



INNOVATION IN AGRIBUSINESS: LIVE STREAMING STRATEGIES AS A SALES TOOL FOR AGRICULTURAL PRODUCTS IN CHINA

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Abstract

Objective: We analyzed which attributes impact Chinese consumers' satisfaction when purchasing agricultural products via streaming during the COVID-19 pandemic, emphasizing innovative marketing strategies and their relevance in the pandemic context.

Methodology: Quantitative, descriptive, and exploratory approach, through a survey (n=257).

Originality: We bring up the importance of innovative approaches, such as streaming, to address the challenges faced by traditional agricultural suppliers and establish effective connections between supply and demand.

Main results: The credibility of the brand, characteristics of the streamers, elements related to the setting of the broadcast and the promotions promoted in the lives impact on the perception of satisfaction of Chinese consumers.

Theoretical contributions: This study contributes to the understanding of the phenomenon of using social media, especially streaming, to sell agricultural products. It

offers theoretical insights into the factors that influence the development of this sales method and emphasizes the importance of self-efficacy in the use of platforms for agricultural purchases.

Managerial contributions: The study finds that platforms such as TikTok and Kwai are effective for online sales of agricultural products. Valuable insights are provided for farmers and producers interested in using social media streaming as a direct sales channel. In Brazil, these strategies have potential applicability in the local market.

Keywords: Agricultural Products; Sustainability-Oriented Innovation; Social Media; Sustainable Consumption; Consumer Behavior.

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INOVAÇÃO NO AGRONEGÓCIO: ESTRATÉGIAS DE TRANSMISSÃO AO VIVO COMO FERRAMENTA DE VENDAS DE PRODUTOS AGRÍCOLAS NA CHINA

Resumo

Objetivo: Analisamos quais atributos impactam na satisfação dos consumidores chineses na compra de produtos agrícolas via *streaming* durante a pandemia da COVID-19, enfatizando as estratégias inovadoras de marketing e sua relevância no contexto pandêmico.

Metodologia: Abordagem quantitativa, descritiva e exploratória, por meio de uma pesquisa (n=257).

Originalidade: Trazemos a importância de abordagens inovadoras, como o *streaming*, para enfrentar os desafios enfrentados pelos fornecedores agrícolas tradicionais e estabelecer conexões efetivas entre oferta e demanda.

Principais resultados: A credibilidade da marca, características dos *streamers*, elementos relacionados à ambientação da transmissão e às promoções promovidas nas *lives* impactam na percepção de satisfação dos consumidores chineses.

Contribuições teóricas: Este estudo contribui para a compreensão do fenômeno da utilização das mídias sociais, especialmente streaming, nas vendas de produtos agrícolas. Oferece *insights* teóricos sobre os fatores que influenciam o desenvolvimento desse método de vendas e enfatiza a importância da autoeficácia no uso de plataformas para compras agrícolas.

Contribuições gerenciais: O estudo constata que plataformas como TikTok e Kwai são eficazes para as vendas *online* de produtos agrícolas. São fornecidos insights valiosos para agricultores e produtores interessados em utilizar o streaming nas mídias sociais como um canal direto de vendas. No Brasil, essas estratégias têm potencial aplicabilidade no mercado local.

Palavras-chave: Produtos Agrícolas; Inovação orientada para sustentabilidade; Mídia Social; Consumo sustentável; Comportamento do Consumidor

INNOVACIÓN EN EL AGRONEGOCIO: ESTRATEGIAS DE TRANSMISIÓN EN VIVO COMO HERRAMIENTA DE VENTAS DE PRODUCTOS AGRÍCOLAS EN CHINA

Resumen

Objetivo: Analizamos los atributos que impactan en la satisfacción de los consumidores chinos al comprar productos agrícolas a través de transmisiones en vivo durante la pandemia de COVID-19, enfocándonos en las estrategias innovadoras de marketing y su relevancia en el contexto pandémico.

Metodología: Se empleó un enfoque cuantitativo, descriptivo y exploratorio, utilizando una encuesta con una muestra de 257 participantes.

Originalidad: Destacamos la importancia de enfoques innovadores, como la transmisión en vivo, para enfrentar los desafíos de los proveedores agrícolas tradicionales y establecer conexiones efectivas entre la oferta y la demanda.

Principales Resultados: La credibilidad de la marca, las características de los presentadores en vivo, los elementos relacionados con el entorno de la transmisión y las promociones realizadas durante las transmisiones en vivo impactan en la percepción de satisfacción de los consumidores chinos.

Contribuciones Teóricas: Este estudio contribuye a la comprensión del fenómeno del uso de las redes sociales, especialmente las transmisiones en vivo, en las ventas de productos agrícolas. Ofrece perspectivas teóricas sobre los factores que influyen en el desarrollo de este método de ventas y enfatiza la importancia de la autoeficacia en el uso de plataformas para compras agrícolas.

