

# The Influence of the Central Path Media Blog Post Information Characteristics on User Behavior

Shengxue Cheng<sup>a,\*</sup>, Changbin Jiang<sup>b</sup>, Kaijiao Ren<sup>c</sup>

Wuhan University of Technology School of Management, Wuhan, Hubei Province, China

<sup>a</sup>2637409918@qq.com, <sup>b</sup>175521@qq.com, <sup>c</sup>616579220@qq.com

\*corresponding author

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**Abstract:** The rapid increase in the number of media microblogging news releases has made large multimedia ignore the impact on the behavior of news information users. This paper uses the Elaboration Likelihood Model (ELM) as the framework to select 10 news media accounts with great influence. Taking the “40th Anniversary of Reform and Opening” as an example, the information characteristics of blog posts are extracted from the central path, and the central path is constructed. The model of the impact of information characteristics on user behavior is verified by regression analysis. The results show that the guidance, summary, interesting of the media microblogging center blog post positively affects its users’ forwarding, commenting and liking behaviors. The blog post interactivity only has a significant impact on the user's comment behavior.

## 1. Introduction

As of November 2018, Weibo’s monthly active user was 446 million, and its presence in Weibo has become an important part of media operations. At present, the mainstream media covers more than 500 million users on Weibo, with a cumulative coverage of more than 1.5 billion. The three media of @The People’s Daily, @CCTV News, @Xinhua News Agency are among the best, and the size of the fans is far ahead. Because of the rigor, accuracy and timeliness of news reports, it is not possible to provide long-term attractiveness through branding, games, forwarding, and question-and-answer awards, as well as branding, to stimulate fan interaction and participation. And social platforms like Weibo use the influence of social attributes to expand content. The purpose is to let the network democracy share, actively comment, and promote communication, for the media or network public opinion regulators can better understand the public opinion, predict and guide the network public opinion trend to provide reference and recommendations.

As an important subject of information dissemination, the media has attracted the attention of scholars at home and abroad. In comparison, domestic research on media microblogs mainly focuses on qualitative analysis of media microblog development status, operational strategies, and public opinion guidance from the perspectives of channels and discourse features [1-2]. A small amount of literature studies the influence of media attention, credibility, and social relationships on the behavior of netizens [3-4]. It is rare to quantitatively explore the influence of information characteristics on the behavior of netizens from the perspective of media blog posts. Therefore, identifying the information characteristics that affect the behavior of media microblog users, and exploring how to attract netizens to actively spread and participate in discussions has become an urgent problem for mainstream microblogging.

## 2. Theoretical Basis and Assumptions

### 2.1. Elaboration Likelihood Model

In the 1980s, social psychologists Petty and Cacioppo summarized theories about the formation and change of attitudes and cognition. The proposed Elaboration Likelihood Model (ELM) can

explain the process of information characteristics of media posts affecting user behavior [5]. ELM shows that the process of changing the attitude and behavior of a sink by the influence of source and content is described as two information processing paths, namely the central path and the edge path. The central path means that the user will carefully think about and evaluate the relevant content of the information in order to change the attitude in the process of obtaining information. In this process, the user is particularly concerned with the quality of the content related to the information itself.

At present, ELM is widely used as a persuasive model in information dissemination and consumer behavior research. Wei Z. & Yuling S. (2014) took the public events of the Japanese car as an example, based on the ELM model, proposed the influence factors of the blog content and source characteristics on the public opinion transmission, and built a regression model to verify [6]; Glassman & Paprzycki (2017) used ELM to compare the impact of central and marginal prevention information on college students' alcohol consumption and drunk behavior [7]; Wei Z. & Xiaodan L. (2018) based on the ELM theory to compare consumer product concerns and attitudes from the central path and the edge path [8]; Xianjie H. & Xiaoyu W. et al. (2018) found that investors do not respond to all information in the impact of information disclosure on economic consequences, it can only be effectively transmitted to investors with high quality and value [9]; Miller & Freimund (2019) combined ELM and TPB to analyze how different information feature communication strategies affect passenger environmental protection behavior through a situational survey of passenger bear spray behavior [10].

