Research on the influencing factors of public comments emotion on government microblogs

Wenjie Liao [1, *], Lie Li [1, a], Xiaoyi Lu [2, b]

[1] School of Management Wuhan University of Technology Wuhan, China

[2] School of Marxism Wuhan University of Technology Wuhan, China

* Corresponding Author Email: Liumankit0763@163.com, [a]2513618311@qq.com, [b]415923624@qq.com

Abstract. The rapid development of online social media has attracted a large number of users, and government microblogs have widely spread their influence by virtue of the openness of the social media platform itself. In recent years, government microblogs have gradually become important channels for the public to pay attention to government policy information and understand the effect of government policy. The public comments in government microblogs are a form of E-WOM, and the emotions contained in them can reflect the public's recognition of the government's governance effects. The purpose of this study is to explore the influencing factors of public comments emotion on government microblogs.First,we establish a conceptual model of the influencing factors of people's emotions on the basic of the previous literatures.And use LDA topic extraction, sentiment analysis and text classification methods, 20 government affairs microblogs in 5 major cities are collected to verify, and the results show that bloggers use emotional language frames, choose appropriate microblog topics, and actively respond to public comments, which have a positive impact on public commentary sentiment; however, blog posts that contain media items or blog posts that are too short will make People have negative emotions. The research results are helpful to optimize the operation of government microblogs, have a good emotional interaction with the public, and make the public more recognize the government's governance effect.

Keywords: Government Microblog, Online Comments, LDA, Sentiment analysis, Text classification.

1. Introduction

The "Opinions of the General Office of the State Council on Promoting the Healthy and Orderly Development of Government New Media" issued in 2018 mentioned: New media for government affairs is an important channel for the party and the government to connect with the masses, serve the masses, and gather the masses in the mobile Internet era; It is an important means to speed up the transformation of government functions and build a service-oriented government; it is an important position to guide online public opinion and build a clear cyberspace; it is an important way to explore new models of social governance and improve social governance capabilities. The government has produced a large number of interactive activities with the public on the emerging e-government platforms represented by government microblogs. These interactions can leverage the publicity of social media to spread their influence widely. The sentiment of people’s comments on government microblogs can be used as an important indicator to measure people’s recognition of the city and government work, so exploring its influencing factors has far-reaching social significance.

Sentiment analysis is an important research direction in text analysis. The generation of network emotion is a complicated process, which has a profound social background and is closely related to the law of network information dissemination (Tang Chao, 2012). Research on sentiment analysis has accumulated several results in China and abroad, and the research includes sentiment polarity analysis and sentiment classification. Sentiment polarity analysis is a basic task in sentiment analysis. Its purpose is to judge whether the text is positive or negative, that is, positive and negative emotions, or three perceptual attitudes: positive, neutral, and negative. On this basis, the perceptual intensity is expressed by scoring. At present, there are many studies on text sentiment polarity analysis in the academic circles, and they are applied in various fields. There are two main technologies for sentiment

polarity analysis, one is to use sentiment dictionary as a reference library for text sentiment polarity analysis, and the other is to use a training document set in a specific field as a text polarity knowledge source to establish text sentiment polarity analysis for text classification model recognition. Ma Chao and Yu Hui used the sentiment analysis method based on the sentiment dictionary to build a sentiment polarity analysis model to analyze the sentiment of comments under the microblog of the Shanghai public security agency(Ma Chao *et al*, 2020), and found that the model worked well. Sun Lingling established a text classification recognition model based on LSTM network to extract user comment text sentiment when dynamically mining the user's attention and satisfaction of hot topics (Sun Lingling *et al*, 2021). The text classification recognition model based on the LSTM network completely obtains the unstructured context information of the review text, avoiding too much reliance on the construction of the sentiment dictionary. This paper adopts the second method, based on the Baidu PaddlePaddle deep learning framework, to do sentiment polarity analysis for government microblog comments.

Chinese research on the sentiment analysis of microblog comments has been done for a long time, but the background is mostly based on public emergencies or ordinary microblogs. When Zhao Xiaohang analyzed the "Tianjin Explosion" incident (Zhao Xiaohang, 2016), he used microblog comments to represent public sentiment, and used this to conduct a comprehensive analysis of the effect of information release and real-time public opinion feedback. An Lu conducted sentiment analysis on Microblog comments under public health emergencies, in order to explore the co-evolution law of public sentiment and public opinion evolution (An Lu and Wu Lin,2017). Ji Xuemei analyzed four types of public emergencies: natural disaster events, accident disaster events, public health events, and social security events, and explored the impact of government microblog response methods on public comment emotions on public emergency events (Ji Xuemei *et al*, 2020). In the academic world, the sentiment analysis of microblog comments is mostly based on emergencies or ordinary microblog backgrounds, and pays attention to the changing trends and laws of emotions, but there is little research on the factors that affect the sentiment of government microblog comments in daily situations.

On the basis of the previous literature, this study explores the influencing factors of government microblog comment emotions from the two perspectives of government microblog bloggers' publishing strategy and public interaction——blogging topics, readability, richness and rational-sensitivity framework and bloggers' response situation. A conceptual model of influencing factors of people's comments on government microblogs is established, and the data of 20 government microblogs in 5 major cities are collected for verification. The experimental results confirmed the conclusions of some previous studies. This study differs from previous studies in that:1) This article collects the data of 20 government microblogs in 5 major cities for one year, with a large time span;2) This paper explores the influencing factors of public comments on government microblogs based on daily situations.3) This paper explores the impact of blog post rational-sensitivity language framework and blog post readability on public comment sentiment.