Implicaciones Gerenciales: El estudio confirma la eficacia de plataformas como TikTok y Kwai para las ventas en línea de productos agrícolas. Ofrece ideas valiosas para agricultores y productores interesados en utilizar las transmisiones en vivo en las redes sociales como un canal de ventas directo. En el contexto brasileño, estas estrategias tienen un potencial significativo para aplicaciones en el mercado local.

Palabras Clave: Productos Agrícolas; Innovación Orientada a la Sostenibilidad; Redes Sociales; Consumo Sostenible; Comportamiento del Consumidor.

1 Introduction

The advance of technology, especially mobile internet, has not only transformed the way information is transmitted but has also exerted a significant influence on the structure of the physical product market, as well as on producers' business channels. Commercial transactions have undergone continuous change and innovation (Wang, 2018).

In China, the COVID-19 outbreak in early 2020 damaged traditional distribution channels for agricultural products, leading to a situation where many fresh products from rural areas could not be marketed in a conventional way. In this context, live broadcasts of agricultural products provided an effective connection between supply and demand, mitigating the challenges faced by farmers in selling their products (Xiong et al., 2021). In addition, these live streams have paved the way for the development of new input marketing strategies.

In the first quarter of 2020, the number of live streams related to agricultural products on the platform reached 1.4 million internet users (Taobao, 2020). Online sales of agricultural products in China reached 575 billion Yuan (R\$480 billion) in 2020 (Shao et al., 2021). In 2021, 43.92% of Chinese internet users obtained information about agricultural products mainly through online platforms, of which 38.4% were obtained through live broadcasts (iiMedia Research, 2020). Online sales of agricultural products in the country reached 422.1 billion Yuan in 2021, while rural online sales totaled 2,050 billion Yuan, representing an increase of 14.23% compared to 2020 (Bai, 2022).

There seems to be an entrepreneurial trend emerging in the Chinese rural scene, exploring direct sales to end consumers. In her article, Xu (2021) presents the case of a farmer she interviewed who, before live broadcasts, used digital means to sell through a program on WeChat, the most widely used social network in China, obtaining approximately 100 orders a day. With the adoption of live broadcasts, this figure jumped to 50,000 orders per broadcast, resulting in a monthly turnover of nine million yuan in sales. This scenario has seen a reversal in China's rural migration movement, with 54% of rural streamers being identified as *fanxiang qingnian*, or "returning youth", indicating the return of these young people to the countryside after trying to find jobs in the cities.

To cope with the transformations brought about by this new channel, apps such as JD.com and Alibaba quickly developed initiatives to incorporate rural content into their platforms, taking advantage of the live streaming model, recognized for its high profitability and growing popularity (MIT, 2020). These companies helped farmers set up stores on their

platforms, simplified the interfaces to make them more intuitive and user-friendly, and used their logistics structures to deliver products directly to buyers' homes.

Kang et al. (2015) state that consumers now expect greater interaction and engagement from sellers, especially in e-commerce environments. The expectation that consumers will simply go to a sales page and decide to make an active purchase is no longer realistic (Kang et al., 2015). Live broadcasts on video platforms or sales channels allow for greater interaction and engagement with the consumer (Wohn & Freeman, 2020). In addition, these broadcasts provide a relaxed and entertaining experience for the audience, creating a virtual relationship between the audience and the presenter or streamer (Hamari & Sjöblom, 2017).

In China, streamers can be professionals hired by companies for specific broadcasts, or in many cases, farmers themselves. They present products such as fruits, grains, flowers and vegetables, share information about preparation, provide recipes and describe aromas and flavors during the live sessions, which usually last one to two hours. Figure 1 illustrates the interface of a live broadcast as described in this study. Interested consumers can purchase directly through the app, using payment methods such as WeChat and Alipay, without the need to fill in payment information, just the delivery details.

Figure 1

Live on Chinese TikTok showing cherries



Source: Screenshot from TikTok live. Note: Image rights authorized for use in this article.

Given this scenario of live streaming in China and the sales of agricultural products through it, it has become crucial to carry out a study on consumer behavior to understand which variables influence the purchase of agricultural products through this medium. Although there has been research into consumer purchasing behavior in online stores or live streaming in China, which is already considered a common form of marketing in the country, with an expected annual growth of 58.3% over the next three years (iResearch, 2021), until November 2020, there was no specific study investigating agricultural products in this context.

This manuscript seeks to differentiate itself by presenting data from a market survey carried out in China, exploring the habits and preferences of the population when watching live broadcasts for the sale of agricultural products. This article aims to answer the following research question:

RQ: What attributes impact on Chinese consumers' satisfaction when buying agricultural products via lives?

In addition to the central research question, this paper seeks to map the characteristics of the main groups of consumers who buy agricultural products via live broadcasts in China, the main purchasing channels and what impact the characteristics of the streamers, the products, the promotions and the scenarios of the live sessions have on this perception of satisfaction.

2 Theoretical Framework

The Creative Economy refers to applying creative ideas to produce economically valuable goods and services, using intellectual capital as a raw material (Marchi, 2014). The Creative Economy proposes a theoretical approach to economic impact (generating income, jobs and exports), connecting cultural, social, technological and economic aspects. Its contribution is significant for innovation and the sustainable development of companies, entire segments and society (Barakat et al., 2022).

