

INFLUENCE OF INTERNET CELEBRITY LIVE STREAMING ON CONSUMER PURCHASE DECISION: MEDIATING ROLE OF CONSUMER IMMERSION

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Abstract

This article starts from an empirical perspective, focusing on the development of the internet celebrity economy and internet live streaming, as well as the current research status of consumer purchase decision. Combining the empirical research of some scholars, this article proposes research hypotheses and models, designs questionnaires and scales, and analyzes the influencing factors of live streaming on consumer purchase decision under the internet celebrity economy. Questionnaires were distributed through Questionnaire Star, and the 450 valid questionnaires collected were subjected to descriptive statistics, reliability analysis, validity analysis, correlation analysis and regression analysis using SPSS29.0. A structural equation model was constructed using AMOS 23.0, and the fit of the model was tested. The following conclusions were drawn: Firstly, in the process of internet celebrity live streaming marketing, internet celebrity live streaming content has a positive impact on consumer purchase decision; Secondly, the immersion generated by consumers during the process of watching live streaming also has a positive predictive effect on their purchase decision; The third is that consumer immersion plays a significant mediating role between internet celebrity live streaming content and purchase decision.

Keywords: Internet celebrity live streaming, Purchase decision, Digital Marketing

Introduction

This study comprehensively reviews the development background of internet celebrity live streaming and the rise and development trend of e-commerce, providing the necessary background knowledge for in-depth research on the topic of "Influence of Internet Celebrity Live Streaming on Consumer Purchase Decision: Mediating Role of Consumer Immersion". By clarifying the research objectives, elaborating the problem statement and hypothesis, this study further explores the possible contributions and implications of this study to the academic and practical fields. At the same time, this study clarifies the scope of the study and focuses on the internet celebrity live streaming market in China. This comprehensive presentation is intended to allow readers to gain an in-depth understanding of the motivation, purpose, and importance of the study, thereby providing a solid foundation for the in-depth analysis in subsequent chapters.

Research Objectives

1. To study the direct effect of internet celebrity live streaming on consumer purchase decision.

2. To study the mediating role of consumer immersion between internet celebrity live streaming and consumer purchase decision.

Scope of the Research

1. Population : At present, among the online live streaming sales platforms in China, Douyin is the live streaming platform with the largest customer base, the largest transaction volume, and the smoothest platform operation. According to the "2024 Douyin E-commerce Talent Growth Report", the average daily number of small, medium, mid-level, and top Douyin e-commerce sellers in the first half of 2024 exceeded 560,000, 170,000, and 3,000 respectively. Therefore, this study selected consumers who shopped in the live streaming rooms of the top 1,000 small, medium, and top anchors on the Douyin platform as the overall sample for investigation.

2. Samples : In order to ensure the wide applicability of the research results. This study will adopt a random sampling method to select consumers who frequently shop in Douyin live streaming rooms as the sample of this study. In order to ensure the scientificity and accuracy of the research, this study selected 500 samples who shopped in the live streaming room more than 3 times a month as the survey subjects. The basis for sample size: usually focuses on the ratio of the number of cases/observations ($N: q$) estimated in the model used to determine sample size to the number of free parameters (q). A higher $N: q$ ratio is preferred. The rule of thumb is that each free parameter in the model should have at least 5 cases/observations (i.e. $N: q=5$) (Bentler and Chou, 1987; Bentler, 1995) . For strong neural data, the minimum sample size should be at least 10 times the number of free parameters (i.e. $N: q=10$) (Hoogland and Boomsma, 1998). Kline (1998) suggests that the $N: q$ ratio should be within the range of 10 or even 20. In the structural equation model of this research, the degree of freedom $df=45$. Based on the reference of sample size (N): degree of freedom (q)= $10\sim 20$, the sample size N of this study is $45 * 10\sim 20=450\sim 900$. The actual sample size of the researchers in this research was 500, ranging from 450 to 900, therefore, the sample size is reasonable.

