

# A comparison of the impact of review sentiment differences on sales under different sales modes—taking Douyin and Taobao as examples

*Mufei Gao*

School of Intelligent Technology and Services, City University of Macau, Macau, China

D24090101555@cityu.edu.mo

---

**Abstract.** Online review sentiment exerts a crucial influence on consumers' purchase decisions, yet systematic comparisons of the distribution differences of review sentiment under different sales modes and their influencing mechanisms on sales remain insufficient. This study takes as the research objects and the product "Advanced Night Repair Eye Supercharged (5th Generation)" of the brand Estée Lauder as a case study. A total of 1,200 product reviews (600 from Douyin and 600 from Taobao) were collected. SnowNLP was adopted for sentiment analysis, the Kolmogorov-Smirnov (KS) test was used to compare the sentiment distribution differences between the two platforms, and multiple regression was applied to test the moderating effect of platform type on the sentiment-sales relationship. The results show that there is no significant difference in the distribution of review sentiment scores between the two platforms; sentiment scores have a significant positive impact on sales conversion. The study indicates that despite the convergent sentiment distribution, the effectiveness of sentiment varies across platforms. This research provides theoretical support for the brand review effects of different sales modes across platforms.

**Keywords:** sentiment Analysis, sales volume, E-commerce platform, sales mode

---

## 1. Introduction

With the development of the e-commerce industry, e-commerce platforms in China have been divided into two categories: short-video-based e-commerce platforms (represented by Douyin) and traditional e-commerce platforms (represented by Taobao). This study verifies whether different sales modes (dominated by video and graphic content respectively) will affect review sentiment and thus sales volume by examining the sales performance of the same brand resulting from review word-of-mouth on different platforms. This study addresses the following research questions: (1) Are there differences in the sentiment distribution of reviews across different platforms? (2) Does the sentiment score have a significant impact on sales volume across different platforms? By taking Douyin and Taobao as cross-platform research objects, this study breaks through the limitations of existing studies that mostly focus on traditional e-commerce platforms, systematically compares the review sentiment characteristics and sales influence mechanisms of short-video social e-commerce and traditional transactional e-commerce, and fills the research gap in cross-platform

comparisons of review sentiment. Meanwhile, this study introduces the two-sample KS test to analyze the distribution differences of review sentiment scores, enriching the research methodologies in the field of e-commerce review sentiment analysis. The findings provide a theoretical basis for brand owners to conduct review management and marketing across different e-commerce platforms, thereby helping brands improve sales conversion.

## 2. Research design and data processing

### 2.1. Data processing

The data used in this study was crawled from different platforms, including release time, review content and other information. A total of 1,500 pieces of data were crawled, and 1,200 valid samples were obtained after cleaning, including 600 from Douyin and 600 from Taobao.

In the data cleaning stage, the original dataset was standardized in time format, missing values and outliers were removed, and invalid data such as system default positive reviews, pure emoji or symbol reviews, and duplicate reviews were eliminated to ensure the validity and integrity of the data [1].

The sentiment score of reviews was used as the independent variable to better identify the differences between the two platforms. To exclude the interference of other factors on sales conversion, two other types of data were introduced: the natural logarithm of review length was included in the model to control the impact of information richness; the number of days from the review release date to the data collection date was used to reflect the timeliness of reviews.

### 2.2. Research methods

#### 2.2.1. *KS test*

The two-sample KS test was adopted to examine whether there are significant differences in the distribution of review sentiment scores between Douyin and Taobao. This test method is sensitive to differences in the location, dispersion and shape of distributions and can reflect distribution characteristics more comprehensively.

#### 2.2.2. *Sentiment tendency analysis*

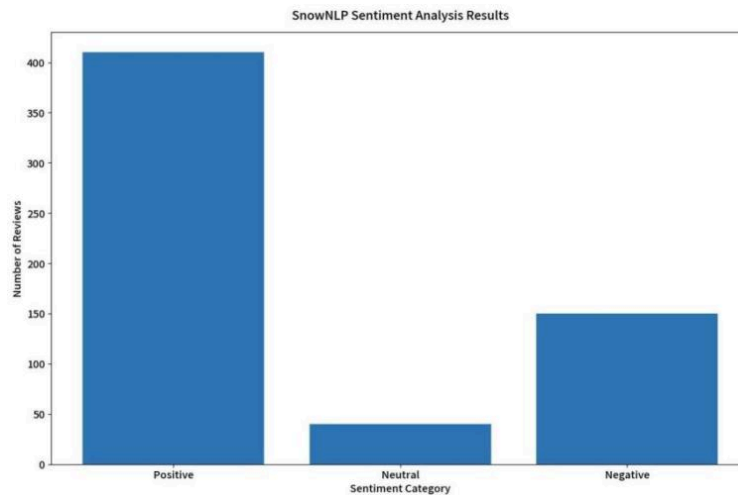
SnowNLP, a Chinese sentiment analysis library for Python, was used to judge the sentiment of each review text. Trained based on the Naive Bayes classifier, this library outputs a sentiment probability value between 0 and 1, where a value closer to 1 indicates more positive sentiment and a value closer to 0 indicates more negative sentiment [2].