2. Research Hypotheses and Models

2.1. Blog Topics

This paper uses the LDA model to extract the topics of government microblogs, and then interprets and summarizes the topics according to the city image theory to form blog topics. The concept of city image was first proposed by American scholar Kevin Lynch (Lynch K,1964). He believed that the public's comprehensive feelings formed a city image, that is, a city image is a public impression, which is a close combination of objective existence and people's subjective feelings. Chinese scholars Yan Jun believes that city image is a social system that includes multiple subsystems (Yan Jun,2017). When analyzing the city's influence and communication, they all divided city image into five categories: environmental image, economic image, technological and cultural image, government

image and citizen image. This article intends to refer to these five city image categories to summarize themes to form blog topics.

Studies have shown that different themes of social media have different abilities to attract people, and thus the nature and polarity of people's emotions are different. Netizens' emotions will be fluctuated by changes in posting topics. When An Lu et al. took the Zika incident as an example, they subdivided emotions into five types of emotions: "joy", "anger", "sorrow", "fear" and "shock", and then extracted microblog topics in different stages of the event cycle, in order to realize the collaborative analysis of Microblog topics and perceptual polarity (An Lu and Wu Lin, 2017). For example: after the outbreak of the Zika epidemic, microblogs about foreign epidemic reports will arouse strong boredom and hatred among the public, and when information related to the Chinese epidemic appears later, the public's "fear" will reach a relatively high level. When Zhao Xiaohang analyzed the "Tianjin Explosion" incident (Zhao Xiaohang, 2016), he found that the release of casualties and aftermath resettlement information on relevant government microblogs would lead to an increase in negative sentiment among the public. Although previous scholars mostly conducted research based on the background of emergencies, they have indeed confirmed that different topics of blog posts can have different impacts on the nature and polarity of people's emotions. In general, if we do not consider the distinction of microblog topic categories, we cannot effectively explain the perceptual changes of public comments. Therefore, this paper hypothesizes:

Hypothesis 1: The topic category of government affairs microblog has an impact on public comment sentiment, and different topics can have different effects.

2.2. Readability of blog posts

Readability is a criterion for judging the quality of information, which refers to the degree to which text information is understood and impressed by readers. It can reflect the reading and appreciation value of relevant reading materials (Hu N *et al*, 2012). Studies have shown that highly readable text content can increase reading speed and make people keep reading. The Fleisch formula explores factors that measure the difficulty of reading English texts, among which the fewer words, the better the readability (Flesch R,1946).

Korfiati conducted research on Amazon's reviews (Korfiatis N *et al*, 2012), and found that a more readable review under a product will make consumers think that the review is more useful. Useful comments will increase the satisfaction of the public, and the sentiment will tend to be positive. Run Qiang took the sentence length as the criterion of readability when exploring the factors influencing the perceived usefulness of online reviews (Yan Qiang and Meng Yue,2013). Studies have also shown that comments with longer sentences will make consumers spend more time reading and reduce their willingness to buy (Gupta P and Harris J,2010). Based on previous research and the characteristics of the Chinese language, this paper uses the number of words in the main blog post as a measure of the readability of the main post, and believes that readable text will make the public more satisfied and reflect positive emotions in response to comments. Therefore, this paper hypothesizes:

Hypothesis 2: Posts with fewer words in government microblogs will have a positive impact on users expressing positive emotions when commenting.

2.3. Richness of blog posts

According to the information richness theory proposed by R.L.Daft and R.H.Lengel in 1986, information richness refers to "the ability of information to change understanding and cognition within a certain period of time"(Daft R L and Lengel R H,1986). Therefore, the richness of online social media can be considered as its ability to transmit information. The media richness theory pointed out that for more complex tasks, blog posts with more expressive forms and richer content will achieve better results (Dennis A R and Kinney S T,1998). The level of information richness received by users affects their decision-making. When Chia-Chen studied the purchase intention of online reservation platforms, they found that online sellers providing more complete, clear and transparent product information can reduce consumers' perceived risk and increase satisfaction and

purchase intention (Chen C C and Chang Y C,2018). The research of Shalom Levy also found that the increase in the richness of product information can make people think that the information is more credible, which is conducive to the active dissemination of Electronic Word-of-Mouth (E-WOM)(Levy S and Gvili Y,2015). The information published in government microblogs contains text, images, mentions, tone of voice, links, facial signals, tags, etc., which can all be regarded as different forms of information richness. People's comments after browsing government microblog posts will be affected by the richness of blog post information. The public is more likely to accept content-rich government microblog information and have positive emotions about it. Therefore, this paper hypothesizes:

Hypothesis 3: Highly rich government microblog posts will make user comments tend to be more positive.

2.4. Perceptual-Rational Language Framework for blog posts

When Chinese scholars Zeng Xun studied media frames, he divided text frame types into perceptual frames and rational frames according to the strength of logic (Zeng Xun,2011). He believes that the perceptual frame contains more persuasive texts and has obvious emotional color; while the rational frame often has more in-depth thinking results. This article judges the perceptual-rational language framework based on whether it prefers to use perceptual or rational language when posting. Emotional posts have relatively strong subjective attributes and have relatively strong appeal. Rational posts are mainly logical, straightforward information.