3. Variable Scope: Combined with relevant literature, this study selects internet celebrity live streaming as the independent variable and consumer purchase decision as the dependent variable. In order to deeply understand the intrinsic connection between the independent and dependent variables, this study introduces consumer immersion as a mediating variable.

4. Time Scope: The data collection and analysis of this study are mainly concentrated in the period from 2023 to 2024, focusing on the latest developments of internet celebrity live streaming during this period.

Research Methodology

1. Research Methodology
Structural Equation Modeling
2. Pre research

In order to verify the rationality of the questionnaire design in this article, a small-scale pre survey was conducted before the formal distribution of the questionnaire. In the pre survey stage, a total of 86 questionnaires were collected by distributing the questionnaire links to some WeChat and QQ groups, of which 64 were valid, with an effective rate of 74.4%. Among them, there are 36 male students and 28 female students. The age range is mainly between 18 and 25 years old, with a bachelor's degree as the main educational background.

The pre survey used reliability testing to ensure the validity of the measurement items within the scale. The selected measurement indicators are Cronbach's Alpha value,

correlation between corrected items and total, and Cronbach's Alpha value after removing items. Cronbach's Alpha value is used to measure whether the scale has good internal consistency. Cronbach's Alpha values range from 0 to 1. It is generally believed that a Cronbach's Alpha value above 0.8 indicates good reliability of the scale; If Cronbach's Alpha value is between 0.7-0.8, it indicates that the reliability of the scale is acceptable; If Cronbach's Alpha value is between 0.6-0.7, it indicates that the scale needs to be revised; If Cronbach's Alpha value is below 0.6, it indicates that the scale needs to be redesigned.

During the pre survey stage, the correlation between the corrected items and the total of each item in the measurement scale, as well as the Cronbach's Alpha value after deleting items, are used to determine whether the designed item needs to be deleted. The detection criteria are as follows: when the value of "correlation between corrected items and total" is less than 0.3, the question will be deleted; When the Cronbach's Alpha value after deleting the item is significantly higher than the overall Cronbach's Alpha value of the variable, the question will be deleted.

Researchers conducted validity tests on the predictor variables, intermediate variables, and outcome variables within the pre survey. The Cronbach's Alpha values of the indicators "Personal Charm of Internet Celebrity", "Professionalism", "Incentive Mechanism", "Value added Content", and "Real time Interaction" in the predictor variables are all greater than 0.8, indicating that the scale design for these five dimensions is well done. At the same time, the values of "correlation between corrected terms and total" for each item within the predictor variable are all greater than 0.4, and the "Cronbach's Alpha values after deleting terms" are all smaller than the Cronbach's Alpha values for each dimension. Therefore, all items within the predictor variable scale are retained and their reliability is verified.

The Cronbach's Alpha values of the indicators "Attraction of Live Content", "Freshness of Live Content", "Live Atmosphere", "Authenticity", "Sense of Belonging", and "Platform Functional Support" in the intermediate variables are greater than 0.8, indicating that the scale design for these six dimensions is well done. At the same time, the values of "correlation between corrected terms and total" for each item within the predictor variable are all greater than 0.4, and the "Cronbach's Alpha values after deleting terms" are all smaller than the Cronbach's Alpha values for each dimension. Therefore, all items within the mediator variable scale are retained and their reliability passes the test.

The Cronbach's Alpha values of the indicators "Consumer Personal Needs", "Product Cost effectiveness", and "Word of mouth Communication" in the outcome variables are greater than 0.8, indicating that the scale design for these three dimensions is well done. At the same time, the values of "correlation between corrected terms and total" for each item within the predictor variable are all greater than 0.4, and the "Cronbach's Alpha values after deleting terms" are all smaller than the Cronbach's Alpha values for each dimension. Therefore, all items within the outcome variable scale are retained and the reliability is verified.

