

Research on the Influence of Enterprise Microblog Content on New Product Information Dissemination – Based on SEM-Neural Network Method

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Abstract:

Microblog has increasingly become an important tool for enterprise marketing diffusion. Enterprise-generated content and accompanying user-generated content in enterprise Microblog will have an impact on the dissemination and diffusion of new product information. Information forwarding is an important basis for the dissemination of new product information. According to Elaboration Likelihood Model (ELM) theory, this article uses questionnaire surveys and SEM-Neural Network methods to conduct empirical research from the perspectives of enterprise-generated content and user-generated content in enterprise microblog to analyze the factors that affect the diffusion of new product information. Research has shown that the interest, interactivity and brand awareness of enterprise microblog information content will have a significant impact on the information dissemination of new products, the usefulness of user-generated information, the number of comments and the number of thumb up will also have an impact on the information diffusion of new products.

Keywords: *Enterprise-generated content, User-generated content, ELM theory, Information dissemination*

I. INTRODUCTION

In recent years, with the rapid development of Internet technology, social media has increasingly become a platform for information dissemination and communication, and more and more companies have begun to realize the role of social media in product marketing and brand promotion. Take the typical social media --- Microblog as an example. It can not only facilitate companies to publish new product information, but also rely on users' social networks

to spread information widely. Therefore, with the continuous growth of user groups, Microblog has gradually become a fertile ground for companies to carry out marketing activities [1]. Companies use Microblog to deliver information on the functional attributes and innovative features of new products to consumers, that is, the transmission of company-generated content, and the use of Microblog's forwarding function to make information spread fissionally, so as to achieve the purpose of product promotion and brand promotion.

When companies release information about new products, on the one hand, they hope to influence consumers' adoption of information through the expression of Microblog information; on the other hand, they hope to stimulate consumer participation and discussion and expand the influence of information. After the enterprise-generated content is generated, the information of the new product will be spread horizontally in the cyberspace; in addition, due to the involvement of consumers, users add knowledge about the new product in the Microblog comments, and the attached user-generated content is also increasing. Thereby affecting more information audiences. Therefore, consumers' acquisition of new product information comes from two parts, one is enterprise-generated content (EGC) and the other is user-generated content (UGC). The dissemination of enterprise microblog content is carried out by attaching enterprise-generated content and user-generated content together. The content of these two different sources may have an impact on the diffusion of new product information. At present, research on the diffusion of corporate microblog information rarely considers the impact of these two types of content on consumers at the same time, and especially ignores the role of user-generated content in corporate microblogs. Therefore, this article starts from the two levels of the enterprise and the user, studies the impact of different levels of factors in corporate microblogs on the diffusion of new product information, provides guidance for companies to use social media for new product information release and marketing diffusion, and increase the stickiness between companies and consumers.

II. MATERIALS AND METHODS

2.1 Related Research

2.1.1 Elaboration Likelihood Model

Elaboration Likelihood Model (ELM) is a model in which audiences process information and change their attitudes after receiving information stimuli [2]. This model divides the user's attitude change in processing information into two ways: the central path and the edge path. The central path means that information audiences analyze and think about the characteristics of information in a rational way, and form corresponding cognitions and attitudes through

comparison and induction. These information characteristics mainly refer to the quality of the information, such as the objectivity and authenticity of the information content. The edge path refers to the user's subjective and irrational way, based on the situational factors to make simple reasoning and judgment on the information. For example, consumers will judge whether to consider accepting advertising information based on the spokesperson and advertising atmosphere in the advertising information, rather than starting from the specific content of the advertising information. The center path and the edge path coexist. The specific path to choose is related to the audience's ability and willingness. When the individual has no energy or willingness to analyze the specific content of the information, the edge path will be selected, otherwise the center path will be selected to process the information.

2.1.2 Influencing factors of information dissemination

The research on the motivation and influencing factors of information dissemination mainly focuses on the following aspects: First, the characteristics of the enterprise or product. For example, the advertising intensity of the company, promotion strategy, product innovation, interest, etc. [3,4]; second, individual consumers. For example, consumers' personalities, motivations and emotions, etc. [5]; third, consumers' social networks. For example, the strength of the relationship between users, the centrality of social networks and the number of nodes [6]; fourth, the characteristics of information. For example, the value of information and the emotional impact of information on user sharing [7]. This research focuses on the specific field of corporate microblog, and studies the factors affecting the diffusion of new product information. In addition to having an impact on viewers when publishing information related to new products on enterprise microblogs, it also hopes to use the information audience to forward and spread the information.

