Statistical Analysis of the Impact of Short Video Marketing on Consumers' Purchase Intention

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Abstract: With the rapid development of digital technology, short video platforms have gradually come to occupy the core position of brand marketing. However, short video marketing faces challenges in terms of traffic conversion, content quality, and homogenization, and based on this. The purpose of this research is to make up for the difference in theoretical and practical aspects. This study employs a combined methodology of questionnaire surveys and empirical testing to systematically deconstruct the mechanistic pathways through which the technological features of Video-on-Demand (VOD) services influence consumer purchasing behavioral tendencies, Pearson Correlation Analysis, Regression Model and Factor Analysis. Based on the reliability analysis, Cronbach's alpha is above 0.8, which means that the data is reliable. Among them, the consistency of practical information, cultural connotation, and celebrity image is particularly prominent in driving consumer decision-making. In addition, the in-depth dissemination of short videos and corporate brand culture can effectively enhance consumer trust and brand recognition.

1 INTRODUCTION

In today's technological progress, the traditional novels, pictures and text as a representative of digital media entertainment have been unable to meet the needs of people's lives. Short video platforms are also emerging, and the traffic liquidity modes such as advertisements and live broadcasts are continuously innovated. Their high-quality content is bringing more business opportunities and value dividends to brands (Wang, 2020). Since 2014, short video platforms have risen rapidly and gradually become popular, bringing new experiences and feelings to users. User engagement on short video platforms is significantly higher than that of traditional social media (Voorveld et al., 2018), a phenomenon closely related to Gen Z consumers' preference for visual, interactive content (Djafarova & Bowes, 2021). Under this trend, technological progress has brought about changes in content production models, communication methods, and audience acceptance habits, while intensified market competition has led to the gradual fading of traffic dividends (Liu 2022). Many brands are promoting myopic frequency, but they also face a lot of problems, such as short video traffic conversion rate being very low, the content obtained by Yao (2018) through data and literature analysis is inferior and vulgar, Li &Wang (2021) has too much homogeneous content through data and literature analysis, and Nilobar & Zheng (2021) highlight the inherent dilemmas in short video content creation under capital and algorithmic pressures, and the trust crisis caused by lack of supervision, Elti & Zheng (2021) has obtained the monopoly crisis under capital operation through the analysis of existing literature data. So, how to affect the customer's buying intent in the short video marketing is a subject worth further research. Based on these, the author makes an analysis of the video style, discusses the spread level of Music Video (MV), and researches the influence of MV on customers's perception and buying intention.

2 RESEARCH DESIGN AND EMPIRICAL TESTING

This article did a study by means of a conventional questionnaire. Among the major possible variables

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are the Video-on-Demand (VOD) system's message quality, the short video content, the video style, and the short video operation method. Based on the empirical framework of Kim and Ko (2012) on social media operation strategies, this study further optimizes the measurement dimension of short video operation methods, covering innovative strategies such as gamified advertising and influencer cooperation. Formal questionnaires are distributed through professional online questionnaire platforms and online social platforms for sample data collection. The report consists of three parts. One is about personal data, the second part is consumers' perception of the information quality, short video content, the third chapter discusses how the star effect affects customer's shopping intention through brand effect. A total of 300 questionnaires were sent, with a 1:1 ratio of men to women.

On this basis, through Pearson correlation analysis, regression analysis, factor analysis and other means, to study how short video advertising communication through the customer's effective impact, thus promoting buying desire. In order to further verify the visual appeal of short video keyframes, the eye tracking technology of Wang and Kim (2021) can be used to analyze the user's attention distribution of color and dynamic elements. In addition, AR technology (augmented reality) and gamification elements can be combined in interactive advertising design, and Xu and Sundar (2023) have experimentally demonstrated that such designs can significantly improve users' immersion and purchase intention (β=0.29, p<0.01)

3 RESULT

3.1 Validity and Reliability Verification

When the squared values of the simple correlation coefficients generally exceed those of the partial correlation coefficients, and the KMO (Kaiser-Meyer-Olkin) measure approaches 1, this indicates significant correlations among the variables, making it appropriate to perform factor analysis. Conversely, if the values progressively approach 0, it reveals that the associations between them are not strong.it suggests minimal mutual influence between variables, rendering the data unsuitable for factor model analysis. Table 1 shows the KMO values for this study and the approximate chi-square.

