



Research on the Influence of Shopping Guide Short Videos on College Students' Consumption Based on Structural Equation Model

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Abstract: This study focuses on the penetration mechanism of shopping guidance content in short video platform to college students' consumption decision, and constructs a three-dimensional analysis framework of "sensory stimulation-emotional drive-algorithm guidance" to systematically explore the influence paths of Interactivity, Product Popularity and Opinion Leader of short video on Purchase Intention and behavior. Based on the data of 341 valid questionnaires, the theoretical hypothesis is verified by structural equation model (SEM) and maximum likelihood estimation (MLE), and it is concluded that the interactivity of short videos and product popularity significantly positively affect college students' purchase intention, and further drive the actual purchase behavior through the mediation of willingness; Opinion leaders have no direct and significant influence on purchase behavior, but indirectly affect consumption decision by enhancing purchase intention, highlighting the core value of emotional resonance in short video marketing.

Keywords: college students' consumption, shopping guide short video, structural equation model

1. Introduction

In the contemporary digital landscape, short video platforms have rapidly become a pivotal medium for content consumption and dissemination, profoundly influencing the behavior and attitudes of various demographic groups. Among these, college students represent a particularly active and engaged audience segment. The rise of shopping guide short videos has introduced a new dimension to marketing strategies, leveraging the unique characteristics of these platforms to shape consumer decisions. This study aims to explore the multifaceted influence of shopping guide short videos on the consumption decisions of college students, focusing on the underlying mechanisms through which sensory stimulation, emotional drive, and algorithmic guidance impact their purchasing behavior.

Previous research has highlighted the significant role of short video content in shaping consumer perceptions and behaviors. For instance, studies have shown that the interactive nature of short videos can enhance consumer engagement and purchasing intent [1]. Additionally, the influence of opinion leaders and the popularity of products featured in these videos have been identified as key factors affecting consumer decisions [2-3]. However, the comprehensive impact of these factors, particularly in the context of college students, remains underexplored.

To address this gap, we designed a questionnaire to systematically measure the characteristics of shopping guide short videos, college students' purchase intention, and their actual purchase behavior. The questionnaire was distributed via popular platforms such as WeChat and QQ groups, utilizing the "Questionnaires Star" software to collect data. After rigorous data cleaning to remove duplicates, inaccuracies, and incomplete records, we



obtained 341 valid responses. The reliability and validity of the questionnaire were assessed using Cronbach's α and exploratory factor analysis (EFA), respectively, ensuring the robustness of our measurement scale.

For the analysis, we employed structural equation modeling (SEM) using AMOS software. SEM is a powerful multivariate statistical method that integrates measurement and structural models, allowing for the systematic testing of complex causal relationships. Our model included three independent variables (interactivity, product popularity, and opinion leader influence), one mediator variable (purchase intention), and one dependent variable (purchase behavior). Parameters were estimated using maximum likelihood estimation (MLE), given the large sample size and the data's compliance with multivariate normality assumptions. The model's fit was evaluated using eight standardized fit indices, including the Chi-square to Degrees of Freedom Ratio, Root Mean Square Residual, Goodness-of-Fit Index, Adjusted Goodness-of-Fit Index, Normed Fit Index, Incremental Fit Index, Comparative Fit Index, and Root Mean Square Error of Approximation. The results indicate that the model fits the data well, providing a solid foundation for hypothesis testing.

The findings reveal that interactivity and product popularity significantly influence purchase intention and behavior, while the effect of opinion leaders is indirect, mediated through purchase intention. These results underscore the importance of sensory stimulation and emotional drive in shaping consumer decisions and highlight the role of algorithmic guidance in influencing consumption patterns. This study contributes to the existing literature by providing a comprehensive analysis of the impact of shopping guide short videos on college students' consumption decisions and offers practical insights for optimizing marketing strategies on short video platforms.