Based on the above, the reliability test results of the pre survey show that the designed questionnaire has certain effectiveness and can be officially launched for research.

3. Data Collection

The collected questionnaires were cleaned online. Questionnaires with a response time of less than 30 seconds and 10 consecutive questions with the same options were first eliminated. The Mahalanobis distance in SPSS29.0 software was used to test the normality of the outliers of multiple variable data in the collected data, and the outlier data was eliminated. Finally, the data with normal or partial normal distribution was obtained as the final data.

4. Data Analysis

4.1 Descriptive Statistics

The researchers used SPSS29.0 software to perform descriptive statistics on the collected data. They analyzed the subjects' age, gender, Internet age, live streaming preference, shopping orientation, and other information through comparative analysis, average analysis, and cross analysis. The main analysis included frequency analysis, central tendency analysis, dispersion analysis, data distribution, and some basic statistical graphs. Among them, the mean, median, and mode reflect the central tendency of the data. The range, variance, and standard deviation reflect the dispersion of the data. The deviation and kurtosis reflect the distribution shape of the data.

4.2 Scale Reliability and Validity

1) Reliability Test

The reliability test of the scale uses Cronbach's alpha coefficient. It is generally believed that an alpha coefficient greater than 0.7 is more reliable.

2) Validity Test

The validity test of the scale uses SPSS29.0 to perform a sphericity test. A KMO value greater than 0.7 indicates that it is suitable for factor analysis. The rotated eigenvalues were selected for the convergent validity (AVE) and combined validity (CR) tests. AVE values greater than 0.5 indicated that the convergent validity of the data was good, and CR values greater than 0.7 indicated that the combined reliability of each dimension data was high.

3) Exploratory Factor Analysis (EFA)

The researchers used SPSS29.0 software to conduct exploratory factor analysis on the variable data. The questions with standardized factor loading coefficients less than 0.5 were deleted.

4) Pearson correlation test

SPSS29.0 software was used to conduct correlation tests on the variables. The correlation was significant ($P < 0.05$) and the correlation coefficient was between 0.3 and 0.7, indicating that the correlation between the variables was statistically significant. The correlation coefficient greater than 0.7 indicated that there was a possibility of multicollinearity between the variables. If the correlation coefficient was less than 0.3, it indicated that the correlation between the scales was not significant.

5) Common method bias test

The Harman single factor method was used to test the common method bias of the data. Without rotating the factors, take a factor. If the explanation of the factor is less than 40%, it means that the data does not have serious common method bias (Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. 2003, Vol. 88 No. 5, pp. 879-903.) .

6) Confirmatory Factor Analysis (CFA)

AMOS23.0 software was used to perform confirmatory factor analysis on the data of each variable. The standardized factor loading coefficient is greater than 0.6, and the square root of the average variance extracted (AVE) in the discriminant validity is greater than the correlation with other variables, indicating that each variable has a high discriminant validity. The residuals of each factor are independent of each other, and the significant p values are all less than 0.05 (Fornell, C., Larcker, D. F. 1981, 18(1):39-50.) .

7) Structural Equation Model Analysis

Using Amos 23.0 software to perform structural equation modeling on variable data, a good model fit is indicated when chi-square/df is between 1-3, GFI is greater than 0.9, AGFI is greater than 0.9, CFI is greater than 0.9, and RMSEA is less than 0.05. Under non standardized conditions, determine whether the residual values of each variable and question are independent ($P < 0.05$), whether the path coefficients of each variable are

significant ($P < 0.05$), and finally conduct hypothesis testing (Multivariate Data Analysis, 7th ed. 2009.).

Research Results

Firstly, a personal basic information analysis was conducted on the samples in terms of gender, age, education level, monthly disposable income, occupation, etc., to ensure that the samples collected in this study have a certain level of reliability and basically meet the research needs.