During the COVID-19 pandemic, the world searched for viable solutions allowing governments, organized civil society and all other stakeholders to devise sustainable strategies during the lockdown period (Barakat et al., 2022). This article looks at the capacity of the Creative Economy to transform ideas into products, services and initiatives that met the demands of the Chinese agricultural sector during the period analyzed. In this chapter, the constructs analyzed in this paper are conceptualized.

2.1 COVID-19 and online consumption

The COVID-19 pandemic has imposed prolonged social isolation, raising questions about its impacts on mental health, notably on levels of stress, anxiety and depression (Ornell et al., 2020). Fear, in this context, has emerged as a central component, contributing significantly to high levels of stress and anxiety (Bitan et al., 2020).

In the retail sphere, studies have shown that fear related to COVID-19 has directly affected consumers' purchasing behavior (Eger et al., 2021). The pandemic was perceived as an adverse scenario, shaping people's resilience and vulnerability, influencing their choices during the purchasing process (Milakovic, 2020). Faced with the inherent risks, consumers meticulously weighed their options, seeking strategies to mitigate them while making their purchases (Shiu, 2021).

This period of social isolation has led to a substantial increase in the time dedicated to electronic devices such as televisions, computers and tablets, reflecting the migration of activities to the online environment (da Silva et al., 2021). Protection measures and travel restrictions have significantly boosted online shopping, resulting in an increase of approximately 10% in transactions for end consumers (Eger et al., 2021). Many consumers have switched to digital shopping, valuing the security and convenience of purchasing products from the comfort of their homes. This change in consumption patterns, characteristic of periods of crisis, has occurred across the board (Kirk & Rifkin, 2020; Sheth, 2020).

In this online consumption scenario, there has been a transition from a passive culture, where users were mere spectators, to a participatory culture, where active engagement gains prominence, based on creativity and interaction, translating into sharing (Munaier, 2021). In this context, content producers seek to provide relaxed and co-creative experiences, building a platform for psychological identification with the audience, especially meeting the needs of young people in a new online environment (Gao, 2019; Munaier, 2021).

The platforms most used by Chinese users to watch live broadcasts include apps such as TikTok (www.tiktok.com) and Kwai (www.kwai.com), as well as shopping platforms with integrated live broadcast channels, such as Alibaba's Taobao (<https://world.taobao.com>), and video content streaming apps with live broadcast channels, such as Tencent Video (<https://v.qq.com/>) and Aiqiyi (<https://www.iq.com/>).

The specific reasons driving viewership and purchases on TikTok and Kwai are "ease of purchase" and "affordability", both of which are of paramount importance to users (Quest

Mobile, 2022). In March 2022, Kwai reached a daily active user base of 336 million in China, with an average of 108.3 minutes of daily use per person. On TikTok, the number of daily active users reached 546 million, with an average of 109.1 minutes of daily use per person. Surprisingly, more than 55% of users watch live broadcasts daily, and more than 98% watch at least once or twice weekly (iResearch, 2021). Regarding viewing time, 25% of users watch for more than an hour in a single session, and an impressive 70% watch for more than 30 consecutive minutes (iResearch, 2021). These statistics highlight the depth of user engagement in these digital environments, illustrating the relevance and impact of these platforms in the contemporary online consumption scenario.

2.2 Age, Income and Price

Age, income and price are sensitive elements in consumption (Munaier, 2021). According to information from the China Internet Network Information Center (CNNIC, 2022), the generations born in the 1980s and 1990s are very important for online shopping.

According to data from China's National Bureau of Statistics, Disposable Personal Income is understood as the income remaining after income tax, personal pension contributions and accounting subsidies have been deducted. This amount corresponds to the portion of total cash income that a resident family has available for daily expenses. In 2022, according to China's National Bureau of Statistics, in the first half of the year, the per capita disposable income of national residents was 18,463 Yuan (approximately R\$14,770 per year), equivalent to around 1,538 Yuan per month (R\$1,231 per month).

Also relevant is the influence of price perception on (re)purchase intention. According to Ferrand et al. (2010), the perception of high prices reduces the likelihood of customers buying or recommending products and services. At the same time, the perception of a financial advantage (promotion), such as the use of discount coupons, or taking advantage of an opportunity before the promotion ends, can boost the perception of an advantage when buying online (Munaier, 2021).

A crucial approach is payment equity: customers assess whether the current payment is in line with their normative expectations, affecting their satisfaction and the likelihood of a new purchase (Munaier & da Costa, 2021). This personal satisfaction assessment plays a key role in maintaining long-term consumer relationships (Munaier & da Costa, 2021).

2.3 Streamers and the Setting of Lives

Currently in China, various categories of individuals engage in live streaming to sell products, including professional streamers, entertainment stars, media channel presenters, agricultural producers and even government officials. These streamers provide a recurring form of content through live broadcasts, which overcome the limitations of time and space, allowing products to be displayed and offered to anyone, anywhere (Amy, 2017).

