

# Comparative Analysis of the Impact of the Live Streaming Economy on Consumer Online Consumption Behavior Before and After the COVID-19 Pandemic

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**Abstract:** This research investigates the influence of live streaming on consumer online behavior before and after the COVID-19 pandemic. The influencer economy's rise and live streaming advancements have diversified China's internet economy. COVID-19 significantly boosted e-commerce live streaming's popularity, making it a consumption hotspot. Utilizing Affective-Behavioral-Cognitive (ABC) attitude theory and Stimulus-Organism-Response (S-O-R) theory, the study designed scales and questionnaires to assess e-commerce live streaming's impact on consumer purchase intention across pandemic stages. Analyzing 710 valid samples revealed high interactivity, promotional policies, trust, content quality, and influencer professionalism positively affect purchase intention, whereas perceived risk has a negative impact. Consumer attitudes partially mediate this relationship, with significant differences observed across ages, spending levels, and platforms like Tmall Taobao and Douyin. These insights inform tailored marketing strategies and market segmentation. Keywords include COVID-19, e-commerce live streaming, and consumer purchase intention.

**Keywords:** COVID-19; E-commerce Live Streaming; Consumer Purchase Intention

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## 1. Introduction

### 1.1 Development Background of the Live Streaming Economy

With the rapid proliferation of the internet in China, as of June 2021, the number of Chinese netizens reached approximately 1.011 billion, of which online shopping consumers numbered 812 million, showcasing the tremendous potential of the digital economy. In particular, the number of e-commerce live streaming users has reached 384 million, accounting for 38.0% of online <sup>[1]</sup> shopping users, highlighting the popularity of e-commerce live streaming as a new shopping method. Against the backdrop of the COVID-19 pandemic, consumers' consumption trends of online content have gradually shifted from text and images to video formats, especially live shopping via smartphones, becoming a new consumer trend.<sup>[2]</sup> This change not only reflects the transformation of consumption patterns but also signifies the vigorous development of the live streaming economy in the era of Internet 3.0, focusing more on personalized needs and consumer experience.<sup>[3]</sup>

### 1.2 Changes in Consumer Buying Behaviour

The development of internet information technology in the 21st century has greatly propelled the emergence of new shopping methods, with the rise of live streaming giving birth to a new model of e-commerce live streaming marketing. Before and after the outbreak of COVID-19, e-commerce live streaming not only changed the way consumers purchase but also significantly affected their purchase intentions. Specifically, the enhancement of consumers' personalized demands, the expansion of channels for information acquisition, the rapid development of internet shopping platforms, and the application of big data in marketing strategies have collectively fostered significant changes in consumer behavior. Especially during the pandemic, live shopping, with its convenience and interactivity, has become an important bridge connecting consumers and products. This has not only provided consumers with a new shopping experience but also brought unprecedented growth opportunities to e-commerce platforms.

## 2. Literature Review

Building on the literature review that highlights the transformative impact of e-commerce live streaming platforms on consumer shopping behaviors, particularly in the context of the COVID-19 pandemic, this study aimed to explore the dynamics of consumer purchase intentions within the influencer economy.<sup>[4]</sup> Despite the burgeoning interest in e-commerce live streaming, evident in its rapid development since its emergence in China in 2015 and its significant prominence during the 2018 Double 11 shopping festival, scholarly examination, especially on

its effect on consumer purchase intentions, remains relatively scant. The interactivity, entertainment value, and the allure of influencers have been identified as critical factors enhancing consumer purchase intentions, prompting a deeper investigation through this study.

To address this research gap, a meticulously designed questionnaire survey was undertaken, informed by the review of existing scholarly work and research questions. The survey was structured into four main sections: screening questions to ensure relevance, demographic and live streaming behavior characteristics of participants, assessment of reasons behind purchasing products endorsed by influencers using a Likert 7-point scale focusing on six variables including "high interactivity," and "influencer professionalism," and finally, measuring intermediary and outcome variables which involved attitudes towards influencers and their recommended products as well as the consumers' purchasing inclinations.

The pre-survey phase involved an online distribution of the questionnaire, followed by a rigorous analysis of reliability and validity, affirming the questionnaire's credibility. The formal survey, leveraging platforms like Wenjuanxing along with WeChat and QQ for distribution, attracted 923 responses, of which 710 were deemed valid, marking a 76.92% validity rate. The demographic analysis revealed a predominant participation of women and young consumers, underlining the gendered and age-specific appeal of influencer live streaming shopping. Moreover, the survey uncovered a trend among consumers to follow multiple influencers, suggesting a diverse information-seeking behavior.<sup>[5]</sup>

### 3. Fundamental Principles of Structural Equation Modeling

#### 3.1 Introduction to the Model

Structural Equation Modeling (SEM) integrates multiple statistical methods to analyze and validate causal relationships, especially for latent variables. It's broadly applied in fields like social sciences and psychology, relying on theoretical hypotheses for empirical model construction.