In summary, blog quality is the main reason that affects the behavior of media Weibo users, and blog information characteristics are direct factors reflecting the quality of blog posts.

The response of media Weibo users to news information behavior is mainly based on the impact of blog quality, and the blog information feature is a direct factor reflecting the quality of blog post information.

## **2.2. Blog Feature and User Behavior Analysis**

There have been researches on the characteristics of blog, mainly related to symbols, words and opinions in the content of information. ① Symbol: for example, the topic function (“#”) and the mention function (“@”) in the microblog information have a significant impact on the microblog forwarding; Zhumei S and Zhibing W. (2019) predicted the user's adoption level of Weibo health information from three aspects: form, content (summary statements, special symbols, topics, and source of information [11]; ② Text. Mainly through keyword extraction and word frequency analysis methods to study Weibo user behavior and relationship characteristics, Lu S. (2014) based on the research on the forwarding of reviews of corporate brand Weibo information in SNS, found that information interest promotes comments and forwarding [12]; Ling H. & Yuexin H. (2018) found that the interest, usefulness and interactivity of enterprise microblogs are positively affecting consumers' willingness to re-distribute their reputation, which in turn affects word-of-mouth communication behavior [13]; ③ View. Mainly analyze the time, content, orientation, attitude and other factors in Weibo and its comments by means of content analysis, Yuelin L. (2018) found that pseudo-health information has punctuation problems and strong personal opinions, which are unique features in Chinese context when constructing a list of pseudo-health information features [14].

Regarding the user behavior research of Weibo platform, Jing Z. (2014) takes Sina Weibo as an example to empirically analyze the characteristics and trends of Weibo users' attention, comment and forwarding behavior [15]; Vries & Gensler (2012) argues that in social media, like behavior is a reflection of consumer attitudes [16]. Therefore, the user information behavior studied by the author refers to the forwarding, commenting and likes of the blog posts by the media microblog users. In summary, this paper combines the characteristics of media blogs, selects the guidance, summary, interest and interactivity of media posts as the characteristics of blog posts on the central path, and analyzes the impact of blog features on user forwarding, commenting, liking.

### 2.3. Hypothesis

In Weibo, there are often guiding texts that guide users to forward, comment, and like. Based on existing research and user experience surveys, it has been found that such guiding texts have an impact on attracting users to further understand events and participate in discussions. Therefore, make the following assumptions.

H1: The guiding of media Weibo positively affects user behavior

H1a: The guiding of media microblogging positively affects user forwarding behavior

H1b: The guiding of media microblogging positively affects user comment behavior

H1c: The guiding of media microblogging positively affects user like behavior

The news headline is an important part of summarizing the news events, so some media posts will use the general statement to express the news topic at the beginning, which is equivalent to the news headline.

Qingfei Y. & Liang Y. (2017) found that the commentary information with the title is more useful than the absence of the title when studying the influence of information features on the usefulness of the review [17]. Therefore, make the following assumptions.

H2: The summary of media Weibo positively affects user information behavior

H2a: The summary of media Weibo positively affects user forwarding behavior

H2b: The summary of media Weibo positively affects user comment behavior

H2c: The summary of media Weibo positively affects user like behavior

With the rise of expression packs, in addition to text, blog posts often insert emoji to convey emotions. Yang H. (2017) demonstrated the positive communication effects of the People's Daily Sina Weibo expression pack in terms of audience perception, emotion, behavior, etc. [18]. Therefore, make the following assumptions.

H3: The interest of media microblogging is positively affecting user information behavior

H3a: The interest of media microblogging positively affects user forwarding behavior.