Before the advent of live streaming in e-commerce, online shopping did not offer the same sense of presence (Keeling et al., 2010; Li, 2021). The display of goods was limited to text and images, resulting in an often-impersonal experience for consumers.

Tang et al. (2022) investigate the live-streaming scene in China from the perspective of streamers, analyzing how live-streaming empowers rural Chinese women, the reasons for their participation and the challenges they face. Live streaming in e-commerce establishes "face-to-face" communication in real-time, significantly reducing the distance between sellers and consumers. This creates a socially engaging shopping atmosphere, like the experience in a physical store. Thus, it is possible to assume that the streamer's characteristics, such as gender, physical characteristics, popularity, identity and ability to express themselves count in the evaluation of consumer satisfaction.

The sense of presence refers to consumers' perception of the authenticity of the products, the environment and the people in the live-streaming room (Li, 2021). According to Cai and Wohn (2019), live-streaming sales integrate social interactions into e-commerce. In broadcasts of agricultural products, consumers can visually appreciate the products, interact in real-time with the streamer and obtain information about color, freshness, texture and even ways of preparation. Ho et al. (2020) point out that consumers trust products more when they can access visual knowledge in live streams. During these broadcasts, effective consumer interaction can satisfy their needs for immersion, engagement, interactivity and socialization (Ren, 2021).

Wang and Fan (2021) examined the suitability of e-commerce live streams for "green" agricultural foods, analyzing aspects such as seasonality, place of production and sustainability. Their study revealed a positive correlation between agricultural characteristics and broadcast technology elements. In addition, research such as that by Zhang et al. (2020) investigates the impact of live broadcasts on online purchase intention, while Kang et al. (2015) explores the technology used in real-time communication for digital customer service in e-commerce in general. These studies show how direct real-time communication through chats during live

broadcasts creates a feeling of helpfulness and trust, encouraging consumers to carry out transactions. Fan et al. (2019) also corroborate these findings by analyzing the interaction between shoppers and live-streamers, where consumers send text messages and receive direct responses during live broadcasts.

2.4 Trust in the brand

Brand trust is an extremely important element for consumers when purchasing (Song et al., 2019). Brand reputation is a valuable competitive advantage for businesses, including in the agricultural products sector (Munaier et al., 2022). American economist Thomas Sowell (2015) points out that brands efficiently optimize limited consumer knowledge, encouraging producers to compete on both quality and price. By representing a symbol for the consumer, brands make it easier to understand the quality of the product, providing a more accessible and informed choice for buyers, as brands seek to maintain a standard and reputation in the market.

E-commerce live streams, carried out in special collaboration between a specific brand and a streamer, not only offer an opportunity for new consumers to become familiar with the brand but also provide a space for current consumers to interact with the brand and purchase its products (Pinheiro et al., 2019). In addition, it is possible to believe that the consumer feels more secure in purchasing the product, trusting that their financial data will be safe and that there will be an adequate after-sales channel to deal with unsuccessful experiences. The experience of being neglected in the face of an unsuccessful experience makes consumers want to stop doing business with the supplier (Munaier & Las Casas, 2019).

It is essential to consider an essential feature of the Chinese agricultural market: the Geographical Indication (GI), which not only informs about the place of production but also reveals crucial distinctions about the quality of the specific product compared to similar products (Jin, 2022). Given the perishable, fresh and cultivated nature of agricultural products, it is imperative that sellers implement robust guarantees. This includes carefully selecting products based on quality, as well as storing and packaging in suitable environments (Sergio, 2007). In addition, after the purchase, it is essential to ensure prompt delivery in optimal conditions to preserve the quality of the product (Zhou, 2016). Such measures are crucial to establishing consumer trust and ensuring ongoing customer satisfaction.

3 Method

The method used in this study was quantitative descriptive and exploratory (Hair Jr et al., 2014). In live broadcasts, an online questionnaire was used to gain in-depth insights into Chinese consumers' behavior towards agricultural products. The quantitative approach was chosen because of its ability to incorporate collected historical data and not just structured responses (Gil, 2002).

The questionnaire (Tab. 1) was designed with 23 questions, in addition to demographic questions and questions about the use of the main applications used, as well as the frequency of viewing live broadcasts. The dependent variable (DV) was "How important is this attribute to your satisfaction when buying agricultural products via live streams?" All items were measured on a five-point Likert scale, with 1 being the lowest and 5 the highest.

Three tests were carried out using IBM SPSS 22 software: 1) the Exploratory Factor Analysis, performed using the principal components method with Varimax rotation, observing the behavior of the items of each construct employing Bartlett's test of sphericity ($p < 0.001$) and the Kaiser-Meyer-Olkin (KMO) test, aiming for external load ≥ 0.7 ; 2) the Cronbach's alpha reliability test was carried out on the main components, aiming for $\alpha \geq 0.7$, for their acceptability as a construct; and 3) linear regression with the "stepwise" method to identify which constructs have an impact on VD.

