

Research on Digital Marketing Strategies Based on Live Streaming E-commerce: A Case Study of the Lily Industry in Northern Fujian, China

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Abstract: This study explores the influence of live-streaming e-commerce on the development of the lily flower industry in northern Fujian, a region facing challenges in market expansion and supply chain optimization. Live-streaming has emerged as a significant driver of sales and brand recognition across various industries, yet its impact on the floriculture sector remains under-researched. Through an online survey of 277 consumers, this study examined user engagement with live-streaming platforms, product awareness, and purchasing preferences for lily flowers. The data was analyzed using regression techniques to assess the factors that contribute to the success of live-streaming in enhancing both sales and brand visibility. Results indicate that live-streaming e-commerce plays a vital role in expanding the market reach and consumer engagement for lily products. However, further improvements are required in supply chain management and customer service to fully realize its potential. By focusing on content optimization, streamlining logistics, and enhancing brand image, the lily flower industry in northern Fujian can achieve long-term sustainable growth through live-streaming e-commerce.

Keywords: Live-streaming E-commerce; Lily Flower Industry; Supply Chain Management; Consumer Behavior; Digital Marketing Strategies

1. Introduction

In recent years, live-streaming e-commerce has rapidly emerged as a new digital marketing channel on a global scale. Data shows that in 2023, the total scale of live-streaming e-

commerce in China surpassed 4.9 trillion RMB, reflecting a year-on-year increase of 35.2%, which underscores the immense potential and influence of this industry^[1]. China's live-streaming e-commerce has become a vital tool for various industries to boost sales and enhance brand recognition. Platforms like TikTok, Kuaishou, Taobao, and JD.com have significantly driven sales growth for numerous brands through live-streaming activities, making this a hallmark of new consumption models. As a key economic pillar of the region, the lily flower industry faces challenges in market promotion and sales channel expansion. The live-streaming e-commerce model is expected to address these issues and enhance the industry's competitiveness.

As an essential component of the digital economy, live-streaming e-commerce can rapidly integrate markets, bringing together economic activities dispersed across different locations through digital platforms, thereby optimizing resource allocation over a wide spatial area^[2]. Live-streaming e-commerce has evolved from its initial experimental phase to the current stage of large-scale application, with market capacity and user base continuously expanding, leading to explosive growth in market size. Despite facing various challenges and uncertainties, the industry as a whole continues to demonstrate robust growth, with market size projected to reach 8.1 trillion RMB by 2026^[3]. Currently, the trend of diversification in China's live-streaming e-commerce is becoming increasingly prominent. Not only are merchants and internet influencers engaging in live-streaming sales, but celebrities and government officials promoting local agricultural products have also emerged,

enriching the content and formats of live-streaming commerce. With the rapid growth of the live-streaming e-commerce market and the significant increase in the share of flower e-commerce sales, the prospects for selling flowers through live-streaming are promising.

2. Development Status

Over the course of more than 40 years of reform and opening up, China has become the world's largest producer, a key trader, and a significant consumer of flowers. The country's flower cultivation area spans approximately 1.5 million hectares, employing over 5 million people^[4]. China's flower industry is transitioning from a phase of rapid growth to one of high-quality development, achieving significant progress in areas such as product supply, production layout, market circulation system construction, technological innovation, flower culture promotion, and international cooperation. The flower industry plays an increasingly important role in promoting rural revitalization, ecological civilization construction, and the development of a Beautiful China. According to data from the China Flower Association, in 2022, the total scale of the national flower retail market reached 198.68 billion RMB, with the e-commerce retail market for fresh flowers rising to 108.68 billion RMB, accounting for 54.6% of the total market^[4]. As the scale of the flower e-commerce industry expands, it not only reflects consumers' high acceptance and reliance on the e-commerce model for flowers but also highlights the significant role that e-commerce plays in the flower industry.