2. Questionnaire Design and Data Collection

The purpose of this survey is to systematically analyze the multidimensional penetration effect of shopping guide short videos on college students' consumption decisions, focusing on revealing the influence mechanism of sensory stimulation, emotional drive and algorithm induction on college students' consumption views. According to the key factors that affect college students' consumption view, the measurement index scale design of the questionnaire includes the characteristics of shopping guide short videos, college students' purchase intention and purchase behavior, and the specific measurement items are shown in Table 1.

Table 1: Measurement Variables for Shopping Guide Short Videos

Variable Names	Measurement Items
A: Interactivity	A1: Advertising information in video will affect the purchase decision.
	A2: Buy products at a discount because of the platform.
	A3: Messages in the comment area will affect shopping behavior.
B: Product Heat	B1: Sensitive to what is popular today.
	B2: To buy a hot product because of following the trend.
	B3: It is believed that the goods of big brands are more secure.
C: Opinion Leader	C1: Enjoy shopping with popular anchors in online celebrity.
	C2: Marketing means of short video platform will induce college students to consume.
	C3: Products recommended by online celebrity in the short video will stimulate the desire to buy.
D: Purchase Intention	D1: Short video platform increases the desire to buy.
	D2: Buying goods beyond one's ability because of the influence of short videos.
	D3: The impulse to consume occurs in the process of watching short videos.
E: Purchase Behavior	E1: You will spend ahead of schedule.
	E2: You have impulsively consumed in the process of brushing short videos.
	E3: You bought something you didn't plan to buy in the process of brushing short videos.

With the help of "Questionnaires Star" software, questionnaires were distributed on active platforms of college students such as WeChat group and QQ group. Through the collection of questionnaires, the original data collected is 501 answers. Considering that the questionnaire survey may contain untrue data, the data was



cleaned to remove duplicate, inaccurate or incomplete data records, and finally 341 valid answers were obtained as sample data.

The reliability test of questionnaire survey data is an important step to ensure the reliability and consistency of research results [4-5]. Reliability test mainly focuses on the stability and reliability of measuring tools, that is, whether the same measuring tools can get consistent results at different times or under different conditions. In this process, this paper uses the Cronbach's α reliability evaluation tool to test, and the output results in Table 2 show that the overall Cronbach's α is 0.854, the α values of all dimensions were greater than 0.7, and the overall correlation coefficient of all items was higher than 0.4, indicating that the scale had good internal consistency.

Table 2: Statistical Analysis of Measurement Items

Variables	Measurement Items	CITC	Cronbach's α
Interactivity	A1	0.704	0.906
	A2	0.639	
	A3	0.520	
Product Heat	B1	0.564	0.911
	B2	0.643	
	B3	0.459	
Opinion Leader	C1	0.516	0.856
	C2	0.450	
	C3	0.748	
Purchase Intention	D1	0.434	0.890
	D2	0.451	
	D3	0.753	
Purchase Behavior	E1	0.742	0.901
	E2	0.733	
	E3	0.536	

In terms of validity test, the EFA results of exploratory factor analysis showed that the KMO value was 0.907, the Bartlett spherical test was significant, and the factor load of each item in the five factors extracted by principal component analysis was greater than 0.7, which confirmed that the structural validity of the scale was good.

3.Sem Modeling of Driving Mechanism of Short Video Consumption View

Model construction using AMOS

As the core analytical paradigm of empirical research in modern social sciences, structural equation modeling is a multivariate statistical modeling method based on covariance structure theory. By integrating the two-tier framework of measurement model and structural model, it realizes the systematic test and quantitative expression of complex causal network in theoretical assumptions. Its core advantage lies in breaking through the single limitation of traditional regression analysis on the observability of variables, and constructing a mixed analysis framework that deals with both explicit variables (directly measurable observation indicators, such as questionnaire item scores) and latent variables (theoretical constructs that need to be inferred indirectly through multiple explicit variables)[6].

In this study, the structural equation model is constructed by using AMOS software, and the empirical analysis is carried out. The structural equation model includes five structural variables, among which three independent variables are three factors that affect college students' consumption view, namely interactivity, product popularity and opinion leader. An intermediary variable is purchase intention and a dependent variable is purchase behavior. The structural equation model is shown in Figure 1.



