is wider. To fully understand, the impact of short video ELS, this paper uses four variables to measure how to prompt the sales of produce. The methodology includes a questionnaire, interview, reliability and validity analysis, and stability coefficient method. The final results show that the content of ELS on short video platforms, especially ELS scenarios and anchor identities, has significant impacts on the sale of produce. The merchants can virtuously develop ELS on short video platforms as a way to increase the income of poverty-stricken areas for the sake of being conducive to injecting strong economic impetus into rural vitalization.

There are also limitations in this study that need to be taken into further consideration. Given the effect of ELS content on purchasing intention, eleven influence factors are considered. However, there may be some other more critical influence factors in ELS content, such as humor pleasure, and social interaction (Zhou et al., 2021). Hence, exploring the effect of agricultural ELS content involving abundant variables from different perspectives is necessary. Additionally, future studies are encouraged to deepen the comparison between agricultural ELS on short-video platforms and traditional e-commerce platforms, by taking different specific platforms as examples.

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Authors' contributions

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Appendix A

【Questionnaire Questions】

Title: Survey on Consumers' Preference for Live Content of Agricultural Assistance

1. Gender

A. Male B. Female

2. Age

A.15-30 years old B.31-45 years old C. Over 46 years old

3. Which platform do you like to watch the live streaming on?

A. Traditional E-commerce platforms (such as Taobao) B. Short video platforms (such as *TikTok*)

4. Which platform do you like to watch short videos about the sale of agricultural products?

A. Traditional e-commerce platforms (such as Taobao) B. Short video platforms (such as *TikTok*)

Please select the most suitable item according to your actual situation (1= very disagree, 2= disagree, 3= general, 4= agree, 5= very agree)

Table Questionnaire Contents

Factors	Questions
The influencing factors of the original culture	5. When anchors combine dialects with ELS content, it triggers consumer impulsive purchasing behaviors.
	6. When anchors combine local specialties with ELS content, it triggers consumer impulsive purchasing behaviors.
	7. When anchors combine local customs with ELS content, it triggers consumer impulsive purchasing behaviors.
The influencing factors of anchor identity	8. When leadership cadres engage in ELS content, it triggers consumer impulsive purchasing behaviors.
	9. When internet celebrities or star anchors engage in ELS content, it triggers consumer impulsive purchasing behaviors.
	10. When local farmers engage in ELS content, it triggers consumer impulsive purchasing behaviors.
The influencing factors of culture narrative	11. When integrating of background story in ELS content, encompassing historical or contextual narratives that influence individuals or products, it triggers consumer impulsive purchasing behaviors.
	12. When integrating of integration of local historical allusions in ELS content, it triggers consumer impulsive purchasing behaviors.
	13. When integrating positive examples in ELS content, triggers consumer impulsive purchasing behaviors.
The influencing of live streaming scenarios	14. When integrating production scenarios in ELS content (e.g., on-site fruit picking or packaging processes), it triggers consumer impulsive purchasing behaviors.
	15. When integrating natural scenarios in ELS content (e.g., showcasing local scenic vistas), it triggers consumer impulsive purchasing behaviors.

Appendix B

【Interview Questions】

For Operators:

1. Platform Selection: Why choose short-video platforms like *TikTok* for agricultural ELS? How does content differ between *TikTok* and *Taobao* ELS?

2. Content: What considerations are made when planning ELS content? (e.g., alignment between hosts and products, alignment between live content and products)

3. Consumer Trust: In your opinion, what ELS content is most crucial for reducing product uncertainty and enhancing consumer trust?

4. Anchor Identity: What are the differences in agricultural ELS content among anchors of farmers, internet celebrities, and leading cadres? Are there any differences in audience reactions?

5. Factors Affecting Purchase Intention: Which of the following factors do you believe can relatively increase consumer purchasing intention?

- (1) Regional culture — dialects, local specialties, customs
- (2) Anchor identity — farmer, internet celebrities, leading cadres
- (3) Cultural narrative — produce background stories, historical allusions, and relevant positive examples (What methods do you think are best for narrating products in ELS?)
- (4) ELS scenarios — production scenario, natural scenario

6. Considerations in Content Planning: Do you consider the following aspects when planning ELS content?

- (1) Matching the produce image with the anchor image, ensuring natural compatibility between the anchor and produce
- (2) Matching produce with ELS content
- (3) Providing rich background and context for the ELS content

For Anchor:

1. Platform Characteristics: What are the distinguishing features of short-video platforms compared to e-commerce platforms like *Taobao*? (e.g., ELS processes, ELS discourse, produce, ELS scenarios, viewers' reaction)
2. Consumer Trust: There exists an information asymmetry between consumers and sellers regarding produce. How do you address consumers' needs to understand and produce information?
3. Consumer Engagement: In the case of long ELS sessions, what methods do you employ to maintain consumers' interest and engagement?

For Consumers:

1. Platform Selection: Why do you choose to purchase produce through ELS on *TikTok*?
2. Which of the following four behaviors best satisfies your need to produce information? And will they increase your likelihood of purchasing the produce? Which situations, among the following, reduce your uncertainty about the product and enhance the possibility of purchase?
 - (1) The anchor conducts product trials
 - (2) The anchor sharing similar values with you
 - (3) The anchor has a high online popularity
 - (4) A meticulously decorated scenarios
3. What is your attitude towards the content of ELS?
 - (1) Utilitarian Attitude (Practical):

The live stream provides essential information about the product.

The content of the live stream makes me more inclined to seek additional information about the product.

The information about the product presented in the live stream is useful to you.

- (2) Hedonic Attitude (Enjoyable):

The content of the live stream is interesting.

The content of the live stream pleases you.