H3b: The interest of media microblogging positively affects user comment behavior

H3c: The interest of media microblogging positively affects user like behavior

At present, some media microblogs are good at using the exclamatory sentences with clear positions and full emotions to mobilize emotions and evoke resonance [2]. Such as "Pride for you! China's achievements", "40th anniversary of reform and opening up, what changes make you feel the deepest?" This expression is more open and resonating, providing an interactive and participatory space for the audience. In the study of brand crisis communication, Xue Ke (2013) found that the use of "rhetoric" in blog posts affects users' forwarding or reply behavior to some extent [19]. Therefore, make the following assumptions.

H4: The interactivity of media microblogs positively affects user information behavior

H4a: The interactivity of media microblogs positively affects user forwarding behavior

H4b: The interactivity of media microblogs positively affects user comment behavior

H4c: The interactivity of media microblogs positively affects user like behavior

In summary, under the ELM framework, the influence relationship and assumptions between the central path media blog information characteristics and user behavior are shown in Figure 1.

## 3. Variable Definition and Data Collection

### 3.1. Variable Definition

The author sets three dependent variables according to user behavior, namely, the amount of forwarding (y1), the amount of comments (y2), and the amount of like (y3). There are four kinds of independent variables studied, namely guidance (guid), summary (emo), interesting (emo) and interactivity (mark) of the central path. To ensure that the results are more scientific, the variables are further quantified and converted into actionable observation variables (as shown in Table 1).

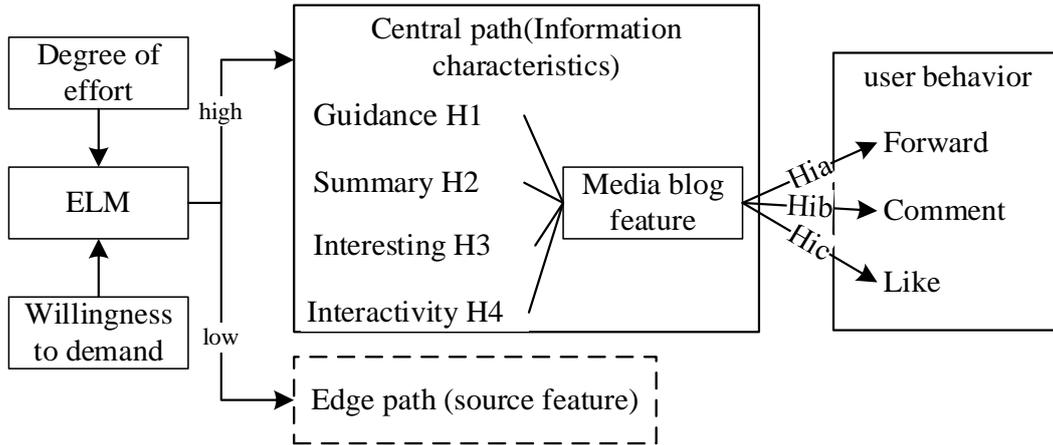


Figure 1 Relationship between the characteristics of the central path and the user behavior under the ELM framework.

Table 1 Model variables.

Variables	Definition
$guid_j$	Whether the $j^{th}$ microblog contains any of the four types of guiding texts: Forwarding for”, “Liking for ...”, “Collection   Transfer”, “Poke Spit   Link for details”, yes 1 no 0
$title_j$	Whether the $j^{th}$ microblog contains the summary statement marked by [], yes 1 no 0
$emo_j$	Whether the $j^{th}$ microblog contains the emoji marked with “[ ]”, yes 1 no 0
$mark_j$	Whether the $j^{th}$ micro-phrase statement contains any punctuation of “!” or “?”, yes 1 no 0

### 3.2. Data Collection and Processing

The author grabbed 407 media accounts in the “media” category under Sina Weibo’s “Important Looking for People”. Selecting TOP50 based on fan rankings will eliminate the small amount of blog posts and non-news media accounts associated with the “40th Anniversary of Reform and Opening Up”. Select the account number of the fan ranking TOP10 as the research object. Grab 1911 pieces of Weibo information from January 2018 to March 2019. Excluding abnormal data, comment setting data, and 1857 valid data remaining. The captured information fields include the content of each Weibo, the time of publication, the number of forwards, the number of comments, and the number of likes. Then through the content segmentation and annotation of the blog post, the blog posts are summarized, interesting, guiding and interactive.