The central path of ELM theory is based on information content, which will have an impact on the recipient's subsequent behavior and attitude. According to the content-driven theory, the forwarding of information is determined by the content of the information [8]. At the beginning of the launch of new products, many consumers did not have a direct consumption experience, but only produced stimulus responses to the information content. Therefore, the information characteristics of the company itself may be an important factor leading to the user's information dissemination behavior [9]. For example, Hu Ling is studying the impact of microblog information stimulation on consumer word-of-mouth re-dissemination, and believes that the Interestingness, usefulness and interactivity in the characteristics of corporate microblog information will have an impact on consumer word-of-mouth re-dissemination [10]; Xu Ying It has also been verified in research that the interest, interactivity, and significance of corporate microblog content have varying degrees of impact on information penetration [11]. In

addition, as a member of multi-level communication, how to effectively stimulate consumers to share and disseminate corporate information determines the scope of information diffusion. Therefore, some characteristics of the company itself will also have an impact on consumers, such as brand awareness. Consumers tend to prefer products with trustworthy quality. In the case of ignorance of new products, brand awareness is also a guarantee of product quality.

Enterprise-generated content is one aspect of socialized information dissemination, and nodes composed of heterogeneous individual users constitute another aspect of information dissemination. Unlike other communication media, when companies release new product information on Microblog, some early information audiences will express their opinions and attitudes. Therefore, when browsing enterprise-generated content, consumers will also consider the information that other users are involved in. The comment area of Microblog is the most obvious part of user-generated content. The information audience will browse the knowledge provided by other users and the attitudes of most people, especially some influential users. Their opinions or attitudes often have a great influence on the information audience. In the existing studies, there are few studies on the impact of user-generated content in corporate microblogs on information diffusion.

2.1.3 Partial Least Squares-Structural Equation Model and Neural Network

This research uses a multi-analysis method that combines Partial Least Squares- Structural Equation Modeling (PLS-SEM) and Neural Network (NN). PLS-SEM can be regarded as a complete SEM method, which serves as a statistical framework for processing factor models, including physical models or theoretical models, unobserved or observed variables, and observed data from model testing [12]. This means that by using different types, PLS-SEM is used to calculate the relationship between the observed variables. However, considering consumers' intent to disseminate information about new products, simply using PLS-SEM will often oversimplify complexity. Therefore, this study considers the combination of PLS-SEM and NN to identify nonlinear relationships [13]. NN is a massively parallel and distributed processor composed of simple processing units. The processor has a neurological tendency to store data and knowledge from experiments and ensure the availability of its use [14]. Compared with traditional statistical methods (such as multiple regression analysis and SEM), NN has obvious advantages. First of all, this method can discover the relationship between linearity and non-linearity, so that the process of non-compensating decision-making can be checked [15]. Secondly, neural networks are superior to traditional compensation models in all aspects, including multivariate, logical and discriminant regression analysis. Moreover, compared with linear models, neural networks can provide higher prediction accuracy. Although the application of neural network is a very suitable prediction method, it still has its

limitations. The biggest limitation is that it is a "black box" method, which makes testing hypotheses and testing causality unsuitable. Therefore, in order to balance these two methods and make full use of the advantages of PLS-SEM and NN, this study first studied the research model and hypothesis using PLS-SEM, and used the results to further use NN for ranking analysis. This method the problem of overfitting of neural network models is solved. Although PLS-SEM is often used to verify hypothetical relationships in social sciences and behavioral sciences, few studies integrate it with neural networks, and even fewer are applied to consumer behavior research. Therefore, in order to expand the research field, this article aims to find the factors that affect consumers' willingness to disseminate new product information by combining PLS-SEM and NN methods.

2.2 Research Hypothesis

This study mainly studies the effect of new product information diffusion in social media, integrates enterprise-generated content and user-generated content in corporate microblogs, and studies the impact of new product information diffusion. According to the previous explanation, the dissemination of corporate microblog information mainly depends on the acceptance and forwarding of information by the audience. Forwarding is an important mechanism for information diffusion. Only when more users forward it, information can be quickly disseminated. Therefore, this study adopts consumers' willingness to forward as the criterion for judging the spread of new product information.