Odekerken-Schroder found that when a companion robot uses more perceptual information, the user will feel closer to the robot, thereby eliminating the user's sense of loneliness and isolation (Odekerken-Schröder G *et al*, 2020). When exploring the influence of merchants' perceptual and rational publishing strategies on consumer behavior, Sela found that merchants' use of perceptual terms such as "I" and "we" when editing information can shorten the distance between merchants and consumers, thereby generating More positive consumer Word-of-Mouth (Sela A *et al*, 2012). The research of Verhagen shows that the emotions perceived by consumers when interacting with enterprises largely drive the Electronic Word-of-Mouth (E-WOM), and positive emotions are more likely to generate positive E-WOM (Verhagen T *et al*, 2013). Emotional texts can express concern and create connections, which is conducive to bringing people a more positive experience. Using some emotional terms when editing text can bring a sense of intimacy to the reader. Users are very sensitive to the perceptual and rational language components of blog posts. When the government media provides information through different language frameworks, it will affect people's views on bloggers, thereby affecting the emotions of comments. Therefore, this paper hypothesizes:

Hypothesis 4: The use of perceptual language framework in government affairs microblog will make user comments tend to be more positive.

2.5. Blogger Responses

Some studies have shown that if government microblogs cover up the truth and avoid problems when responding to public questions after reporting incidents, public doubts and dissatisfaction will increase(Xu Xin,2016). A number of studies have found that when government microblogs do not respond to information, people's anxiety and resentment will increase significantl (Weng Shihong and Ye Xiaoyun,2013; Wu Peng *et al*, 2018; Du Hongtao *et al*, 2017). The immediate response of the government microblog can make the people's mood more positive. Shi Anbin and Qiu Weiyi took the landslide accident in Shenzhen as an example (Shi Anbin and Qiu Weiyi,2018), and studied the impact of the crisis communication strategy of Shenzhen's government microblog on public sentiment. They found that after the public commented, the government affairs microblog issued an apology message in response to the public, which could gain the public's affirmation and understanding. This alleviated the negative emotions of the people to a certain extent. In the field of e-commerce research, Cabral and Hortac's research found that the seller's feedback level is positively correlated with consumers' purchase intention (Wu J *et al*, 2013). The seller's effective reply to the negative

comments can replace the negative comments as the dominant information, and fully and effectively convey product quality information to consumers (Zheng Chundong *et al*, 2015). Based on the above-mentioned literature review analysis, it can be inferred that microblog bloggers' replies can dissipate people's negative emotions. Therefore, this paper hypothesizes:

Hypothesis 5: Replies from bloggers on government microblogs will make user comments tend to be more positive.

To sum up, based on the previous literature and the analysis of the above hypothesis, the public will be affected by the comprehensive influence of different factors in the interaction between the government and the people, and feedback emotions with different polarities. The conceptual model of the influencing factors of public comments emotion established in this study is shown in Figure 1.

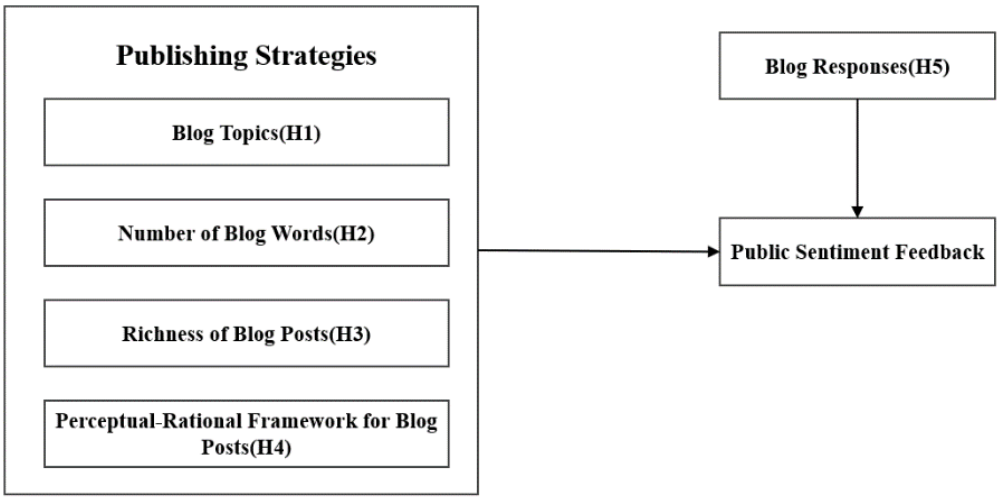


Figure 1. Hypothetical Model of Influencing Factors of public comments emotion

3. Research Data and Variables

3.1. Data Collection and Pre-processing

This study selects five cities, Beijing, Shanghai, Guangzhou, Shenzhen and Wuhan, as the analysis cities, and selects representative government microblogs in the cities. We use the octopus collector to crawl the microblogs published by government social media from January 31, 2021 to January 31, 2022 in Sina Microblog, and obtain relevant information such as microblog posts, corresponding comments, and blogger responses. Table 1 shows the microblog list of each city.