3.1 Population and Sampling

To achieve the objectives of this study, an online questionnaire was carried out, and disseminated on Chinese social platforms such as Tencent's WeChat (<https://weixin.qq.com/>), using a cross-sectional design (Malhotra et al., 2012). The sample consisted of ordinary consumers living in the People's Republic of China, who met the criterion of having made at least one purchase of agricultural products on live broadcasts. The final sample included 257 respondents. It is worth noting that the sampling was convenience and non-probabilistic, aiming to capture the perspective of consumers involved in these specific transactions (Hair Jr et al., 2014).

4 Discussion of results

4.1 Descriptive section

People from different socio-economic and demographic backgrounds in China contributed to the survey. The questionnaire was answered by 257 people in the country who had already made at least one purchase of agricultural products via live broadcasts.

Regarding sex at birth, 55.64% of the sample was female and 44.36% male. The results obtained align with the distribution of sex at birth of users observed in Alibaba's annual "2020 Taobao Live New Economy Report" (2020), where users are mostly female. Regarding the respondents' ages, in the under-18 age group, 25 people responded, and the predominant age group was 18 to 30-year-olds (64.98%; n=167). There were 45 people aged between 31 and 40, and 20 people over 40.

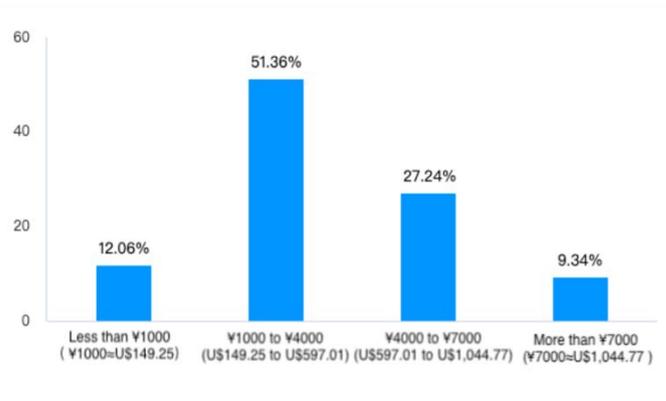
Although all age groups had respondents, the conclusions of this survey can be better directed toward the young public, between the 80s and 90s generation. These two age groups already have a certain amount of purchasing power and find it easier to accept change. They are proficient in operating some smart devices. These characteristics are directly aligned with the characteristics of online consumer groups. And those born between 1980 and 1995 are the ones who buy the most online. These two generations are more active online and represent most survey respondents.

The majority of survey respondents usually watch lives through apps focused on video broadcasts, such as TikTok and Kwai (73.93%). Apps focused on online shopping came in second (42.02%).

Among the survey samples, from the point of view of the level of monthly disposable income, they are mainly concentrated at 1,000-4,000 Yuan (between R\$800 and R\$3,200), representing 51.36%. They also fall within the predominant age distribution and belong to the consumption level of the young group. Respondents with a monthly disposable income of between 4,000 and 7,000 Yuan (R\$3,200 to R\$5,600) represent 27.24%, and the remainder, below 1,000 and above 7,000 Yuan per month, represent relatively small proportions of 12.06% and 9.34% respectively. Income and its relationship with age groups are shown in Fig.2 and Fig.3.

Figure 2

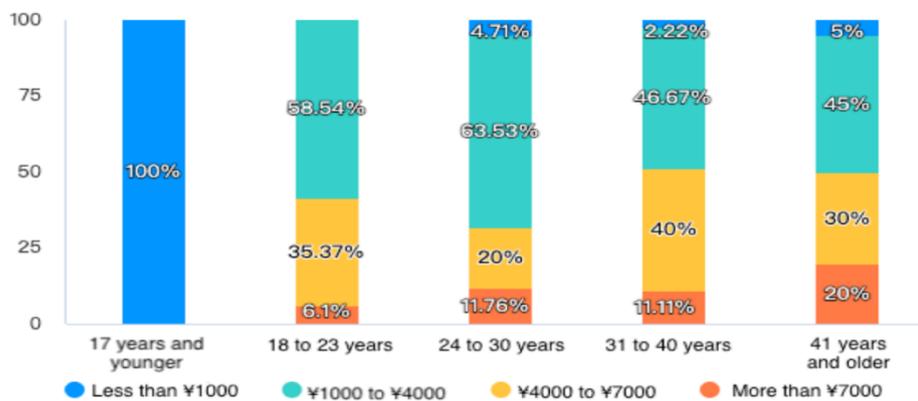
Monthly disposable income



Source: Prepared by the authors based on the survey results

Figure 3

Monthly disposable income by age group

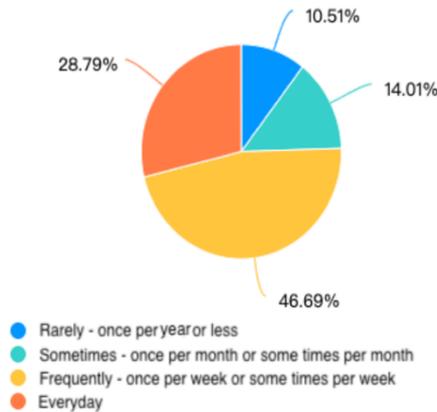


Source: Prepared by the authors based on the survey results

Frequent viewing of live streams seems to be a characteristic of this audience that consumes this type of content, as can be seen in the results obtained (Fig.4): 28.79% of the participants in the survey watch live streams related to agricultural products daily, 46.69% of the participants watch frequently, once or more a month or several times a week.