2.2.1 Enterprise-generated content

The central path of ELM theory is based on information content. The audience of information is both the receiver and the disseminator of information. The characteristics of the information presented by corporate microblogs will have an impact on consumers' attitudes. Social media is filled with a lot of information. Simple and rigid statements can hardly attract consumers' interest. Humorous information expression can increase the attractiveness of advertisements and produce positive effects [16]. Existing statistics show that the number of humorous and funny information reposts on Sina Weibo is relatively high, indicating that users tend to spread interesting information [17]. In the early stage of the spread of new products, consumers are more likely to accept and recall interesting advertisements. Interesting information can increase audiences' awareness of products, increase consumers' acceptance of information, and further affect information sharing behavior [18]; When Shen Lu et al. studied the influence of the information characteristics of brand posts in SNS on comment reposting, they believed that the interestingness of the information would promote users' comment reposting [19]. In addition, based on the theory of reciprocity, when the user's emotional needs

are met, consumers will have the idea of "repaying" and the willingness to spread information.

Based on the above analysis, hypotheses are proposed:

H1: Interestingness of the information content has a significant positive impact on consumers' willingness to forward.

In the early stage of the launch of new products, consumers lacked understanding, and the simple introduction of attributes and functions of enterprises may not achieve good publicity effects. If the company strengthens interaction with consumers, it will improve consumers' perception and experience of new products, and it will also be more conducive for consumers to accept and spread knowledge about new products. Therefore, many companies use methods such as asking questions and adding URL links to strengthen the exchanges between companies and consumers about new products and improve consumers' awareness and understanding. According to the theory of customer fit and interdependence, the interaction between enterprises and consumers is conducive to increasing consumers' attention to the brand and fostering user stickiness. As a platform with a small communication distance with information audiences, corporate microblogs can convey information about new products to consumers more conveniently. When corporate microblogs release new product information, they can mobilize consumers through comments, forwarding the lottery, etc. The enthusiasm of participation promotes consumers' willingness to forward, and the spread of information about new products is also included in the forwarding process.

Based on the above analysis, hypotheses are proposed:

H2: Interactivity of information content has a significant positive impact on consumers' willingness to forward.

The edge path is information that is not directly related to the topic that users refer to when processing information [20]. Information recipients who take this path pay little attention to the content and details of the information, and often only pay attention to some profile characteristics of the information, such as brand awareness. When consumers adopt new products, they often refer to brand awareness. On the one hand, well-known brands tend to form in consumers' minds a good impression of product prices, functions, and practicality. Consumers believe that the brand's high reputation is generally related to the company's past reputation and product quality, which means that the higher the company's previous value, the higher the consumer's perception of the brand's previous value, and the easier it is to process information [21]. It is also easier to stimulate higher-level attitude preferences of consumers

[22]. Therefore, with high-profile brands, consumers' expectations for new products will also increase, and they are also willing to participate in the evaluation and discussion of new products. In addition, products with high brand awareness often have a "star" effect, and the public is also paying more attention. Therefore, when releasing new product information, based on the herd effect and their own communication motivation, consumers are also willing to discuss and forward, especially the loyal consumers who have a certain stickiness to the brand. This situation is more obvious.

Based on the above analysis, hypotheses are proposed:

H3: Brand awareness has a significant positive impact on consumers' willingness to forward.

2.2.2 User-generated content

Social media not only facilitates the communication and interaction between enterprises and users, but also enhances the interaction between users and users. While consumers receive enterprise-generated content, they will also learn more about new products through the information attached to other users. Social media has the characteristics of openness and freedom, and users can freely express their views and opinions on new products. In particular, the comment function set up on Microblog allows users to express their emotions and attitudes more directly, while also having an impact on other information audiences. When users receive new product information sent by the company's Microblog, they will also browse other users' comments to obtain more clues that are conducive to information judgment. In the information adoption model, the usefulness of information affects the adoption behavior of information [23]. The usefulness of information is the judgment of the value of the information audience after browsing the information. Users perceive that the information is valuable and may spread it. In the initial stage of the launch of a new product, consumers lacked understanding of it. Useful review information is an effective supplement to the content generated by the company. It can help other audiences understand the knowledge of the new product, especially the review information provided by individuals with professional knowledge. It helps consumers to better understand the new products. Existing research also shows that users prefer to forward useful information, because forwarding such information often makes individuals feel smarter and more knowledgeable [24]. In addition, useful information often has a certain social exchange value, and consumers can achieve mutual benefits through this measure.