Table 1. Government microblogs of various cities

City	Microblog Name
Beijing	Beijing Release, Safe Beijing, Beijing Weather, Cultural Tourism Beijing
Shanghai	Police-civilian through train-Shanghai, Shanghai Metro shmetro, Shanghai Release, Shanghai Weather
Guangzhou	Guangzhou China Release, Guangzhou Weather, Guangzhou Public Security, Guangzhou Bureau of Culture, Radio, Television and Tourism
Shenzhen	Shenzhen Public Security, Shenzhen Weather, Shenzhen Microblog Release Hall, Shenzhen Health Commission
Wuhan	Wuhan Release, Wuhan Firefighting, Safe Wuhan, Wuhan Tourism

The total number of comment data crawled is 634036. After deleting the main post data without comment content and the same comments under the same main post, merge all the comment data under the same main post. A total of 135,711 pieces of data were obtained in the final arrangement.

Use the precise pattern of the jiaba library in Python to segment the corpus.After word segmentation, we first use regular expressions to delete numbers, letters, and Chinese and English punctuation in the corpus, and then use the stopwords to perform preliminary data cleaning on the

corpus. Then analyze the processed corpus to obtain the top 100 words with word frequency, and filter out words that appear a lot but have nothing to do with the research topic and interfere with the later topic extraction, and add them to the stopwords and perform data cleaning. Finally, we obtain the corpus.

3.2. Summarize blog topics

Zhang Zhaoyang used the LDA model to extract the topics of microblog blog posts during the epidemic to explore the relationship between microblog topics and user behavior (Zhang Zhaoyang *et al*, 2021). This study first imitated their approach, using the LDA model to extract blog topics, and then summarized the topics into topics according to the city image theory. In order to ensure the quality of the topic model, this paper uses the method of simulating the results of manual evaluation to determine the optimal number of topics. Methods for simulating human evaluation results can be divided into indirect methods and direct methods, among which the most widely used indirect method is to calculate perplexity (Mimno D *et al*, 2011), and the direct method is to calculate its topic consistency (Newman D *et al*, 2010). For LDA modeling, the lower the perplexity, the better, indicating that the extracted topics are clearer. But when the number of topics exceeds a certain amount, the larger the number of topics, the lower the perplexity, so we can't just consider perplexity. The higher the topic consistency, the better, which means the stronger the distinction between different topics learned, which can also reflect the interpretability of the model (Röder M *et al*, 2015). Therefore, the consistency index is currently considered to be a better evaluation criterion for topic models than perplexity. In this paper, the optimal number of topics for the LDA model is determined by focusing on topic consistency and supplemented by perplexity.

First, set the range of the number of topics from 1 to 200, calculate the consistency and perplexity with 10 topics as the span, and summarize the change law of consistency and perplexity,as allows.

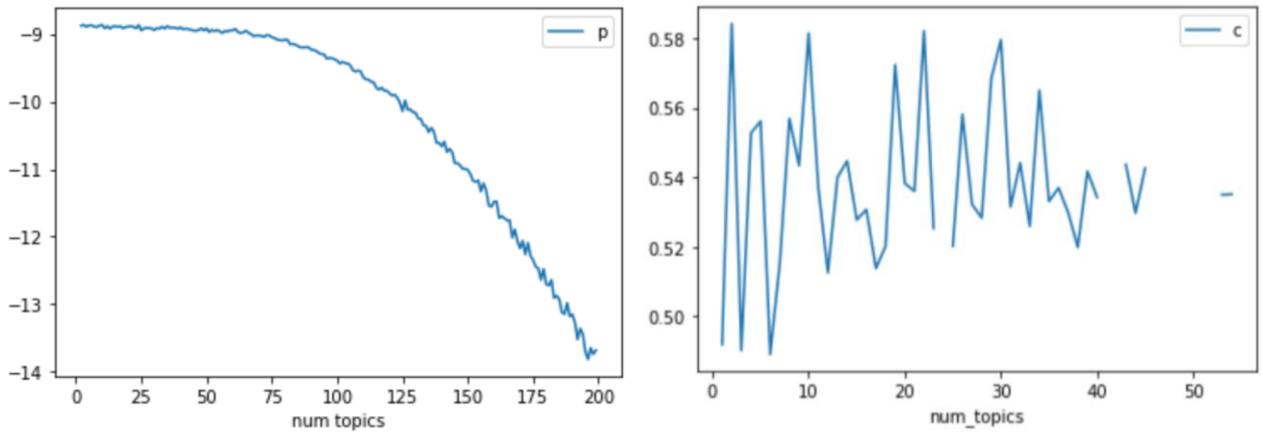


Figure 2. Topic perplexity and coherence trends

We found that when the number of topics is in the interval (19,24), the results of topic consistency are better; when the number of topics is in the interval of (10,30), the results of perplexity are better. Therefore, we select a new range to output the results one by one, and select the number of topics that make the consistency higher and the perplexity lower. The final number of topics was determined to be 20.