Secondly, the researchers conducted reliability tests on the predictive variables, intermediate variables, and outcome variables of the survey. The results indicate that the scale reliability of the outcome variables is very good.

Thirdly, the researchers conducted validity tests, and the KMO value was 0.904, indicating that the data set is suitable for factor analysis. Meanwhile, if the Sig. value is less than 0.001, it indicates a correlation between the designed variables and is suitable for factor analysis. The rotated component matrix obtained by implanting valid questionnaire data into SPSS analysis. The factor loading values are mostly above 0.7, indicating a good correlation between the overall indicators and variables. At the same time, the questionnaire data will be imported to evaluate the fitting of the structural equation. The indicator selected in this article is CFI; The comprehensive fit index takes into account the number of variables in the model fit, and the selected index is chi square/df. All indicators meet the standards, indicating that the established model has a good fit and can proceed with the next analysis.

Fourthly, the researchers conducted correlation analysis, and the results showed that the Pearson correlation coefficients between the variables were: the correlation between CNI and ICLS was 0.47, the correlation between CNI and CPD was 0.54, and the correlation between ICLS and CPD was 0.6, indicating a moderate to high degree of correlation between the variables and the potential for certain interactions between them.

Fifth, convergent validity, constructive reliability, and discriminant validity

The researchers validated the convergent validity (AVE) and construct reliability (CR) of confirmatory factor analysis based on the factor loadings presented in AMOS. In the standardized state, the factor loadings of each variable were greater than 0.7, indicating that each measurement item had high explanatory power. The convergence validity (AVE) values of each variable are all greater than 0.5, and the construction reliability (CR) values are all greater than 0.8, indicating that the scale has good convergence validity and high construction reliability.

Based on the correlation between variables and the convergence validity (AVE) value, the researchers validated the discriminant validity of each variable. The results showed that the mean variance extraction (ANOVA) of the ICLS variable, after taking root, was 0.797, which was greater than the correlation coefficient between ICLS and CNI (0.472) and the correlation coefficient between ICLS and CPD (0.604), indicating that the ICLS variable has good discriminant validity compared to other variables; The root mean square extracted value of the CNI variable, 0.757, is greater than the correlation coefficient between CNI and ICLS, 0.472, and also greater than the correlation coefficient between CNI and CPD, 0.54. This indicates that the CNI variable has good discriminant validity compared to other variables; The root mean square of the mean variance extraction of CPD variable is 0.774, which is greater than the correlation coefficient between CPD and CNI of 0.54 and the correlation coefficient between CPD and ICLS of 0.604, indicating that CPD variable has good discriminant validity compared to other variables.

Sixth, path analysis between variables

The researchers created a path relationship table based on the path relationships between the variables presented in the structural equation modeling diagram. From the table, it can be seen that hypothesis 1: ICLS can have a significant positive impact on CPD ($B=0.472$, $t\text{-value}=9.098$). Assumption 2: ICLS can have a significant positive impact on CNI ($B=0.45$, $t\text{-value}=8.244$). Assumption 3: CNI can have a significant positive impact on CPD ($B=0.328$, $t\text{-value}=6.015$). The above statements all indicate that H1, H2, and H3 are valid.

To verify the significance of the mediating effect in the model, the researchers used Bootstrap's Bias corrected percentile method and Percentile method in AMOS23.0. The results showed that in the test for the significance of the mediating effect in ICLS \rightarrow CNI \rightarrow CPD, the standardized path coefficient of hypothesis H4 (LCLS \rightarrow CNI \rightarrow CPD) was 0.15, Z-value was 3.95, and p-value was significant at the 0.001 level, indicating that the hypothesis of H4 is valid.