Among the 1857 data, the proportion of blog posts with summary is 89% (1653), while the number of Weibo with expression packs is 19.6% (364), and the proportion of Weibo with guide text is 45.67% (848), in terms of blog interactivity, 33.49% (622) of the samples used interactive punctuation.

## 4. Data Analysis

### 4.1. Research Methods

Considering that the dependent variable represents the number of events, is a discrete integer (count variable), and the behavior of the blog post being forwarded, commented, and liked is random, with Poisson distribution characteristics, and this paper assumes that the variables involved are mostly qualitative variables. Referring to the previous research results and treatment methods [17], this paper uses Poisson model to verify the hypothesis. The specific expression is as in formula (1).

$$y_{ij} = \beta + \exp(\alpha_1 guid_{ij} + \alpha_2 title_{ij} + \alpha_3 emo_{ij} + \alpha_4 mark_{ij}) + \epsilon_{ij} \quad (1)$$

Can be simplified to:

$$\ln(y_{ij}) = \beta_{0ij} + \sum_{n=1}^4 a_{ni} x_{nij} \quad (2)$$

In formula (2),  $y_{ij}$  is a dependent variable that measures the behavior of media microblog user information. Where  $i = \{1,2,3\}$ ,  $j = \{1,2,3,\dots\}$ , which in turn indicates that the  $j^{\text{th}}$  microblog is forwarded, commented, and liked.  $\beta_{ij}$  represents the intercept of the formula, representing the random error of the Poisson distribution.

#### 4.2. Relational Model Test

In the regression model of the research design, three models and four independent variables are involved. In order to avoid the model estimation distortion, it is necessary to test the fitting degree of different models to the observation values one by one, and the close relationship between the dependent variables. According to the test results (Table 2, Table 3), the fitted values of the model variables (guidance, summary, interesting and interactivity) to the models  $y_1$ ,  $y_2$ ,  $y_3$  are  $F_1=466.502$ ,  $F_2=457.89$ ,  $F_3=502.776$ , the influence of independent variables on each dependent variable was significant ( $p < 0.001$ ). Combined with  $R^2$  and Adjusted  $R^2$ , the regression equations have more than 50% explanation for forwarding, commenting, and likes. In addition, the VIF of the independent variables in each model approaches 1 ( $< 10$ ), and the Tolerance ranges from (0.8, 1). Therefore, the multicollinearity problem between independent variables can be ruled out, and the model constructed by six variables as independent variables is more stable. In summary, the robustness and predictive power of the regression equation meet the research requirements.

Table 2 Model robustness test.

Model	F	sig	R2	Adjusted R2
y1	466.502	.000	0.601	0.600
y2	457.891	.000	0.585	0.575
y3	502.776	.000	0.619	0.617

Table 3 Covariate collinearity test.

	y1			y2			y3		
	Sig.	VIF	Tolerance	Sig.	VIF	Tolerance	Sig.	VIF	Tolerance
guid <sub>ij</sub>	.000	1.135	.881	.000	1.135	.881	.000	1.135	.881
title <sub>ij</sub>	.000	1.102	.907	.000	1.102	.907	.000	1.102	.907
emo <sub>ij</sub>	.000	1.104	.906	.000	1.104	.906	.000	1.104	.906
mark <sub>ij</sub>	.015	1.087	.920	.002	1.087	.920	.065	1.087	.920

#### 4.3. Regression Model Verification

Since the Poisson model requires that the conditional mean and the conditional variance are equal, this condition is difficult to satisfy in reality. The variance of the model dependent variable is also much larger than expected, that is, there is excessive data dispersion. Therefore, the negative binomial regression model was used to perform the hypothesis test [20], and the data was imported into the stata software to calculate the following verification results (Table 4).