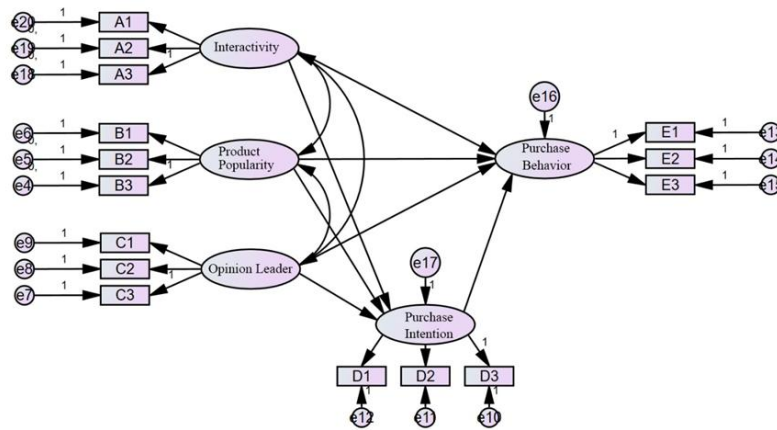


Figure 1: SEM Model of College Students' Consumption View

Given the large sample size in this study and the data's compliance with multivariate normality assumptions, Maximum Likelihood Estimation (MLE) was employed for parameter estimation. MLE optimizes model fit by maximizing the likelihood function, offering advantages such as high statistical efficiency and asymptotic unbiasedness with sufficient samples. Model parameters, including structural paths, factor loadings, and residual variances, are depicted in Figure 2.

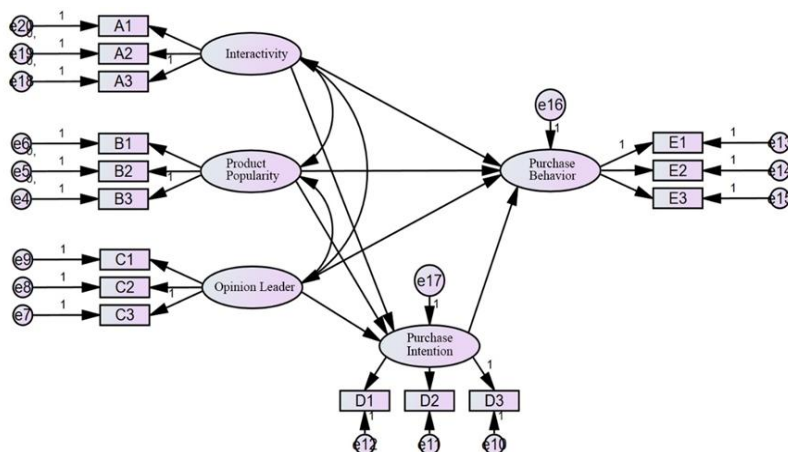


Figure 2: Structural Paths and Measurement Loadings Estimated via MLE

Multivariate path analysis and model fitness test

In order to verify the matching degree between the theoretical model and the empirical data, it is necessary to evaluate the adaptability of the model through the Goodness-of-Fit Test system. The process is based on the core assumption of structural equation model: if the model is set reasonably, its implied covariance matrix should be highly consistent with the covariance matrix of sample data. In specific operations, researchers can complete data preprocessing, model fitting and result output with the help of AMOS software, and quantify this consistency through standardized fitting indicators. These indicators are essentially statistics reflecting the difference between the predicted values of the model and the actual observed values, and their numerical values directly determine whether the theoretical assumptions can be supported by data.

To comprehensively evaluate the goodness-of-fit of the structural equation model, this study employs eight standardized fit indices:

- Chi-square to Degrees of Freedom Ratio (CMIN/DF): Tests the exact fit of the model, though sensitive to sample size.
- Root Mean Square Residual (RMR): Quantifies the average residual covariance between predicted and observed matrices (values closer to 0 indicate better fit).