Based on the above analysis, hypotheses are proposed:

H4: Usefulness of comments has a significant positive impact on consumers' willingness to forward

In Microblog, comments are the main form for users to express their attitudes. After users browse corporate Microblog, they have a preliminary understanding of new product information and are accustomed to understanding the attitudes of other users. For viewers, comments are a way to further obtain new product information, and users' attitudes towards information are more or less affected by the attitudes of other audiences. Comment consistency refers to the degree to which most users in corporate Microblog comments support the original point of view, that is, the degree to which the tendency of the comment is consistent with that of the original Weibo [25]. Zhao Wenjun and others believe that users will be affected by herding effect and public opinion, and their attitudes towards online information are likely to be the same as most users [26]. Through the central path, rational reference to other users' attitudes and consistent stability can effectively improve users' understanding of Microblog information and increase their knowledge of new products. In particular, popular comments generated by corporate replies or likes of information audiences can better reflect the consistent attitude of consumers, and other users are easier to forward and spread information based on a herd mentality. The consistency of user reviews is the support for the content generated by the enterprise, helps new product information to gain the trust of consumers, and promotes consumer forwarding and dissemination.

Based on the above analysis, hypotheses are proposed:

H5: Consistency of comments has a significant positive impact on consumers' willingness to forward.

The credibility theory of information sources points out that when consumers lack the ability to distinguish information content, they will judge the trust of information sources based on the professionalism, authority, credibility and attractiveness of the information disseminator. In most cases, the information source has a significant impact on the degree of information acceptance [27], especially the credibility and attractiveness of the information source [28]. In social media, the social identity of the content producer will also affect the dissemination of its content by users, and information sources of different identities have great differences in the guidance of forwarding comments [29]. In Microblog, not only the corporate Microblog information received by the information audience comes from the official Microblog of the company, but also the comments and reposts of the V user concerned about the corporate Microblog. In the research on the effect of advertising information, the information provided by celebrity advertisements often has a better persuasive effect. The influence and authority of

celebrities will significantly affect users' willingness to spread [30], and play an important role in the diffusion of information in social media [31]. V users in Microblog are often at the core node position and have a large number of fans, and their comment forwarding behavior often triggers a "ripple effect", so they are a key factor in promoting the rapid spread of information [32].

Based on the above analysis, hypotheses are proposed:

H6: Influence of reviewers has a significant positive impact on consumers' willingness to forward.

When corporate Microblog releases new product information, users can express their opinions and attitudes through the comment and like function, which expands the influence of the information. In addition to the information released by the company, the number of user comments can also be used as persuasive information to have an impact on other information audiences. The number of comments shows the total amount of information contained in the comments to a certain extent. The more the number of user comments, the richer the information about the product provided at the user level [33]. This can help information audiences gain more clues about new product knowledge and judgment on the original information based on the edge path, which increases the probability of the product being known. To a certain extent, the number of Microblog comments also reflects users' concerns and hot discussions. The larger the number of comments, the more consumers are paying attention. Other users, based on the herd mentality or their own interest in new products, will forward the consumer's comments, which will also be accompanied by the proliferation of corporate Microblog content during the forwarding process. Similarly, the number of likes will also affect the psychology of information audiences. Because the number of likes can intuitively see the attitude of most users, the higher the number of likes, the more the information audience supports the new product information in the enterprise microblog, and the more it can promote consumer forwarding.

Based on the above analysis, hypotheses are proposed:

H7: Number of comments has a significant positive impact on consumers' willingness to forward.

H8: Number of likes has a significant positive impact on consumers' willingness to forward.

Based on the above assumptions, the theoretical model of this research is shown in Fig 1.