The validity analysis results demonstrate that the structural validity of the research data meets optimal criteria: The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy reached 0.931 (>0.9 threshold), and Bartlett's test of sphericity showed statistically significant results (p < 0.001), confirming the suitability of the data for factor analysis. Through principal component analysis, six key factors with eigenvalues exceeding 1 were extracted, collectively accounting for 73.17%.of the total variance, indicating strong explanatory power of the constructed model.Among them, the factor loadings of "Short Video Content" (Factor 3, loadings 0.763 - 0.867) and "Consumer Attitude" (Factor 1, loadings 0.756 - 0.864) are relatively high, verifying the rationality of the scale design.

Table 1: KMO Test Results

KMO test and Bartlett test		
KMO value		0.931
Bartlett sphericity test	Approximate chi-square	6158.578
	df	351
	P	0.000***
Note: ***, **, and * represent the significance levels of 1%, 5%, and 10%, respectively		

The research was done with SPSS 26.0 software after the data processing stage. The Cronbach alpha ratio was 0,941 as shown in Table 2 and all Adjusted Item-Sum Correlations (CITCs) were greater than 0.4. Notably, no significant increase in the α coefficient was observed even when deleting any single measurement item. These results demonstrate high internal consistency of the questionnaire and excellent data reliability.

Table 2: The Influence of different short video advertisement content on consumption intention

	The average after the item is deleted	The variance after the item is removed	The relevance of the deleted item to the overall after the item was deleted	Cronbach's α coefficient after the term is removed
8. How much does the different content of short video ads affect your willingness to spend? - Make teasers (e.g. movie trailers, product sales trailers)	86.891	478.735	0.641	0.939
9. Introduce the product itself (e.g. Xiaomi brand features)	86.894	487.939	0.481	0.94

Table 2: The Influence of different short video advertisement content on consumption intention (cont.).

	The average after the item is deleted	The variance after the item is removed	The relevance of the deleted item to the overall after the item was deleted	Cronbach's α coefficient after the term is removed
10. Introduce how to use it (such as the inline control headphones of Xiaomi mobile phones)	86.844	485.051	0.533	0.94
11. Storytelling (e.g. Coca-Cola's magic story)	86.81	487.192	0.517	0.94
12. Do activities (e.g. Disney-themed events)	86.857	484.911	0.548	0.94

The correlation between the deleted items in 9-12 and the overall after deletion was greater than 0.4, and there was no significant change in Cronbach's α coefficient after deletion

3.2 Correlation Characteristics Between Variables

Pearson correlation analysis showed that the five core variables of short video marketing (the degree of influence of content consumption intention, the degree of influence of style purchase intention, the degree of influence of techniques, the degree of influence of celebrity effect,it has good correlation with customer satisfaction (P < 0.001), and the correlation range is 0.33 to 0.528.

Table 3: Pearson correlation was used to analyze the results

	The degree of influence of content consumption intention	The degree to which the willingness to buy is influenced by style	The degree of influence of the manipulation	The degree of influence of the celebrity effect	Attitude
The degree of influence of content consumption intention	1(0.000***)	0.33(0.000***)	0.507(0.000***)	0.43(0.000***)	0.427(0.000***)
The degree to which the willingness to buy is influenced by style	0.33(0.000***)	1(0.000***)	0.528(0.000***)	0.437(0.000***)	0.448(0.000***)
The degree of influence of the manipulation	0.507(0.000***)	0.528(0.000***)	1(0.000***)	0.497(0.000***)	0.499(0.000***)
The degree of influence of the celebrity effect	0.43(0.000***)	0.437(0.000***)	0.497(0.000***)	1(0.000***)	0.436(0.000***)
Attitude	0.427(0.000***)	0.448(0.000***)	0.499(0.000***)	0.436(0.000***)	1(0.000***)
Note: ***, **, and * represent the significance levels of 1%, 5%, and 10%, respectively					

As Table 3, the correlation between the degree of influence of tactics and consumer attitudes was the strongest (r=0.499), indicating that the innovation of short video operation methods (such as hot topic interaction and brand integrated packaging) had a significant driving effect on consumer attitudes.

The correlation between celebrity effect and content consumption intention was high (r=0.43), indicating that the consistency of celebrity image and advertising content can effectively improve users' content attention.