- Goodness-of-Fit Index (GFI): Measures the proportion of variance-covariance explained by the model (range: 0–1, with higher values indicating better fit).
- Adjusted Goodness-of-Fit Index (AGFI): Corrects GFI for model complexity by penalizing excessive degrees of freedom.
- Normed Fit Index (NFI): Compares the discrepancy between the proposed model and the null model, normalized by the null model's discrepancy.
- Incremental Fit Index (IFI): Further adjusts CFI to penalize model complexity, enhancing robustness in small samples.
- Comparative Fit Index (CFI): Corrects NFI for sample size fluctuations, with a recommended threshold of >0.90 (acceptable) or >0.95 (excellent).
- Root Mean Square Error of Approximation (RMSEA): Estimates the discrepancy per degree of freedom, adjusted for model complexity. Recommended thresholds: <0.08 (acceptable), <0.05 (excellent), with a 90% confidence interval for significance testing.

The computational formulas and evaluation criteria for each index are detailed in Table 3. By synthesizing their synergistic performance, this study mitigates the limitations of individual indices, ensuring a rigorous and holistic assessment of model adequacy.

Table 3: Test result of goodness-of-fit of SEM

Fit Index	Standard Threshold	Observed Value	Fit Status
CMIN/DF	<3	2.084	liberal
RMB	<0.08	0.076	excellent
GFI	>0.8	0.895	excellent
AGFI	>0.8	0.879	excellent
NFI	>0.9	0.987	excellent
IFI	>0.9	0.969	excellent
CFI	>0.9	0.894	acceptable
RMSEA	<0.08	0.075	excellent

An analysis of the fit indices presented in Table 3 reveals that, except for the Comparative Fit Index (CFI), which marginally falls below the conventional threshold of 0.90 (CFI = 0.894), all other fit statistics meet established criteria. Given the convergence of evidence from these complementary indices—particularly the excellent RMSEA and the robustness of IFI—the model demonstrates adequate overall fit, and the establishment of this model is reasonable, which can be used for hypothesis testing and empirical analysis.

Table 4: Hypothesis Testing Results for Path Relationships in the Structural Model

Path Relationship	Estimate β	S.E.	C.R.	P-value
Purchase Intention \leftarrow Opinion Leader	0.775	0.009	2.51	0.312
Purchase Intention \leftarrow Product Popularity	0.181	0.287	0.63	0.029
Purchase Intention \leftarrow Interactivity	0.331	0.439	0.754	0.042
Purchase Behavior \leftarrow Purchase Intention	0.019	0.342	0.056	0.049
Purchase Behavior \leftarrow Opinion Leader	-0.507	0.202	2.506	0.512
Purchase Behavior \leftarrow Product Popularity	0.164	0.209	0.783	0.003
Purchase Behavior \leftarrow Interactivity	0.271	0.39	0.695	0.007

Based on the analysis results in Table 4, the following conclusions are drawn from the hypothesis testing of path relationships.

(1) Predictors of Purchase Intention:

- Interactivity ($\beta=0.331$, $p<0.05$) and Product Popularity ($\beta=0.181$, $p<0.05$) exhibit significant positive effects on Purchase Intention, as their path coefficients are positive and statistically significant. No space will be added before or after paragraph.



• Opinion Leader ($\beta=0.775$, $p>0.05$) does not significantly influence Purchase Intention positively, despite its positive coefficient.

(2) Predictors of Purchase Behavior:

• Interactivity ($\beta=0.271$, $p < 0.01$) and Product Popularity ($\beta = 0.164$, $p<0.01$) show significant positive effects on Purchase Behavior, with positive and statistically significant coefficients.

• Opinion Leader ($\beta=-0.507$, $p>0.05$) has no significant negative (or positive) effect on Purchase Behavior, as its coefficient is negative but statistically insignificant.

• Purchase Intention ($\beta=0.019$, $p < 0.05$) has significant positively effects on Purchase Behavior, indicating a direct causal link between the two constructs.

Hypothesis testing and path adjustment

In the structural equation model hypothesis test of influencing factors of college students' consumption view, this study puts forward 8 hypotheses (see Table 18 for details).