## 3. Data statistics

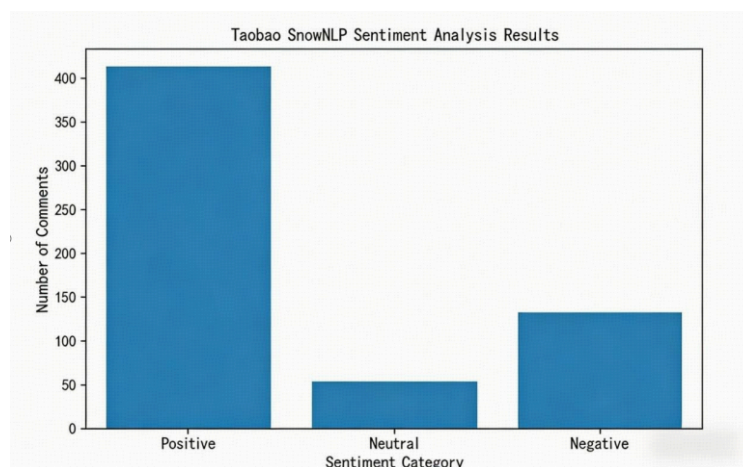
### 3.1. Descriptive statistics

Descriptive statistics were conducted on the review sentiment scores of Douyin and Taobao, and the results show that: Among positive reviews, As is shown in Figure 1 and Figure 2, Taobao had 413 (accounting for 68.8%) and Douyin had 408 (accounting for 68.0%), with the two being very close and Taobao slightly higher by 0.8 percentage points. Among neutral reviews, Taobao had 54 (accounting for 9.0%) and Douyin only had 42 (accounting for 7.0%), with Taobao having a significantly higher proportion of neutral reviews. Among negative reviews, Taobao had 133 (accounting for 22.2%) and Douyin had 150 (accounting for 25.0%), with Douyin having a 2.8 percentage points higher proportion of negative reviews than Taobao.

In summary, in terms of sentiment tendency distribution, the proportion of positive reviews on Douyin is slightly lower than that on Taobao, the proportion of negative reviews is slightly higher, and the proportion of neutral reviews is basically the same, which further reflects the similar overall characteristics of review sentiment expression on the two platforms.



**Figure 1.** Douyin sentiment analysis



**Figure 2.** Taobao sentiment analysis

### 3.2. Two-sample KS test

The two-sample KS test was used to verify the significant difference in the distribution of review sentiment scores between Douyin and Taobao, and the test results are as follows: the KS statistic is 0.0183 and the  $p$ -value is 1.000 ( $p > 0.05$ ). According to the judgment criteria of hypothesis testing, the null hypothesis cannot be rejected at the 5% significance level, meaning that there is no significant difference in the distribution of review sentiment scores between Douyin and Taobao. The results of the Kolmogorov-Smirnov (KS) test show that the KS statistic is 0.0183 and the  $p$ -value is 1.0000, indicating that there is no significant difference in the distribution of review sentiment scores between the two platforms.

This result provides an important premise for subsequent analysis: even though the review sentiment distribution characteristics of the two platforms are similar, the influence mechanism and intensity of review

sentiment on sales conversion may still differ significantly due to the differences in platform attributes and review functions.

### 3.3. Moderating effect test

By introducing the interaction term of "review sentiment score  $\times$  platform type", the moderating effect of platform type on the "review sentiment - sales conversion" relationship was tested. Table 1 reports the OLS regression results with rating as the dependent variable, including coefficient estimates, model fit indicators and diagnostic statistics.