Figure 4

Regularity with which you watch lives about agricultural products

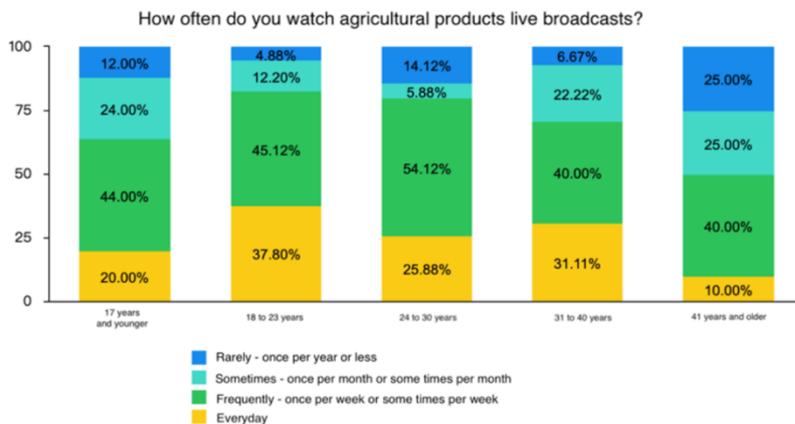


Source: Prepared by the authors based on the survey results.

As shown in Figure 5, those who watch most regularly are young people between 18 and 30. Compared to traditional online shopping, such as sales sites or sales through online ads, e-commerce live streaming has unique advantages and characteristics. As well as being an easy way of demonstrating products and having relatively long access times for the user, it also allows consumers to participate and interact; they can ask questions directly to the presenter, create reactions and sometimes participate in the broadcast via video. This direct interaction creates a feeling of closeness between the user and the presenter and can strongly influence their purchasing decision (Fan et al., 2019).

Figure 5

Age group and regularity of purchase



Source: Prepared by the authors based on the survey results

4.2 Analytical section

At this stage, the data collected was processed using statistical techniques to explore possible differences between the averages obtained.

As this was an exploratory study that sought to identify, based on the literature consulted, which attributes of lives had the greatest impact on Chinese consumers' satisfaction when buying agricultural products, a set of 23 items was drawn up, in addition to the dependent variable and demographic questions.

Exploratory factor analysis (EFA) and reliability analysis were conducted to identify whether the items were adequately grouped to form constructs with convergent validity and explanatory power. The results are shown in Table 1 and the premises of the technique were met.

Table 1

Questionnaire used: "How important is... to your satisfaction when buying agricultural products via Live?"

References	Code	Item	Load	Construct
Ferrand <i>et al.</i> (2010; Ho <i>et al.</i> (2020).	Origin	Product origin	0.90	Origin KMO=0.82 (p≤0.00) Variance=80% α=0.91
	Price	Price	0.77	
	Delivery	Delivery time	0.78	
	Product_Display	Being able to see the product during the live	0.75	
Jin (2022); Munaier <i>et al.</i> (2022); Song <i>et al.</i> (2019).	Brand_Reputation	Brand Reputation	0.85	Brand Credibility KMO=0.88 (p≤0.00) Variance=68% α=0.88
	Broad_Followers	Number of live followers	0.80	
	Broad_Influencers	Celebrities present at the live	0.77	
	Product_Aftersales	After-sales products	0.85	
Amy (2017); Cai & Wohn (2019); Li (2021); Wang & Fan (2021).	Broad_Scenario	Live scenario	0.95	Transmission KMO=0.80 (p≤0.00) Variance=78% α=0.91
	Broad_Atmosphere	Live atmosphere	0.85	
	Broad_Duration	Live duration	0.87	
	Broad_Period	Live period	0.87	
Cai & Wohn (2019); Fan <i>et al.</i> (2019); Ren (2021); Tang <i>et al.</i> (2022).	Stream_Expression	Streamer expression	0.95	Streamer KMO=0.87 (p≤0.00) Variance=72% α=0.92
	Stream_Gender	Streamer Genre	0.84	
	Stream_Physical	Streamer's physical characteristics	0.80	
	Stream_Popularity	Streamer popularity	0.85	
	Stream_Explain	Streamer's explanation of the product	0.79	
Munaier (2021); Munaier & da Costa (2021).	Promotion_Brand	Brand promotion	0.94	Promotion KMO=0.81 (p≤0.00) Variance=78% α=0.90
	Promotion_SalesTime	Limited time sale	0.86	
	Promotion_Stok	Limited stock	0.85	
	Promotion_Coupons	Special coupons for live	0.87	

Source: The authors, based on the literature consulted and data collection.