Guidance has a positive impact on user forwarding, comments and likes ( $\alpha_{11}=0.951$ ,  $\alpha_{12}=0.981$ ,  $\alpha_{13}=1.009$ ,  $P < 0.01$ ), H1a, H1b, H1c are supported, and the impact is significant, in general, news guidance significantly affects the behavior of media Weibo users, and H1 is supported. Summary has a significant positive impact on user forwarding, comments, and likes ( $\alpha_{21}=1.513$ ,  $\alpha_{22}=0.676$ ,  $\alpha_{23}=0.448$ ,  $P < 0.01$ ), H2a, H2b, H2c are supported, in general, news summaries significantly affect user behavior, and H2 is supported. Interesting positively affects user forwarding, comments, and like behavior ( $\alpha_{31}=0.676$ ,  $\alpha_{32}=0.448$ ,  $\alpha_{33}=0.543$ ,  $P < 0.01$ ), H3a, H3b, H3c are supported, overall, the news summary significantly affected user behavior and H3 was supported. Interactivity positively affects user forwarding, comments, and like behavior ( $\alpha_{31}=0.015$ ,  $\alpha_{32}=0.201$ ,  $\alpha_{33}=0.025$ ,

P<0.01), H4a, H4b, H4c are supported, but only the impact on user comments is significant, and H4 is partially supported.

Table 4 Empirical results of negative binomial regression model.

Model name	Forwarding model	Comment model	Like model
Dependent variable	y1	y2	y3
Independent variable			
guid <sub>ij</sub>	.9505575(3.43)	.9811899(6.51)	1.008514(7.55)
title <sub>ij</sub>	1.512951(5.83)	1.850166 (12.32)	1.998515(15.50)
emo <sub>ij</sub>	.6762981(3.99)	.4480405 (3.52)	.5426229(5.35)
mark <sub>ij</sub>	.0154552(0.05)	.2006238 (1.64)	.025246(0.33)
LR	1324.97	726.85	2107.67

Note: The regression coefficients of the explanatory variables, the corresponding z values and the LR values of the regression models are provided in the results, where the regression coefficients represent the results at a significance level of 0.05.

## 5. Conclusion

As can be seen from the results, as a new form and new platform for news release, the media microblog has an impact on the behavior of media microblog users in terms of news guidance, summary, interesting and interactivity. As an open social media platform, Weibo's role in information dissemination and Internet users' acceptance is also becoming increasingly prominent.

Therefore, when the media microblog develops to a certain level, in addition to continuously enhancing its professionalism and authority, it is more important to consider how to influence the information behavior of media Weibo users in the news content; Appropriate use of guidance words in the guiding aspect of blog posts to guide users to spontaneously generate information dissemination and opinion publishing behavior in the information flow network environment; In terms of news interest, it conforms to the reading habits and interest preferences of current netizens. For the group characteristics of Weibo users, the user of Weibo, a social media user, is embedded in the production system of the media as new productivity. Let users actively participate in the dissemination of content and the expression of opinions, and effectively feedback public opinion; Paying attention to the simplicity and power of information in the summary of news, so that news information can quickly reach the netizens, and then generate information participation behavior; In terms of news interactivity, attention is paid to the user's emotional resonance and thinking, resulting in an opinion and emotional expression of the event.

The research in this paper only considers the information characteristics of the sender of Weibo information, and does not take into account the detailed indicators of the information characteristics. Therefore, the follow-up study will consider the deep mining of information features, consider the cross-combination of different information content characteristics, observe the difference of the influence of different combinations on the information behavior of netizens, and make the research system more perfect from a new perspective.

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## References

- [1] Yu Guoming. (2013) Quantitative Analysis of the Status Quo of Official Microblog Operation in Chinese Media. *News & Writing*, 1, 84-87.
- [2] Zhu Zhibin, Cheng Zheng. (2018) The innovation and effect analysis of the operation strategy of

the media microblogging-2017, 2018 People's Daily microblogging national two conferences research. Chinese reporter, 6, 42-46.