2.1 Current Development Status of the Lily Industry in Northern Fujian

The favorable climate and soil conditions in northern Fujian have made it a leading lily production area in China. The local government has actively promoted the high-quality development of the lily industry, leading to a cultivated area of 12,000 mu by 2022. With an annual production of over 80 million stems and a total output value of 630 million yuan, the lily industry has significantly contributed to the region's social and economic development^[5]. Building on these achievements and leveraging a diverse range of lily varieties, the lily industry in northern

Fujian has secured a significant position in the market and earned the title of "China's Lily Hometown". By integrating live-streaming e-commerce with the region's lily industry and utilizing relevant live-streaming sales techniques, the industry can enhance consumer interaction, further boost sales efficiency and market visibility, and improve the overall purchasing experience and consumer trust^[6].

2.2 Research on the Application of Live Streaming E-commerce in the Lily Industry in Northern Fujian

Currently, research on the application of live streaming e-commerce in the lily industry in northern Fujian is relatively lacking, particularly in the systematic exploration of its empowering effects and existing challenges. To address this gap, this study will first conduct a SWOT analysis to assess the advantages, disadvantages, opportunities, and threats of integrating live streaming e-commerce with the lily industry in this region. Subsequently, through survey questionnaires and data analysis, the study will systematically explore the current application status and empowering effects of live streaming e-commerce in the lily industry in northern Fujian, aiming to fill the current research gap and provide theoretical support and practical guidance for the application of live streaming e-commerce in the floral industry.

2.3 SWOT Analysis of Live Streaming E-commerce on the Lily Industry in Northern Fujian

2.3.1 Strengths

Live streaming e-commerce brings numerous advantages to the lily industry in Northern Fujian. Firstly, it overcomes geographical limitations by enabling lilies to be sold nationwide and even overseas. Consumers can purchase lily products through online platforms, significantly expanding the market reach^[2]. Live streaming e-commerce offers real-time interaction, allowing farmers or experienced streamers to directly engage with consumers, clearly showcase different lily varieties, and provide real-time floral arrangement, pairing, and care advice, thereby enhancing consumer confidence and satisfaction^[6]. Moreover, the marketing costs of live streaming e-commerce are relatively low. Promoting through social media is more

cost-effective and has better reach compared to traditional marketing methods^[7].

2.3.2 Weaknesses

Currently, in Northern Fujian, there is a relative scarcity of streamers with specialized knowledge in floriculture. The varying levels of expertise among these streamers often result in a lack of professional flower-related knowledge, which hinders their ability to provide satisfactory answers to consumers. In some cases, streamers may exaggerate during broadcasts, which can significantly erode consumer trust^[8]. Additionally, live-streaming e-commerce imposes new demands on the supply chain, particularly for floral products that require cold chain logistics to maintain freshness and quality. Currently, the domestic cold chain logistics infrastructure in terms of coverage and facilities is insufficient, making it difficult to fully meet market demands^[9]. Lastly, live-streaming e-commerce places high demands on network and video equipment, which some small and medium-sized floral businesses may find challenging to afford, thereby impacting their participation and competitiveness.

2.3.3 Opportunities

The current national government has introduced several policies to support and encourage the development of the lily flower industry in northern Fujian. The National Flower Industry Development Plan (2022-2035) explicitly states that the government will further promote research and development investment and independent innovation in the flower industry, driving the sector's digital transformation and upgrading. The plan aims to accelerate the deep integration of online services and offline experiences, fostering the growth of new retail, new business formats, and innovative models^[4]. With the advent of a new generation of digital and AI-powered tools, AI hosts—who offer lower costs, greater efficiency, and longer continuous live-streaming hours—are expected to attract more consumer attention, enhancing live-streaming efficiency and creating new possibilities for flower industry live-streaming^[10].