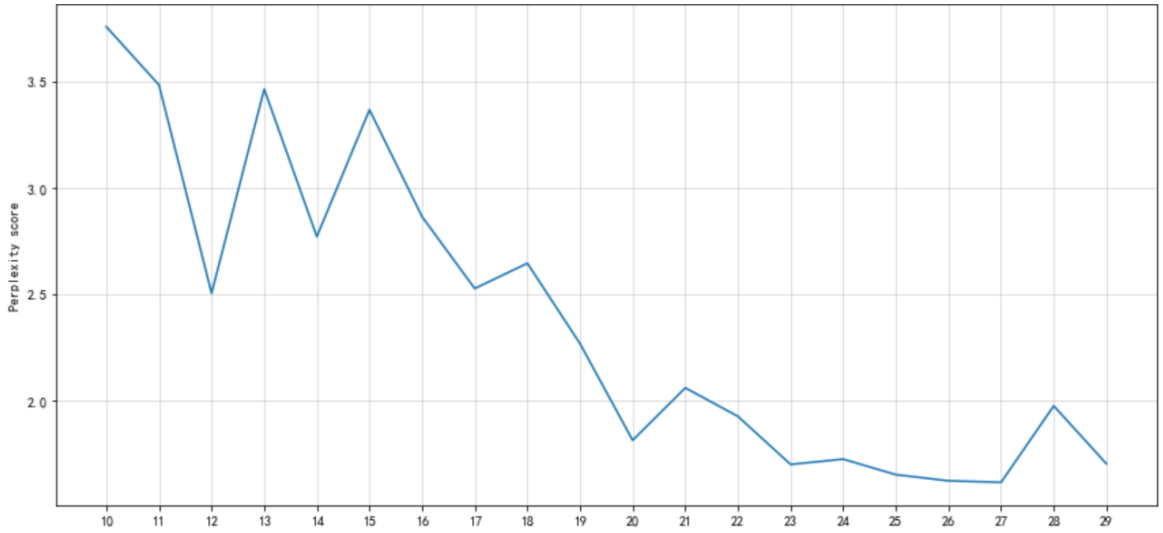


Figure 3. Topic perplexity line chart

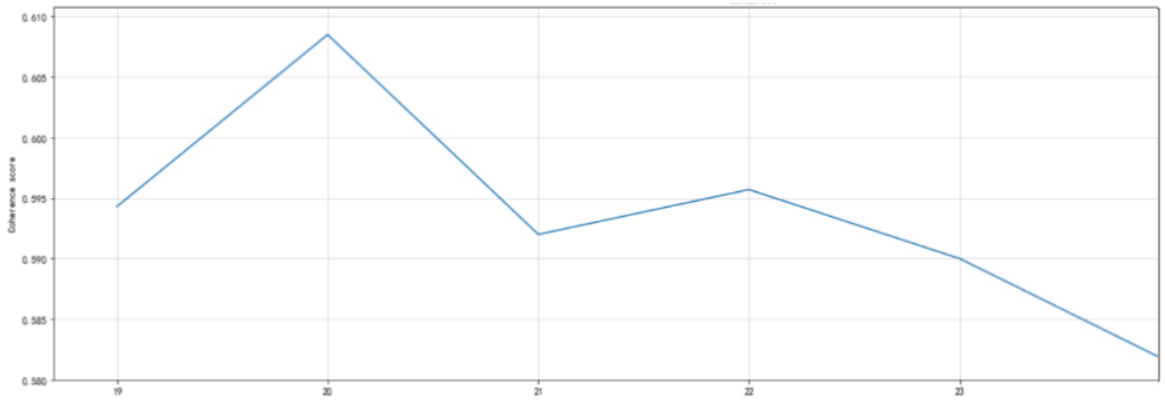


Figure 4. Topic consistency line chart

Modeled using the ldamodel class in the gensim library. Get 20 topics and their top ten keywords by weight, as shown in Table 2.

Table 2. 20 topics

Topics	Key words
topic0	rainstorm; yellow; green; reporter; romance; peak; show; correct ; development; unimpeded
topic1	park; discovery; platform; Friends; lottery; company; netizens; accept; new year; family
topic2	work; spring festival; management; society; epidemic prevention; focus; do well; guarantee; related
topic3	early warning; hour; time; signal; my district ; future; influence; gust; defense; direction
topic4	life; consultation; arrangement; Pearl River; recommendation; control; try; norm; false; suitable
topic5	the whole city; children; education; development; enterprise; knowledge;; suspected cases; received
topic6	cloudy; bight; partial; cloudy; each district; between; gastronomy; minor; go to work; weather forecast
topic7	thunderstorm; good night; place; remember; good morning; sunshine; rainfall; friends; short time; go out
topic8	lift; accumulate; report; panda; cure; native; sunny to cloudy; southerly wind; among clouds; finally
topic9	activities; do practical things; high temperature; travel; civilization; experience; passengers; ride; fight;
topic10	traffic police; Traffic; spring festival travel; traffic safety; trend; ten days; like; find; visibility; cold air
topic11	city; country; nationwide; source; vacation; service; telephone; project; construction; reservation
topic12	CCTV; flower city; vote; handy; protection; business; local; effort; choice; my country
Topic13	policeman; man; network; woman; recently; call the police; discover; mobile phone; one; remind
Topic14	typhoon; hope; section; collection; start; baiyun mountain; tradition; happiness; influence; rescue
Topic15	culture; check-in; history; people; sky; feeling; square; red; attention; construction
Topic16	passenger flow; peak; scene; opinion; organization; time; current limit; suggestion; adjustment
Topic17	salute; passenger; train; turn on; go out; a kind of; ride; know the sky; do; ultraviolet light
Topic18	personnel; citizens; reminder; information; community; operation; travel; driving; cooperation; passengers
Topic19	health; novel; coronavirus; risk; regional; emergency; situation; disaster; international; community

During the preliminary exploration of the subject keywords, it was found that there were almost no words related to the economy, so the economic image was removed. We summarize the themes of blog posts in four categories of city image: government image, environment image, technology and culture image, and citizen image.7 main topics are drafted, including life services, transportation and commuting, events and festivals, medical resources, government affairs introduction, sports and entertainment and humanistic feelings. Table 3 shows the topics after the summary of themes.