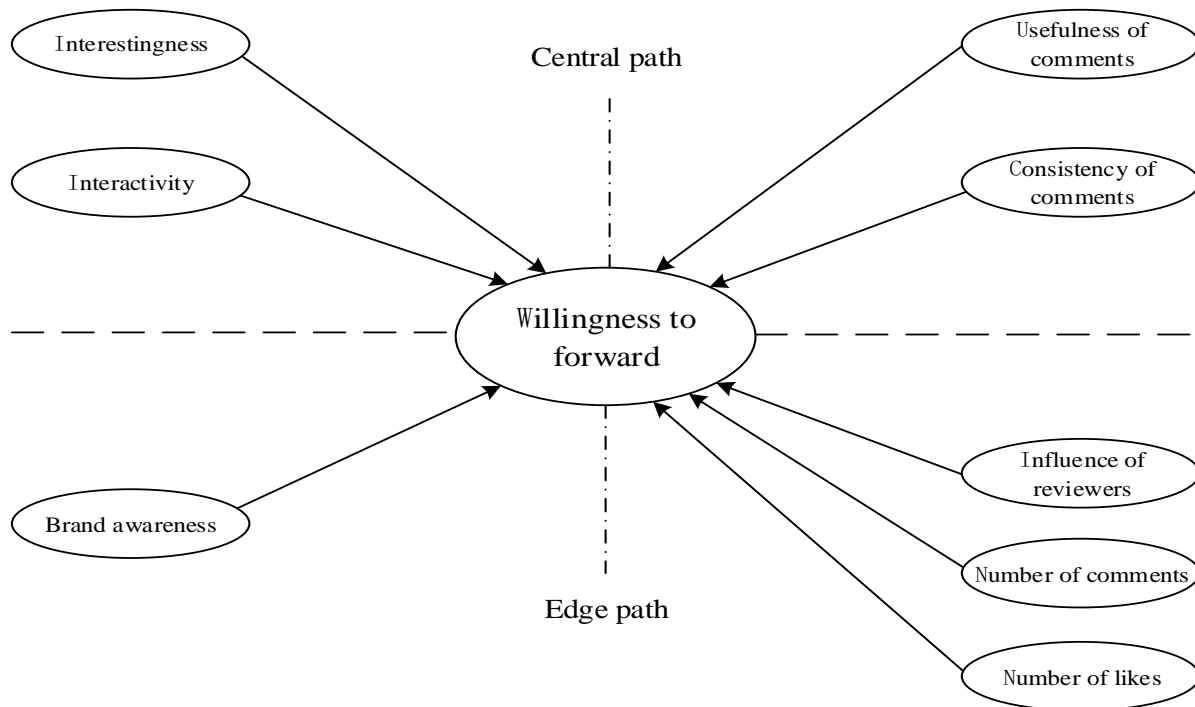


Fig 1: Theoretical framework model diagram

2.3 Empirical Research and Analysis

2.3.1 Data collection

The questionnaires for this study are issued from May 10, 2020 to June 3, 2020. The subjects of the survey are users who have browsed new product information released by the company's official Microblog on Microblog, and filter qualified data through question restrictions. Such as "have you followed the company or brand Microblog information", "please fill in a Microblog of the company you have followed". The survey is conducted through online questionnaires and paper questionnaires. On the one hand, the questionnaire star platform is used to produce and distribute questionnaires, and on the other hand, some college students are visited and distributed paper questionnaires. The questionnaire survey lasted three weeks, and a total of 278 copies were collected, of which 256 were valid questionnaires, with an effective rate of 92.09%. Basic information is shown in TABLE I.

TABLE I. Basic information statistics of the sample

Basic Information	Item	Number	Percentage (%)
Gender	Male	119	46.48
	Female	137	53.52
Age	Younger than 18	0	0
	18-25	93	36.33
	26-30	87	33.98
	31-35	54	21.09
	36-40	22	8.60
	Older than 40	0	0
	Under undergraduate	13	5.08
Education level	Undergraduate	132	51.56
	Master	84	32.81
	Ph. D.	27	10.55

2.3.2 Survey design

This study conducts empirical research by means of questionnaires. In order to ensure the content validity of each variable and item, this research item draws on domestic and foreign mature scales, and designs the questionnaire on the basis of their research. In order to reduce possible misunderstandings or other problems during the measurement process, a pre-survey was conducted before the formal questionnaire survey, and the questionnaire was revised and adjusted through the feedback results of the pre-survey, and a formal questionnaire was finally formed.

The formal questionnaire consists of two parts, the first part is mainly the basic information of the surveyed person; the second part is the item corresponding to each variable of the model. The interestingness of the information content is adapted from the research of Liu [34]; The interactivity of information content is adapted from the research of S.Ne-gash et al. [35]; Brand awareness is adapted from the research of Ho-Dac [36] and Janiszewski C [37]; The usefulness of the comments is adapted from the study of Sussman [23]; The consistency of the comments is adapted from the study of Park et al. [38]; The influence of the reviewer is adapted from the research of Liu Xingjun [39]; The number of comments and the number of likes were adapted from the research of Schubert [40] and Liu Zixi et al. [25]. The willingness to forward information was adapted from the research of Bock [41]. The questionnaire uses the Likert seven-level scale. 1 point means very disagree, 7 points means very agree.