The first construct analyzed refers to the origin of the product, its price, delivery time and the possibility of seeing the product on sale during the live. A more utilitarian element can be identified in this construct. The total explained variance in a single principal component was 80%. A new variable was created from the averages of these four items. Given that, in the EFA, the highest extracted load came from the "origin" item, this name was given to the construct.

The second set of items includes elements of building and maintaining a brand's reputation, from the credibility of the brand itself to the experiences of the after-sales service provided by the supplier. In addition, one item includes the presence of famous people in the live and the number of followers of the live, which brings greater perceived credibility. The five items were combined into a single component, with 68% of the total variance explained. A new variable was created from the averages of these items. The construct was called Brand Credibility.

The third construct, made up of four items, contains a set of attributes related to the live itself. The setting, the perceived atmosphere, the duration and the period during which the live takes place formed the Transmission construct. The items in this construct were ordered into a single principal component, explaining 78% of all the variance.

The Streamer construct is made up of six items. "Streamer's expression" (voice, tone, intonation and gesticulation), "streamer's gender", "streamer's physical characteristics" (appearance, style, facial details), "streamer's popularity" (recognition, fame or influence on the internet), "streamer's explanation of the product" (way in which the streamer transmits information about the product), "streamer's identity" (streamer's background or social characteristics, such as: profession, field of work, education, place of birth) were organized into a single component, capable of explaining 72% of all the variance.

Finally, the promotional attributes used in the lives that deal with opportunity, promotion appreciation and feeling of advantage or scarcity also formed a construct. The average of the four items formed the Promotion construct, which was able to explain 78% of all the variance extracted.

It is now important to look at the dependent variable. The respondent was asked, on a scale of 1 (not at all important) to 5 (very important), how important is this attribute to their satisfaction when buying agricultural products through lives?

A linear regression was then performed using the "stepwise" estimation technique, which consists of selecting variables for inclusion in the model that best predict the dependent variable (Hair Jr et al., 2014). The Credibility ($\beta=0.28$; $t=4.36$; $p=0.00$), Streamer ($\beta=0.26$; $t=4.27$; $p=0.00$) and Transmission ($\beta=0.20$; $t=3.52$; $p=0.00$) constructs were included in the model. The Promotion construct ($\beta=0.12$) had $t=1.961$ and $p=0.051$ and was a candidate for exclusion. However, it was decided to keep it in the final model, since it is at the limit of acceptability: $t \geq 1.96$ and $p \leq 0.05$ (Hair Jr et al., 2014). The Origin construct was excluded from the model ($\beta=0.76$; $p=0.45$). The R^2 obtained in the model was 30% and the Durbin-Watson test=1.91.

Thus, it is possible to say that the credibility conveyed in the live, the characteristics of the streamer and the promotions promoted in the broadcasts all have an impact on the importance of consumer satisfaction when purchasing agricultural products. These results are in line with the literature consulted and help to understand the phenomenon observed in the Chinese market of consuming agricultural products via live streams.

5 Final considerations

From a perspective of Innovation and Creative Economy, this article sought to analyze which attributes impact the perception of satisfaction of Chinese consumers who buy agricultural products via live broadcasts.

Attributes linked to credibility are central to the consumer. The most important construct in the eyes of the consumer in terms of its impact on satisfaction ($\beta_{\text{CREDIBILITY}}=0.28$) dialogues closely with the brand management literature (Munaier et al., 2022; Sowell, 2015). Brands are a symbol that act as a beacon for consumers. Their reputation makes it easier for consumers to understand the quality of the product.

In the Credibility construct, the presence of the attributes "number of followers of the live" and "famous people present at the live" shed light on some important conclusions about the phenomenon. It seems possible to support that the number of followers of a live determines, to some extent, the level of trust that can be attached to the broadcast. This makes sense, given that broadcasts with low engagement may be due to low interest or the fact that the broadcaster is not an authority on the subject. Similarly, the presence of famous people in the live seems to transfer the traits of the "star" to the broadcast, increasing the perceived credibility of the event. These results are in line with the literature on celebrity endorsement and brand building and are an important finding for understanding the phenomenon observed.

According to Amy's (2017) findings, the availability of showing and offering products to anyone via the platform through live and sometimes recorded broadcasts enhances commercial opportunities in this new sales model. It is worth remembering that 28.79% of the survey participants said they watch live broadcasts related to agricultural products on a daily basis, and 46.69% watch them frequently, once a month or several times a week. It is therefore possible to infer that being present, with constant production of content for this audience, has a positive impact on the volume of sales made by the streamer.

The question now is: what is the role of the streamer? This research provides part of the answer: the streamer who knows how to express themselves, using the right tone of voice, and gestures, with the right appearance and style for the topic, and who knows how to explain the information about the product properly ($\beta_{\text{STREAMER}}=0.26$). These attributes are important for the communicator to be a real link between the advertised product and the consumer (Keeling et al., 2010; Li, 2021; Tang et al., 2022).