Table 3. 7 categories of Microblog topics

Blog Topics	topic number	City image categories
Government Affairs Introduction	13,14,18	Government image
Life Services	3,6,7,8	
Medical Resources	19	
Events and Festivals	1,2	Technology and culture image
Sports and Entertainment	15	
Humanistic Feelings	4,5,9,12	Citizen image
Transportation and Commuting	0,10,16,17	Environment image

3.3. Sentiment Analysis of Public Comments

This study uses Baidu's PaddlePaddle deep learning tool for sentiment analysis. PaddlePaddle's sentiment analysis is an efficient sentiment analysis model. The Baidu sentiment lexicon contains sentences and articles in various fields. The accuracy rate of the sentiment tendency model is higher than 92%, and the usability and accuracy are very high. Use the sentiment model to analyze the sentiment of the corpus, and quantify the sentiment of the review set as a floating-point number between 0 and 1. The closer the score is to 1, the more positive the sentiment is. Some results are shown in Table 4.

Table 4. Partial Sentiment Score

Microblog Comments	Sentiment Score
“I'm so impressed at such a young age, it's amazing”	0.9997
“Long-lost sunshine”	0.9996
“I am quite moved by the efforts of the epidemic prevention staff”	0.9920
“As if you want to sleep can sleep well”	0.5424
“The atmosphere was once very awkward”	0.0718
“Not in the rectification it! ”	0.0033

3.4. Recognition of Perceptual-Rational Language Framework for Blog Posts

The essence of perceptual-rational language frame recognition for government microblog texts is to classify texts and transform text data into categorical data for further research on the hypotheses proposed before. Rational microblogs are usually rich in information and have the characteristics of directly presenting information, such as directly describing the weather conditions; Emotional type means that the text of microblog is rich in emotion, and usually contains modal particles such as "la, ma". It attracts the attention of the masses through words with caring or evaluation attributes.

In order to establish the test set and training set, this paper first marked 1000 blog post data. The labeled data is divided into training set and test set according to the ratio of 8:2. Part of the tagged text tags are shown in Table 5:

Table 5. Part of the training text display

Rational type	Perceptual type
# Climate forecast # is expected to May 1 - May 20 the average temperature of the province is 0 ~ 1 ℃ higher than normal. The extreme maximum monthly temperature is 31℃~33℃ in Huabei, 33℃~35℃ between Jiangsu and Huaihua, and 34℃~36℃ in southern Jiangsu.	#How beautiful are the grasslands of Xinjiang # This is too good to look at! Already looking forward to the summer in Xinjiang #beach recreates a stunning fluorescent sea like a blue star #are you ready to embrace summer?

Word vectors are used to represent text during corpus processing. A rational-perceptual classification model was established by random forest algorithm. Train according to preset parameters and test the model. The evaluation results of the model based on the test set are shown in Figure 5, and the classification model works well.

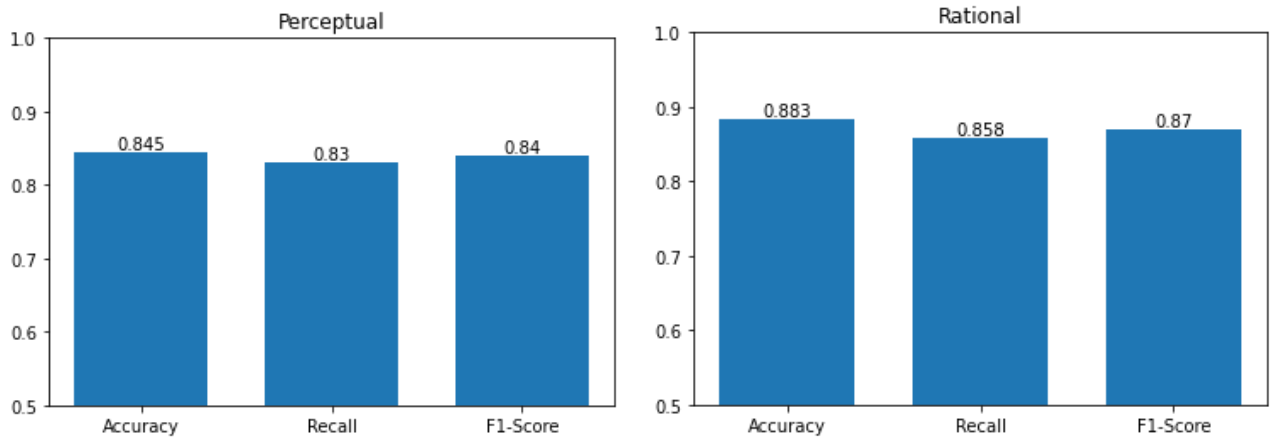


Figure 5. Model Evaluation Results

4. Hypothesis Verification

4.1. Variable definitions

This study intends to use multi-factor analysis of variance and linear regression equations to verify the hypothesis. The specific variables are defined as follows:

Table 6. Variable definitions

Variable	Meaning	index	corresponding hypothesis
Attitude (Dependent Variable)	Sentiment score of public comments	Public sentiment	
Theme	Microblog blog topics	Microblog blog topics	H1
Number of words	Word Count of Microblog Posts	Blog Readability	H2
Video&img	Microblog posts containing media items	Richness of blog posts	H3
Emotional	Perceptual-Rational Language Framework for blog posts	Language Framework for Blog Posts	H4
Interactive	Whether the blogger replies to public comments	Bloggers' responses	H5