3.3 Linear Regression Models of Consumer Attitudes

Based on the results of linear regression, it can see that the four dimensions of VRT (content consuming

intent, fashion preference, operating mode, and celebrity influence) are significantly positively influenced by Tables 4 and 5 (p < 0.01){as shown in Table 4}, the model goodness of fit R²=0.347, adjusted R²=0.339, and F test was significant (F=42.066, p<0.001), which was as follows:

The standardization coefficient of the influence of operational methods was the highest (β=0.222), indicating that the innovation of operational strategies (such as gamified ad placement and influencer cooperation) was the most critical factor in improving consumer attitudes.

Style preference (β=0.202) and content consumption intention (β=0.178) were the second, indicating that the creative style (e.g., humor, cultural atmosphere) and practical content (e.g., product

preview, usage method) of short videos have a continuous impact on consumer attitudes.

The formula of the model is:

$$Attitude = 0.542\ 0.197X1\ 0.214X2\ 0.218X3\ 0.173X4 \qquad (1)$$

Among them, X1X1 to X4X4 represent the influence of content, style, technique, and celebrity effect, respectively.

Table 4: Linear regression analysis results n=321

	Non-normalized coefficients		Normalization factor	t	P	VIF	R²	Adjust R²	F
	B	standard error	Beta						
constant	0.542	0.22	-	2.467	0.014**	-			
The degree of influence of content consumption intention	0.197	0.06	0.178	3.284	0.001***	1.427			
The degree to which the willingness to buy is influenced by style	0.214	0.058	0.202	3.668	0.000***	1.469	0.347	0.339	F=42.066 P=0.000***
The degree of influence of the manipulation	0.218	0.06	0.222	3.665	0.000***	1.780			
The degree of influence of the celebrity effect	0.173	0.06	0.161	2.901	0.004***	1.482			
Dependent variable: Attitude									
Note: ***, **, and * represent the significance levels of 1%, 5%, and 10%, respectively									

In view of the limitations of the current linear regression model goodness-of-fit R² of only 0.339, the three dimensions of theoretical construction, method innovation and practical strategy were systematically optimized. At the theoretical level, the existing model can only explain 33.9% of the variation of purchase intention, exposing the neglect of key variables such as consumer psychological distance and algorithm recommendation mechanism, so it is recommended to introduce the SOR theoretical framework to construct a chain mediation model of "content characteristics→ perceived value → purchase intention", and include product involvement as a moderating variable, and verify the interaction effect between variables through the Bootstrap method. At the methodological level, a hybrid research design can be adopted, combined with questionnaire survey and eye tracking technology, Hotspot Analysis 3.2 software can be used to analyze the visual attractiveness of short video keyframes, and the panel data state space model can be established, the SURE estimator can be used to deal with the cross-section-dependent problem, and a 6-month observation period can be set to capture the attenuation trajectory of purchase intention. In terms of practical strategies, it is recommended to construct a dynamic content matrix, determine the optimal ratio of utility (40%), entertainment (30%), cultural (20%), and public welfare (10%) through A/B testing, develop a UGC incentive model to calculate the ROI threshold of KOL cooperation, and apply AIGC technology to improve creative production efficiency, but it is necessary to control the AI perception within

15% to avoid a trust crisis. Follow-up research can further reveal the mechanism of short video marketing effect by integrating machine learning algorithms and structural equation models to construct multimodal prediction equations including neuroscience indicators.

4 CONCLUSION

Based on the results of questionnaire surveys and the use of integrated model theory, this paper extracts three main characteristics of short video marketing influencing consumers through interviews and relevant data and conducts an empirical study on how these three characteristics affect consumer behavior. The results show that the information quality, short video content, video style. Both the architecture of video platforms and the interaction mechanisms of short-form video content exert significant positive effects on product sales performance. Consumer perceived value effectively enhances purchase decision-making intentions. Based on these empirical research findings, it is suggested that brands should strengthen the innovation of operational methods in short video marketing, such as designing interactive ads based on hot topics, or improving user engagement through gamification; Pay attention to the practicality of content and the diversity of styles, balance creative entertainment and rigorous practicality to meet different consumer preferences; Make reasonable use of the celebrity effect, choose

spokespersons who are in line with the brand tonality, and enhance the user's sense of trust; Optimize the quality of short video information, enhance brand image through public welfare content or cultural narratives, and indirectly promote purchase intention.

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