[3] Zhao L., Wang Q., Cheng J., et al. (2012) The Impact of Authorities' Media and Rumor Dissemination on the Evolution of Emergency. *Physica A: Statistical Mechanics and its Applications*, 391(15), 3978-3987.

[4] Hong Xiaojuan, Jiang Nan, Hong Wei, Huang Weidong. (2016) Research on Media Information Communication Network—Taking Food Safety Microblogging as an Example. *Management Review*, 28(08), 115-124.

[5] Cacioppo J T, Petty R E. (1984) The Elaboration Likelihood Model of Persuasion. *Advances in Consumer Research*, 19(4), 123-205.

[6] Zhang Wei, Sun Yuling, Zhu Qinghua. (2014) Research on the Influencing Factors of Weibo Public Opinion Communication Based on ELM Model—Taking Sina Weibo as an Example. *Journal of the China Society of Scientific Information*, 33(04), 426-438.

[7] Glassman T, Paprzycki P, Castor T, et al. (2017) Using the Elaboration Likelihood Model to Address Drunkorexia Among College Students. *Substance Use & Misuse*, 53(2), 1-8.

[8] Zhang Wei, Li Xiaodan, Guo Lihong. (2018) Research on the Impact of Different Weibo Marketing Channels on Product Sales: The Path Comparison of Brand-owned Media vs. Third-Party Media. *Nankai Management Review*, 21(02), 43-51.

[9] He Xianjie, Wang Xiaoyu, Sun Shuwei, Zhu Hongjun. (2018) Research on the Economic Consequences of Network New Media Information Disclosure—Based on the Perspective of Stock Price Synchronization. *Journal of Management Sciences*, 21(06), 43-59.

[10] Miller Z D , Freimund W A , Metcalf E C , et al. Merging elaboration and the theory of planned behavior to understand bear spray behavior of day hikers in Yellowstone National Park. *Environmental Management*, 2019.

[11] Sun Zhumei, Wang Zhibing. (2019) Research on the adoption of microblog health information based on information features. *Information Theory & Practice*, 42(03), 146-152.

[12] Shen Wei, Zhuang Guijun, Qi Man, Teng Wenbo. (2014) The influence of the information characteristics of brand posts in SNS on consumer word-of-mouth communication behavior. *Soft Science*, 28(11), 103-106.

[13] Hu Ling, Han Yuexin. (2018) Research on the Influence of Information Characteristics of Enterprise Weibo on Consumers' Word-Mouth Re-propagation. *Chinese Journal of Management*, 15(11), 1713-1721.

[14] Li Yuelin, Zhang Xiu, Wang Wei. (2018) Research on the Quality of Social Media Health Information: Analysis Based on the Characteristics of Authentic Health Information. *Journal of the China Society for Scientific Intelligence*, 37(3), 294-304.

[15] Zhang Jing, Zhao Ling. (2014) Research on Basic Characteristics of Microblog User Information Behavior. *Journal of Beijing University of Aeronautics ND Social Sciences*, 1.

[16] Vries L D, Gensler S, Leeftang P S H. (2012) Popularity of Brand Posts on Brand Fan Pages: An Investigation of the Effects of Social Media Marketing. *Journal of Interactive Marketing*, 26(2), 83-91.

[17] Zhai Qingfei, Yan Liang, Zhang Keliang. (2017) Research on the Factors Affecting the Usefulness of Online Comments. *Management Review*, 29(10), 95-107.

[18] Hu Yang. People's Network Sina Weibo expression package symbol construction and communication effect research. Southwest University of Political Science and Law, 2017.

[19] Xue Ke, Lu Xiaojing, Yu Mingyang. (2013) Research on the Characteristics of Weibo

Network and Prestige Blog in Brand Crisis—Taking the Event of McDonald's Expired Door as an Example. *Journal of Tongji University (Social Science Edition)*, 24(03), 47-53.

[20] Chen Qiang. *Advanced Econometrics and Stata Application*. Beijing: Higher Education Press, 2010.