The descriptive statistics of the data are shown in Table 7, Figure 6 and Table 8:

Table 7. Continuous Data Description

Variable	Quantity	Average	Standard Deviation	Minimum Value	Maximum Value
Attitude (Dependent Variable)	135711	0.874211	0.1495	0.001	0.9997
Number of words	135711	179.8494	194.2103	2	4493

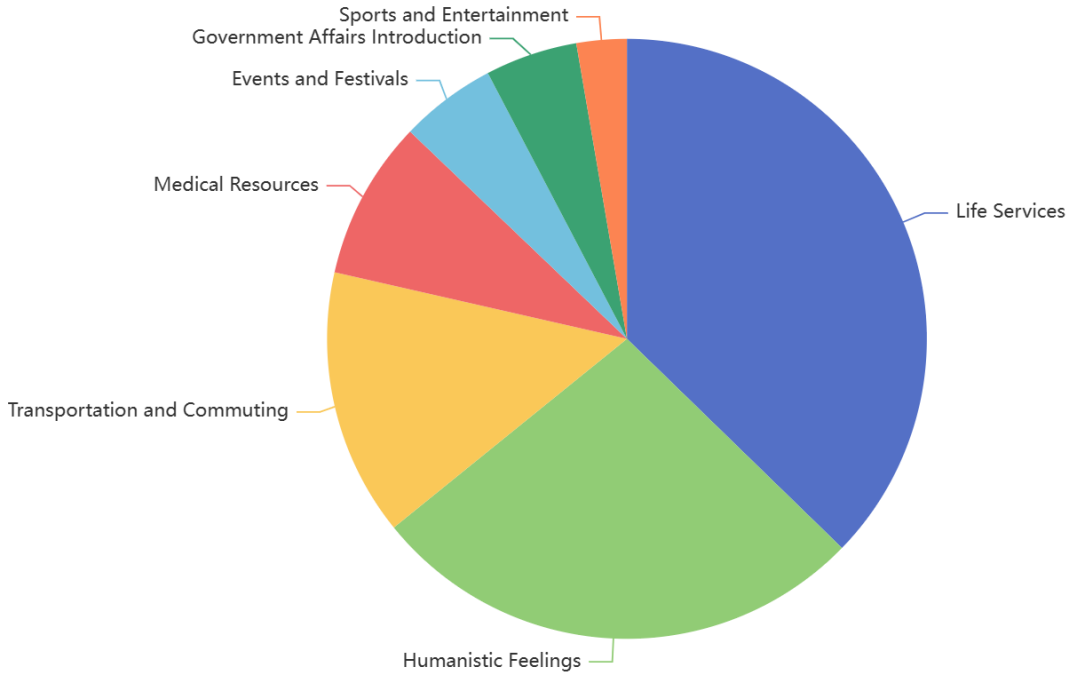


Figure 6. Proportion of each topic

Table 8. Categorical Data Description

Variable	Classification	Frequence	Frequency
Video&img	No Media Items	69070	0.51
	Have Media Items	66641	0.49
Emotional	Rational Language Framework	68097	0.50
	Perceptual Language Framework	67614	0.50
Interactive	blogger no reply	89302	0.66
	blogger with reply	46409	0.34

It can be seen from Figure 6 and Table 8 that the issues of Sports and Entertainment, Events and Festivals account for a small proportion, while the issues of Life Services, Humanistic Feelings account for a large proportion; Blog posts containing media items and blog posts using perceptual language frameworks accounted for half of the total; 66% of all blog posts have replies.

4.2. Multi-factor analysis of variance

Stata software was used to conduct multi-factor analysis of variance with the categorical variables in the above hypothesis as independent variables and public comment sentiment as dependent variables. The results are shown in Table 9:

Table 9. Multi-factor analysis of variance results

Variable	F	Statistical significance
Interactive	21.21	0.000***
Video&img	272.19	0.000***
Theme	103.38	0.000***
Emotional	21559.04	0.000***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Through multi-factor analysis of variance, it can be known that: blogger's response, media items contained in the main post, microblog blog post topic and blog post rational-perceptual framework can significantly affect the sentiment of public comments.

4.3. Regression Analysis

Multi-factor analysis of variance can only prove that categorical variables can have a significant impact on emotion, but it cannot know the direction of its influence, and cannot fully verify the above hypothesis. This paper intends to use the least square method to further verify the proposed hypothesis, and the model settings are as follows:

$$Attitude_i = \alpha + \beta_1 Emotional_i + \sum_{j=2}^{7} \beta_j Theme_{ij} + \beta_8 Number_{words_i} + \beta_9 Video\&img_i + \beta_{10} Interactive_i \quad (1)$$

Among them, Attitude is the sentiment score of the people and is the dependent variable. The coefficient β_1 can reflect the influence of the rational-perceptual language framework on the emotions of public comments; the coefficient β_j is the coefficient of the dummy variables of the six blog post topics. This paper takes the topic of "events and festivals" as a reference variable, and sets six dummy variables to represent the remaining six blog post topics; β_8 reflects the impact of the number of blog words on public comment sentiment; β_9 reflects the influence of microblog blog posts containing media items on public comment sentiment; β_{10}reflects the influence of bloggers' responses on public comment sentiment.

Table 10 shows the regression results of the regression, and the adjusted R^2 of the regression equation is 0.148. After the significance test of the regression equation, the calculated F test volume is 2365.82, and the p value is 0.000. This regression equation is considered significant.