Table 5: Summary of Hypothesis Validation

Research Variables	Hypothesis	Research Outcome
Interactivity	H1: The interactivity of short-video platforms positively influences college students' purchase behavior.	Supported
Product Popularity	H2: The popularity of products featured in short videos positively influences college students' purchase behavior.	Supported
Opinion Leader	H3: The influence of opinion leaders in short videos positively influences college students' purchase behavior.	Rejected
Interactivity	H4: The interactivity of short-video platforms positively influences college students' purchase intention.	Supported
Product Popularity	H5: The popularity of products featured in short videos positively influences college students' purchase intention.	Supported
Opinion Leader	H6: The influence of opinion leaders in short videos positively influences college students' purchase intention.	Supported
Purchase Intention	H7: College students' purchase intention under short-video influence positively affects their purchase behavior.	Supported
Purchasing Behavior	H8: Purchase intention mediates the relationship between short-video influence and purchase behavior among college students.	Supported

The test results show that:

• Seven hypotheses are established: the interactivity (H1, H4) and product popularity (H2, H5) of short videos have a significant positive impact on college students' purchase behavior and purchase intention; The purchase intention (H7) has a significant driving effect on the purchase behavior, and the purchase intention plays a completely mediating effect between the short video influence and the purchase behavior.

• 1 hypothesis is not valid: the influence of opinion leaders in short videos (H3) does not significantly promote the actual purchase behavior of college students, but has a significant positive impact on their purchase intention (H6, $\beta=0.34$, $p<0.01$). This contradiction suggests that opinion leaders may indirectly drive the purchase behavior by influencing the purchase intention, rather than directly acting on the purchase behavior.

Based on the above results, the model is revised as follows:

• Eliminate the invalid path: delete the path of "opinion leader \rightarrow purchase behavior" (H3) to eliminate the insignificant causal relationship in the model;

• Adjust the path coefficient: Re-estimate the standardized coefficient of the remaining path by maximum likelihood estimation (MLE) to ensure that the model parameters match the empirical data.

The modified model path is shown in Figure 3, and the optimized path relationship is more in line with the data fitting results.



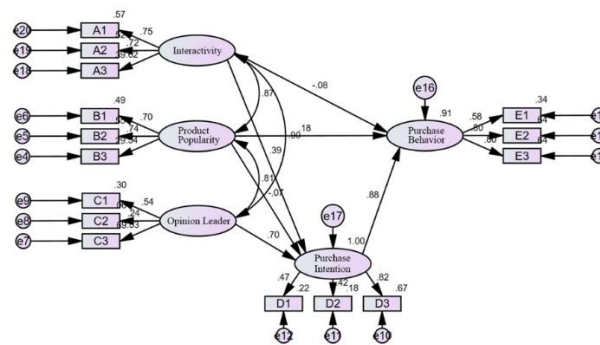


Figure 3: Structural Paths and Measurement Loadings Estimated via MLE

The revised SEM model provides robust empirical evidence for the impact of shopping guide short videos on college students' consumption behavior. In view of the impact of short videos on college students' consumption concepts such as stimulating desire and increasing the pressure of social comparison, it is recommended to start from three levels: the state, short video platforms, and individuals should strengthen the supervision and guidance of short video platforms and promote media literacy education; Short video platforms guide the concept of healthy consumption, provide high-quality content, and reasonably control promotion content; When watching short videos, individuals should maintain rational thinking, pay attention to content selection, rational consumption, avoid comparison psychology, and advocate positive energy, so that college students can form a correct consumption concept and achieve rational and healthy consumption.

5. Conclusions

Through empirical analysis, this study reveals the multi-dimensional penetration path of short videos to college students' consumption decisions: interactivity and product popularity are the core driving factors, purchase intention as an intermediary variable significantly affects behavior transformation, and opinion leaders need to indirectly affect consumption through emotional ties. The research results provide a scientific basis for short video platforms and brands to optimize their marketing strategies, and also provide a theoretical framework and data support for the follow-up research.

Acknowledgment

The works described in this paper are partially supported by Research Project of Henan Social Science Federation in 2024 (No. SKL-2024-344), College Students' Innovation and Entrepreneurship Training Program Project of Anyang Normal University (No. 202410479086).

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