##### 3.1.1 Model Composition and Characteristics

The structural equation model is composed of two parts: the measurement model and the structural model. The measurement model describes the relationship between latent variables and observed variables, connecting observed variables to latent variables through linear functions. The structural model explains the causal relationships between latent variables. Equations (5.1) and (5.2) demonstrate the relationship between indicators and latent variables in the measurement model, while equation (5.3) showcases the interaction between latent variables in the structural model.

##### 3.1.2 Measurement Model Equations

Equation (5.1): The relationship between the manifest variable  $y$  (endogenous variable) and the latent variable  $\eta$  (endogenous latent variable), along with the corresponding measurement error  $\epsilon$ .

$$y = \Lambda y \eta + \epsilon$$

Here,  $y$  represents the endogenous manifest variable,  $\Lambda y$  is the factor loading of the endogenous manifest variable  $y$ ,  $\eta$  is the endogenous latent variable, and  $\epsilon$  is the measurement error of the manifest variable.

Equation (5.2): The relationship between the manifest variable  $x$  (exogenous variable) and the latent variable  $\xi$  (exogenous latent variable), along with the corresponding measurement error  $\delta$ .

$$x = \Lambda x \xi + \delta$$

Here,  $x$  represents the exogenous manifest variable,  $\Lambda x$  is the factor loading of the exogenous manifest variable  $x$ ,  $\xi$  is the exogenous latent variable, and  $\delta$  is the measurement error of the manifest variable.

##### 3.1.3 Structural Model Equation

Equation (5.3) displays the causal relationships between latent variables:

$$\eta = B\eta + \Gamma\xi + \zeta$$

Here,  $\eta$  represents the endogenous latent variables (vector of endogenous latent variables),  $\xi$  represents the exogenous latent variables (vector of exogenous latent variables),  $B$  and  $\Gamma$  respectively signify the coefficient matrices for the interaction between endogenous latent variables and the impact of exogenous latent variables on endogenous latent variables, and  $\zeta$  is the error term in the structural equation.

### 3.2 Establishment and Testing of the Structural Equation Model

#### 3.2.1 Empirical Model Construction

The constructed empirical model aims to verify the impact of various dimensions of e-commerce live streaming on consumer purchase intention. The model is represented through a standardized path coefficient diagram, with the key equation as follows:

$$\eta = B\eta + \Gamma\xi + \zeta$$

This core equation reflects the relationship between latent variables, where  $\eta$  represents endogenous latent variables,  $\xi$  represents exog-

enous latent variables,  $B$  and  $\Gamma$  respectively represent the interaction coefficient matrix between endogenous latent variables, and the impact coefficient matrix of exogenous latent variables on endogenous latent variables,  $\zeta$  is the error term in the structural equation.

### 3.2.2 Fit Test

The fit test results show that the model fits the sample data well, with specific indicators as follows:

1. The Chi-Square to Degrees of Freedom Ratio (CMIN/DF) < 3, indicating a good fit of the model.
2. The Root Mean Square Error of Approximation (RMSEA) is better than the standard value, showing excellent fit.
3. GFI, AGFI, CFI, IFI, NFI all exceed 0.9, indicating superior model fitting.

### 3.2.3 Path Analysis

Path analysis verified the impact of e-commerce live streaming under the internet celebrity economy on consumer purchase intention. Paths with a significance level less than 0.05 indicate a significant relationship between variables. Results show that high interactivity, preferential policies, trust, content quality, and professionalism of internet celebrities all have a significant positive impact on consumer attitudes (cognitive and emotional attitudes). Among them, emotional attitude has a greater impact on purchase intention than cognitive attitude.

## 4. Research Conclusions and Outlook

This study investigates the influence of factors like high interactivity, preferential policies, trust, content quality, perceived risk, and the professionalism of internet celebrities on consumer purchase intention. It concludes that all factors except perceived risk, which has a minor negative impact, positively affect purchase intention. Consumer attitudes, both cognitive and emotional, mediate the relationship between these factors and purchase intention, with emotional attitudes having a stronger impact. Additionally, consumer demographics such as age and online shopping expenditure, but not gender or live streaming platform type, significantly influence the effect on purchase intention. Recommendations for internet celebrities, e-commerce marketing, and consumers are provided, highlighting the importance of trust, quality content, and risk awareness. The study notes limitations in sample data balance and variable completeness, suggesting areas for future research.

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