Another element is the feeling of authenticity of the products and the environment in live broadcasts (Li, 2021). In this sense, the atmosphere and setting of the live broadcast, as well as its duration and period, have an important impact on the perception of consumer satisfaction with agricultural products ($\beta_{\text{TRANSMISSION}}=0.20$). Creating the right environment, with geographical indicators (GIs) that guarantee the perception of quality and freshness of the products sold, seems to be a necessary strategy to bring about the desired atmosphere. And, of course, as long as it's true. If elements are identified that cast doubt on the veracity of the transmission, credibility could suffer significant damage. And as Munaier et al. (2022) argue, greenwashing has a negative impact on brand trust and purchase intention.

Thus, a credible brand, presented by a skilled streamer in an environment that brings the feeling of authenticity are crucial to the consumer's perception of satisfaction when buying agricultural products via streaming.

Finally, another characteristic identified in the research was the economic profile of the buyer of agricultural products via digital platforms. The relationship between income and consumption is observed in extensive literature (Munaier, 2021) and, in the case in point, there was an impact, albeit almost marginal, of appreciation of promotion on the perception of consumer satisfaction with agricultural products via lives ($\beta_{\text{PROMOTION}}=0.12$; $p=0.051$).

Of the respondents, 51.36% have a monthly disposable income between 1,000-4,000 Yuan (between R\$800 and R\$3,200) and another 27.24% between 4,000 and 7,000 Yuan (R\$3,200 to R\$5,600). One inference that can be drawn from this finding is that consumers from a lower social class, but with an income, see better opportunities in online shopping than in face-to-face shopping, perhaps because of the prices offered there.

The lower frequency of respondents with incomes above 7,000 Yuan (R\$5,600) accessing online shopping platforms for agricultural products corroborates this inference. In addition, as we have seen, elements linked to appreciation of promotion are among the main reasons for satisfaction with this purchasing model. Munaier (2021) showed that the lower the income, the greater the appreciation of promotions.

Age seems to be an important component in understanding the online buyer of agricultural products. Two-thirds (66.68%) of respondents aged between 18 and 30 access online platforms where agricultural products are sold every day. These are people who were born in the Internet age and who use apps naturally. This observation gives rise to another inference about generations and behaviors: what role does self-efficacy play in choosing the platform to buy agricultural products online?

Self-efficacy is defined as "a person's belief in their ability to perform a task" (Gist, 1987, p. 472) and, when applied to the mobile context, self-efficacy refers to the degree to which an individual believes they have the ability to perform a task using a cell phone (Mesquita et al., 2021). Ease of purchase seems to be a very important item when choosing which platform to use to buy agricultural products online. It is therefore possible to infer that the greater the self-efficacy in using apps to buy agricultural products online, the greater the adherence to the method.

5.1 Managerial implications

In managerial terms, in addition to the observations made above, it is important to note that the TikTok, Kwai and similar platforms have the greatest adherence on the part of these interviewees. They are therefore the best alternatives at the time of writing this article for those who want to start selling agricultural products online.

Extra attention can also be paid to the setting where the lives are recorded, for a better ambience and atmosphere. And in this sense, to increase the feeling of security, a good practice could be to include testimonials from people who have already bought the products, to attest to the quality, delivery time, juiciness, among other attributes that could further increase the consumer's desire to buy the products presented.

As for its application in Brazil, there are many possibilities. This work has sought to outline some management paths for brands and producers who, inspired by the Chinese phenomenon, are also starting to invest in social media lives as channels not "only" for brand awareness and personality (Munaier et al., 2022), but also for direct marketing. Some of the elements are already in place: abundant agricultural production and Brazilians' social media use behavior.

5.2 Limitations and Suggestions

The unprecedented nature of this study and its findings shed light on new avenues of research, both to advance understanding of Chinese consumer behavior, where this phenomenon has already been observed and for markets with enormous potential that have yet to be explored, such as Brazil. Given the exploratory nature of the work, although of a descriptive quantitative nature, no previously validated psychometric scales were used for the

multidimensional observation of consumer behavior, which is both a limitation and a suggestion for further research.

Future research could identify online buyers' appreciation of promotion versus face-to-face buyers and the differences in product prices in the two forms of purchase, self-efficacy as a direct or moderating variable in the choice of platform, in addition to the frequency of publications and their impact on the consumer's impetus to buy, as well as the relationship between delivery time versus perceived quality, bearing in mind that, as agricultural products tend to have shorter shelf lives, speed of delivery may have some impact on the consumer.

Another suggestion is to measure which traits of the celebrity streamer are transferred to agricultural products. Whether it's reliability and expertise, which make up the perceived credibility of the source and congruence of the endorser and the brand, or whether it's a question of aspiration group, even if the celebrity has no direct relationship with the product.

Another limitation of this article is its exploratory nature. It sought to map the phenomenon of purchasing agricultural products via streaming in China. Its theoretical contribution could be deepened from different theoretical lenses not present in this article. This limitation also points to opportunities for future work. Under the lens of Stakeholder Theory, we can advance our understanding of Network Theory and GIs.

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