**Table 1.** Regression analysis of sales volume

Category	Indicator	Value	Category	Indicator	Value
Model Basic Information	Dependent Variable	rating	Model Diagnostic Tests	Omnibus	179.399
	Model	OLS		Prob(Omnibus)	0.000
	Method	Least Squares		Skewness	-0.613
	Date	Thu, 19 Mar 2026		Kurtosis	2.167
	Time	01:01:39		Durbin-Watson	2.445
	Number of Observations	1,200		Jarque-Bera (JB)	109.715
	Degrees of Freedom (Residuals)	1,196		Prob(JB)	1.50e-24
	Degrees of Freedom (Model)	3		Condition Number	371
	Covariance Type	nonrobust			
	R-squared	0.004			
	Adjusted R-squared	0.001			
	F-statistic	1.414			
	Prob (F-statistic)	0.237			
	Log-Likelihood	-1,996.0			
	Akaike Information Criterion (AIC)	4,000.			
	Bayesian Information Criterion (BIC)	4,020.			

Table 1. Continued

Category	Variable	coef	std err	t	**p>	t	**	[0.025 0.975]
	const (Intercept)	3.1056	0.314	9.905	0.000	2.491	3.721	
Regression Coefficients	content_length	0.0261	0.013	2.003	0.045	0.001	0.052	
	is_douyin	0.5855	0.385	1.520	0.129	-0.170	1.341	
	length_x_ douyin	-0.0236	0.016	-1.508	0.132	-0.054	0.007	

## 4. Discussion

There is no significant difference in the distribution of review sentiment scores between Douyin and Taobao. The mean value, dispersion degree and sentiment tendency distribution of sentiment scores on the two platforms are all not significantly different, which indicates that the overall characteristics of users' post-purchase sentiment expression on different platforms are consistent, thus verifying that different sales modes have no significant correlation with product sales volume.

The review sentiment score has a positive correlation with sales conversion on both Douyin and Taobao, and sentiment tendency has a significant impact on product sales volume. It can be concluded that positive review sentiment can boost product sales volume [3, 4].

Sentiment Score Analysis: The review sentiment scores of different platforms are similar with no significant differences, which proves that the core of reviews lies in the product itself, and factors such as product quality and cost performance described in reviews are the main characteristics affecting product sales volume. In addition, regardless of the marketing methods adopted by the platform, it is ultimately the information about the product itself contained in the reviews that determines the sales volume [5].

## 5. Conclusion

This study takes Douyin and Taobao as the research objects and Estée Lauder's Advanced Night Repair Eye Supercharged Gel-Crème (5th Generation) as the case study. By collecting 1,200 product reviews and adopting methods including SnowNLP-based sentiment analysis, the Kolmogorov-Smirnov (KS) test and multiple regression analysis, it explores the impact of review sentiment differences on sales volume under different sales models. The research conclusions are as follows: First, there is no significant difference in the distribution of review sentiment scores between Douyin and Taobao, with users on both platforms showing consistent overall characteristics of post-purchase emotional expression, and no significant correlation found between different sales models and product sales volume. Second, review sentiment scores exert a significant positive impact on the sales conversion rate of both platforms, and positive review sentiment can effectively boost product sales volume. Third, platform type has a significant moderating effect on the relationship between review sentiment and sales volume. In summary, although the distribution of review sentiment converges on the two platforms, there are cross-platform differences in the effectiveness of sentiment, and the core influencing factor still centers on the product itself.

And then, this study has certain limitations: the dataset is narrow in scope and insufficient in time span, only a single beauty brand Estée Lauder is selected without considering other categories such as sports and food products, and the factor of video dissemination volume is not taken into account. As a result, the generalizability of the research findings is limited. For future research, the sample size and time scope can be expanded, sentiment analysis of video reviews can be incorporated, multi-category brands can be included for comparative analysis, and the research can be extended to other platforms such as JD.com and Pinduoduo for multi-dimensional comparisons, so as to draw more generalizable conclusions.

## References

- [1] Ma, X. (2019). *Research on e-commerce review sentiment analysis and sales volume prediction method* [Doctoral dissertation]. Dalian Maritime University.
- [2] Chang, D., & Wang, Y. Z. (2018). Commodity review sentiment analysis based on lexicon. *Journal of Shaoyang University (Natural Science Edition)*, 15(05), 27–32.
- [3] You, M. L. (2019). *Research on online product sales volume prediction method based on sentiment computing* [Doctoral dissertation]. Dalian Maritime University.
- [4] Fan, W. H., & Xu, J. (2018). Analysis of user pain points based on sentiment computing of online user reviews — Taking mobile phone reviews as an example. *Information Studies: Theory & Application*, 41(01), 132–137, 143.
- [5] Ren, Z. (2022). *Research on the impact of numerical and textual features of online reviews on network product sales: Taking search goods as an example* [Master's thesis]. Nanjing University of Science and Technology.