Discussion

The mediating role of immersion between internet celebrity live streaming and consumer purchase decision

In the context of online shopping, consumers face a much greater amount of product information than in traditional shopping situations, which increases the difficulty of consumer purchasing decisions. Therefore, online recommendation has become an important means to enhance the effectiveness of consumer purchasing decisions (Xiao Bo & Benbasat I, 2007). In fact, the original purpose of the online product recommendation system was to help consumers make better purchasing decisions in the context of excessive information load in online shopping. According to the two-stage model of online purchasing decision-making proposed by Haub & Trifts (2000), in the first stage of information collection and option formation, the ranking information of network recommended products may be the primary factor affecting consumer purchasing decisions. In the process of collecting and evaluating alternative information in the second stage, the quantity and quality of reviews for recommended products on the internet may be important factors affecting consumers' online shopping decisions.

Online recommendations predict consumer preferences based on their search, browsing, or purchase history. Based on this, recommend a subset of products to consumers from a massive amount of product information, thereby reducing the problem of product information overload when consumers make decisions (Smith M. D., 2002). The subset of products recommended online usually sorts candidate products to help consumers evaluate purchase options. Previous studies have revealed that the ranking information provided by online recommendation systems not only reduces consumers' cognitive investment in purchasing decisions, but also improves the effectiveness and satisfaction of consumers' purchasing decisions (Dai Hezhong, 2014; Xiao Bo & Benbasat I, 2007).

In addition, the number and direction of word-of-mouth corresponding to online recommended products can influence consumers' purchasing decisions through awareness effects and persuasive effects (Duan Wenjong et al., 2008). The perceptual effect involves the quantity of online word-of-mouth corresponding to a specific product, and the quantity conveys the existence of the product. The more word-of-mouth a product has, the easier it is for it to enter the consumer's choice of alternative options. The persuasion effect involves the direction of word-of-mouth dissemination. Overall, positive word-of-mouth shapes consumers' attitudes towards specific products and affects their final purchasing decisions, while negative word-of-mouth has the opposite effect.

The number of online word-of-mouth for recommended products, i.e. the number of reviews for a certain recommended product, can have a significant impact on consumers' online shopping decisions (Gong Shiyang et al., 2012), and is also an important variable of concern for researchers (Duan Wenjing et al., 2008). The more online word-of-mouth of a recommended product, the higher the level of attention and popularity of the product from others. People tend to believe that their purchasing decisions are reasonable based on a herd mentality. When consumers lack understanding of a certain product, the quantity of online word-of-mouth can also become the basis for consumers to perceive uncertainty and risk in their purchasing behavior; The more quantity there is, the weaker consumers' perception of uncertainty and risk in purchasing.

The direction of online word-of-mouth dissemination for recommended products, which refers to the overall tendency of others to evaluate a specific product as good or bad, reflects the quality of online word-of-mouth for the recommended product. Others will form evaluations of specific products based on their past consumption experiences and experiences. The quality of evaluation corresponds to the persuasive effect, which is also an important basis for consumers' online shopping decisions (Gong Shiyang et al., 2012).

Recommendations

1. Suggestions for the development of internet celebrity groups
 - 1) Build opinion leaders and enhance brand image.
 - 2) Strict control should be exercised over the content.
 - 3) Becoming a 'tool' that meets user needs.
 - 4) Maintain an active and cohesive fan community.
 - 5) Maintain a strong level of activity within oneself.
 - 6) Pay attention to the interests of fans.
2. Suggestions for the development of the internet celebrity economy industry
 - 1) Integrate with traditional enterprises for common development.
 - 2) Optimize the supply chain system.
 - 3) Pay attention to big data marketing.
 - 4) Guided by consumer demand.
3. Suggestions for internet celebrity live streaming marketing
 - 1) Preparation work before live streaming.
 - 2) Arrangement of live streaming environment.
 - 3) Pay attention to the display of product details.
 - 4) Highlight the advantages of the product.
 - 5) Display according to user needs.
4. Suggestions for internet celebrity fans and consumers
 - 1) Get more information.
 - 2) Choose brands and products with good reputation.
 - 3) In terms of rights protection.

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