2.3.4 Threats

The challenges faced by the lily flower industry in northern Fujian within the live streaming e-commerce sector are significant. The current live streaming e-commerce market is highly competitive, and the flower live

streaming industry in northern Fujian has started relatively late, leading to insufficient branding and incomplete service infrastructure. In terms of transaction services, the industry must compete with more established flower markets, such as the DouNan Flower Market in Yunnan Province. In terms of product competitiveness, it faces challenges from other major lily production areas like Lanzhou in Gansu, Longshan in Hunan, and Yixing in Jiangsu. Additionally, the live streaming e-commerce sector is prone to issues such as false advertising and fraud. Without proper regulation, these risks could lead to a crisis of consumer trust, potentially affecting the overall health of the market.

3. Methodology and Statistical Results

To further analyze consumers' perceptions and experiences with live-streaming e-commerce, this study employed a questionnaire survey. The survey design included aspects such as consumers' basic information, live-stream viewing habits, preferences for product categories, reasons for purchase, and trust in live-streamed products. A total of 300 questionnaires were distributed, with 277 valid responses collected online. Due to the advantages of online surveys—efficiency, low cost, and broad coverage—this method is particularly suitable for gathering behavioral data from internet users, allowing access to specific active online user groups, thus improving the representativeness and reliability of the sample^[11].

Table 1. Gender and Age Distribution

Parameter	Attribute	Sample Size	Percentage
Gender	Male	68	24.47%
	Female	209	75.53%
Age	Under 18	28	10.13%
	18-29	161	58.23%
	30-49	75	27%
	50+	13	4.64%

As the questionnaire was distributed online, the elderly respondents (aged 50 and above) comprised only 4.64% of the total sample, while the 18-49 age group accounted for 85.23% of the sample (Table 1.). Despite this, studies have shown that the 26-40 age group constitutes the primary demographic for online shopping. Therefore, the age distribution of the sample in this survey research is well-suited to accurately reflect the real behaviors of the online shopping consumer group^[12].

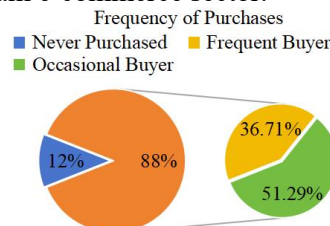
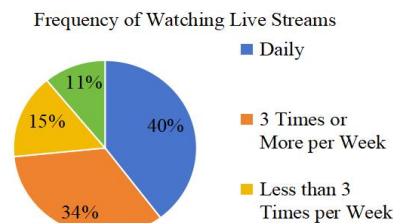
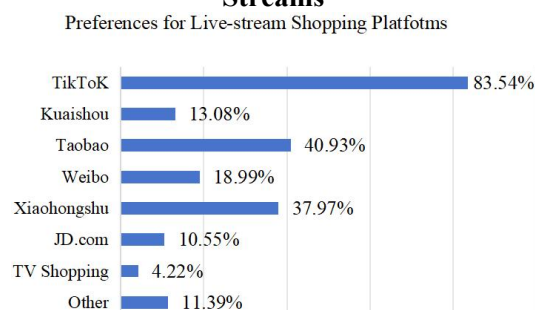
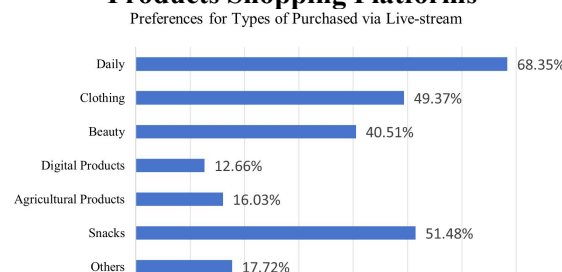
Table 2. Purchase Intention and Trust in Live-Streamed Products

Parameter	Attribute	Sample Size	Percentage
Have Purchased Live-streamed Products	Yes	244	88%
	No	33	12%
Trust in Products Purchased via Live-stream	Yes	205	73.84%
	No	72	26.16%
Intention to Continue Purchasing via Live stream	Yes	237	85.65%
	No	40	14.35%
Have Purchased Flowers via Live-stream	Yes	86	35.27%
	No	158	64.73%