Table 10. Regression Analysis Results

Variable	Regression Coefficients	p value	Remark
Emotional	0.123***	0.000	
	(149.73)		
Life Services	-0.0137***	0.000	Benchmark Group：Events and Festivals
	(-7.57)		
Transportation and Commuting	-0.0172***	0.000	
	(-8.74)		
Medical Resources	0.0279***	0.000	
	(12.98)		
Government Affairs Introduction	0.00164	0.489	
	(0.69)		
Sports and Entertainment	-0.00186	0.515	
	(-0.65)		
Humanistic Feelings	0.0277***	0.000	
	(14.96)		
Number of words	0.0000125***	0.000	
	(6.33)		
Video&img	-0.0174***	0.000	
	(-22.31)		
Interactive	0.00304***	0.000	
	(3.67)		
cons	0.825***	0.000	
	(459.69)		
N	135711	0.000	

* p < 0.05, ** p < 0.01, *** p < 0.001

5. Conclusion and discussion

5.1. Result Analysis

Based on the results of the above model, after statistically analyzing the influence of bloggers' publishing strategies and responses on the sentiment of public comments in interactive activities, this study verifies some of the hypotheses. The conclusions of the above data analysis:

Hypothesis 1: Consistent with the hypothesis, it is proved in the variance analysis that blog post topics can have an impact on public sentiment. In the regression analysis, the topics of Events and Festivals were set as the benchmark group, and the results proved that the topics of Life Services, Transportation and Commuting, Medical Resources and Humanistic Feelings had an impact on the public's comments at the level of 1%. Compared with the issues of Events and Festivals, the issues of Medical Resources and Humanistic Feelings can significantly make people's comments tend to be more positive, while the issues of Transportation and Commuting and Life Services can significantly make people's comments tend to be more negative. Based on the timing of the data acquisition, China is in the period of one year after the outbreak of the epidemic. Most of the Medical Resources issues are about information on epidemic prevention and control. When people comment, they often have an encouraging tone and their emotions tend to be positive. Moreover, the research on the epidemic has made some progress, coupled with the Chinese adoption of a series of measures to deal with the occurrence of the epidemic, the public has a relatively optimistic attitude towards the governance of the epidemic. Humanistic Feelings issues are mostly information closely related to citizens, and usually convey positive information, so the public is more likely to have positive emotions. In the issue of Transportation and Commuting, people may have negative emotions due to news such as traffic jams.

Hypothesis 2: This paper uses the number of blog words as the criterion for judging the readability of blog text. Its regression coefficient is positive and the significance level is 1%, indicating that the more blog words, the more positive the sentiment of public comments, which is inconsistent with the hypothetical conclusion.

Hypothesis 3: This article uses whether a blog post contains media items to judge the richness of blog posts. The regression results show that the inclusion of media items has a negative impact on the sentiment score, which is inconsistent with the hypothesis.

Hypothesis 4: The hypothesis above is that the perceptual language framework makes public comments more positive, and the regression results can verify the hypothesis. In the regression analysis, the emotional mark is 1, the significance level of the emotional posting strategy is 1%, and its regression coefficient is positive. Therefore, it can be considered that the perceptual publishing strategy can significantly make the public's sentiment develop in a positive direction. The larger the proportion of emotional words in blog posts, the more people will feel the intimacy, and they will naturally have positive emotions when they reply. This hypothesis holds.

Hypothesis 5: In the regression analysis, if the blogger has a response, it is marked as 1, and the coefficient of the blogger’s response is positive, and the significance level is 1%. Therefore, the hypothesis can be verified. The blogger’s reply to the public proves that the atmosphere of the interactive activity is good. At the same time, the more positive the official reply is, the more positive the public feedback will be.

5.2. Suggestions on publishing strategies for government affairs media

This study mainly explores the factors that affect the sentiment of public comments from the two aspects of posting strategies and responses of bloggers on government microblogs, and explores the strength and weakness of various factors that affect the sentiment of public comments. The research conclusions have reference significance for the information strategy of the government microblog platform in information disclosure, public opinion guidance, listening and feedback of public appeals.

The information content released by the government microblog involves the practical interests of a wide range of people, and it is planned to meet the huge information needs of the people. Especially

in today's information age, timely and quantitative information communication between relevant government departments and the general public is very important. The establishment of the government microblog platform provides a good information platform for the general public and relevant government departments. This research focuses on the topic category of blog posts, the rational and perceptual framework, the richness of blog posts, the readability of blog posts, and the response of bloggers in the strategy of posting blog posts, and investigates how government microblogs can effectively activate public emotions. The results show that the use of perceptual language framework in the body of government affairs microblog has a significant positive impact on improving the public's sentiment score, that is, perceptual posting strategies can make the public's sentiment more positive; Relatively speaking, people's sentiments will be more positive under blog posts with medical resources or humanistic feelings as the topic of microblog; Editing microblog without media items and increasing the length of blog posts can also positively affect popular sentiment.

Therefore, it is suggested that when editing the content of main blog posts, government microblogs in various places can use text based on perceptual frameworks, and the length of blog posts can be appropriately increased. Use more intimate words when introducing government affairs, interact with the public more, and actively reply to the comments of the public on the main post, so as to avoid alienating the public and causing negative emotions. The above measures have positive significance for improving the positive sentiment of the people.

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