Based on the survey results, 73.84% of respondents expressed trust in products purchased via live-streaming, and 85.65% were satisfied with their purchases and indicated a willingness to continue buying through this mode (Table 2.). In terms of flower purchases, 35.27% of respondents reported having bought flowers through live-streaming e-commerce, signifying a general recognition of the value of this shopping model, though room for further development remains. Moreover, as shown in Figure 1, 88% of respondents have purchased products through live streams, with 51.29% making occasional purchases and 36.71% frequent purchases. The data highlights that the majority of consumers accept the live-stream shopping model, showing high levels of trust and satisfaction with their purchases. Additionally, over one-third of respondents exhibit a strong preference for this shopping method. Regarding live-stream viewing habits, 39.66% of respondents watch live streams daily, 33.76% watch three or more times per week, while only 10.97% rarely or occasionally encounter live streams, indicating a high viewing frequency among most respondents, as shown in Figure 2.

Additionally, the survey results indicate that among the preferred live-streaming platforms, TikTok is the most popular, with a preference rate of 83.54%, followed by Taobao and Xiaohongshu, at 40.93% and 37.97%, respectively, as shown in Figure 3. This data suggests that new media platforms with strong social attributes, such as TikTok and Xiaohongshu, can attract significant traffic and have a greater advantage in live-stream e-commerce compared to traditional e-commerce platforms. In terms of product categories, consumers most frequently purchase daily necessities through live-stream shopping,

accounting for 68.35%, while flower-related agricultural products only account for 16.03%. These data suggest that while consumers tend to purchase daily necessities through live-streams, their willingness to purchase agricultural products, particularly flowers, is relatively high at 35.27%, as shown in Figure 4. This indicates that flowers, as a distinctive category of agricultural products, have unique value and development potential within the live-stream e-commerce sector.

**Figure 1. Frequency of Purchases****Figure 2. Frequency of Watching Live Streams****Figure 3. Preferences for Live-Stream Products Shopping Platforms****Figure 4. Preferences for Types of Purchased via Live-Stream**

Moreover, the Figure 5. shows that the top three factors influencing consumers' decisions to purchase products through live streaming are product demand, product

uniqueness, and price discounts. Conversely, the top three factors deterring consumers from purchasing via live streaming are concerns about product quality, worries about after-sales service, and a lack of need for the product. These insights suggest that for flower products to succeed in live streaming marketing, it is crucial to focus on stimulating consumer demand, clearly highlighting product uniqueness, and offering competitive pricing. Moreover, if hosts or platforms can effectively convey the quality of the products and provide reliable after-sales service, it can further attract consumers and drive successful transactions.



Figure 5. Reasons for Purchasing Products via Live-Streaming

Table 3. Regression Analysis

	X	B	t	Beta	VIF	SE	P
Y	Constant	0.416	3.2	-	-	0.13	0.002
	X ₁	-0.01	-0.226	-0.012	1.088	0.044	0.821
	X ₂	-0.004	-0.156	-0.008	1.051	0.027	0.876
	X ₃	0.364	7.998	0.457	1.198	0.046	0
	X ₄	0.099	2.705	0.167	1.395	0.036	0.007
	X ₅	0.056	2.651	0.159	1.326	0.021	0.009
R ²	0.372						
Adjusted R ²	0.358						
F	F=27.356, p=0.000						

Using SPSS software for regression analysis, the results (as shown in **Table 3.**) indicate that "trust in purchasing products via live streaming" (x_3) ($\beta=0.457$, $p<0.05$), "frequency of purchasing products via live streaming" (x_4) ($\beta=0.167$, $p<0.05$), and "frequency of watching live streams" (x_5) ($\beta=0.159$, $p<0.05$) have a significant positive impact on the dependent variable. The order of their influence on the dependent variable is as follows: trust in purchasing products via live streaming (x_3) > frequency of purchasing products via live streaming (x_4) > frequency of watching live streams (x_5). The variables "gender" (x_1) ($\beta=-.012$, $p>0.05$) and "age" (x_2) ($\beta=-.008$, $p>0.05$) do not

have a significant impact on the intention to purchase products via live streaming in the future. All variables' variance inflation factors (VIF) are below 10, indicating that there is no multicollinearity issue.

The regression analysis results show that "trust in purchasing products via live streaming," "frequency of purchasing products via live streaming," and "frequency of watching live streams" significantly influence consumers' future willingness to purchase live-streamed products, with "trust" being the most significant factor. According to the survey results, 85.65% of respondents expressed that they would continue to purchase live-streamed products in the future, indicating a positive outlook for live streaming e-commerce. Given that "trust in purchasing products via live streaming" has the most significant impact on future purchasing intentions, it is recommended that the northern Fujian lily industry focus on enhancing customer trust in its products through live streaming, such as by improving brand awareness. In conclusion, the application of live streaming e-commerce in the floral industry shows promising prospects and offers a unique driving force for growth.

4. Recommendations

As both the live streaming e-commerce sector and the floral market continue to grow, the northern Fujian lily industry has immense potential. It is crucial for the industry to capitalize on this opportunity by leveraging live streaming e-commerce to accelerate growth and increase sales. While live streaming e-commerce offers numerous advantages for the northern Fujian lily industry, there are areas that need improvement. The following recommendations aim to optimize the industry's development.

4.1 Enhance Live Streaming Content and Customer Experience

Live streaming e-commerce can significantly boost the market visibility and sales efficiency of the northern Fujian lily industry. Therefore, improving the quality of live streaming content and enhancing the customer experience is essential. The Northern Fujian Lily Industry Association, in collaboration with local government and universities with e-commerce programs, can establish live streaming e-commerce training bases. These bases can

provide advanced, shared live streaming facilities and technical support, training professional e-commerce hosts while also making these resources available to small and medium-sized floral enterprises or farmers. Additionally, incorporating AI and other advanced digital tools to optimize live streaming, enhance interactivity, and improve after-sales service can significantly increase customer loyalty and satisfaction.

4.2 Optimize Supply Chain Management

In supply chain management, lily merchants can utilize ERP and big data analytics to optimize order processing, logistics, and inventory management, improving responsiveness. The Northern Fujian Lily Industry Association and local government should actively collaborate with cold chain logistics companies to establish strong partnerships, increasing the application of advanced cold chain technology. This will ensure the quality of floral products by extending their freshness, reducing losses due to improper temperature control during transportation, and enhancing overall supply chain efficiency.

4.3 Strengthen Marketing and Brand Building

To expand the audience and increase brand influence, the northern Fujian lily industry should leverage a variety of platforms, including social media and traditional e-commerce channels. Prioritize platforms like TikTok and Xiaohongshu, which have large user bases and strong social attributes, to attract a broader consumer base. Merchants can use these platforms to publish high-quality content and host live streaming events, increasing brand exposure and recognition. Additionally, the local government can lead initiatives to collaborate with other industries or brands to host events like the "Northern Fujian Lily" cultural tourism festival. By telling the story of the "Northern Fujian Lily," these initiatives can attract visitors to flower farms, further boosting brand visibility and market competitiveness, and adding cultural and tourism value to the brand.

5. Conclusion

As live streaming e-commerce rapidly evolves, consumer acceptance and trust in this platform

continue to increase. This study has shown that live streaming e-commerce can significantly enhance the market visibility and sales efficiency of the northern Fujian lily industry. Therefore, the northern Fujian lily industry should seize this opportunity to actively leverage live streaming e-commerce platforms to boost market visibility and sales, while also optimizing supply chain management and customer service to ensure sustainable development. With the support of live streaming e-commerce, the northern Fujian lily industry is poised to achieve more efficient and widespread growth and prosperity. Future research could further explore different live streaming e-commerce models for various floral products and assess their long-term impacts, providing comprehensive guidance for the continued growth and expansion of the northern Fujian lily industry.

Acknowledgments

This paper is supported by the Fujian Provincial Education System Philosophy and Social Sciences Research Program (No. JAS23121).

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