III. RESULT

3.1 Validity and Reliability Test

This study uses SmartPLS software to analyze the reliability and validity of the data. Reliability can reflect the stability and consistency of the measurement results. The higher the reliability, the smaller the measurement error. The internal consistency coefficient Cronbach's α and the Composite reliability (CR) of latent variables are usually used to evaluate the reliability of the scale. It is generally believed that the CR and Cronbach's α values of the latent variables are both higher than 0.7, and the scale has good reliability. The relevant indicators of the reliability and validity of the scale in this study are shown in TABLE II. The results show that Cronbach's α coefficient and CR both exceed 0.7, indicating that the scale has good reliability.

TABLE II. Relevant indicators of scale reliability and validity

Constructs	Factor loadings	Cronbach's Alpha	Composite reliability(CR)	AVE
Interestingness	0.855	0.78	0.874	0.700
	0.819			
	0.843			
Interactivity	0.712	0.793	0.877	0.704
	0.855			
	0.927			
Brand awareness	0.840	0.794	0.88	0.710
	0.881			
	0.805			
Usefulness of comments	0.878	0.804	0.873	0.635
	0.765			
	0.880			
Consistency of comments	0.727	0.8	0.867	0.621
	0.848			
	0.760			
Influence reviewers	0.812	0.864	0.761	0.867
	0.740			
Number of comments	0.814	0.850	0.908	0.767
	0.861			

Number of likes	0.854	0.785	0.825	0.702
	0.890			
Willingness to forward	0.885	0.76	0.893	0.806
	0.910			

Validity reflects the degree of validity of measured variables. This study uses aggregate validity and discriminative validity to measure. Aggregate validity is generally measured by the average variance extraction of latent variables (Average Variance Extracted, AVE) and the factor loading of the latent variable measurement items. It is generally believed that AVE is higher than 0.5, and the factor loading value of each item of all latent variables is higher than 0.7, and the questionnaire is considered to have good aggregate validity. TABLE II shows that the factor loading value of each item of all latent variables is greater than 0.7, and the average variance extraction value AVE is greater than 0.5, indicating that the scale has good aggregate validity. The discriminative validity is measured by comparing the square root of AVE with the correlation coefficient between the latent variables. If the square root of AVE is greater than the correlation coefficient between the latent variable and other latent variables, the latent variable is considered to have good discriminative validity. The specific results are shown in TABLE III. The square root of AVE is greater than the correlation coefficient between this variable and other variables, so the scale has good discriminative validity. According to the above analysis, the questionnaire of this study has good reliability and validity.

TABLE III. Result of discriminant validity measures

	Interes ting- ness	Inter activi ty	Brand aware ness	Usefulness of comments	Consistency of comments	Influence of reviewers	Nu mbe r of com men ts	Nu mb er of like s	Willi ngne ss to forw ard
Interesting- ness	0.876								
Interactivity	0.814	0.765							
Brand awareness	0.778	0.741	0.872						
Usefulness of comments	0.647	0.645	0.690	0.736					

Consistency of comments	0.695	0.573	0.508	0.699	0.715				
Influence of reviewers	0.671	0.588	0.609	0.515	0.581	0.779			
Number of comments	0.695	0.573	0.508	0.699	0.636	0.721	0.815		
Number of likes	0.541	0.542	0.752	0.588	0.567	0.67	0.542	0.713	
Willingness to forward	0.536	0.622	0.564	0.523	0.480	0.544	0.603	0.478	0.836

3.2 Structural Model Results

This article uses SmartPLS software to analyze the model, and performs 2000 sample sampling through bootstrapping. The test results are shown in Fig 2.

In terms of enterprise-generated content, the inspection results show that the interestingness of corporate microblog information ($\beta=0.394$, $p<0.001$) has a significant positive impact on consumers' willingness to forward, so hypothesis 1 is supported. The interactivity of corporate microblog information ($\beta=0.487$, $p<0.001$) also has a significant positive impact on consumers' willingness to forward, so hypothesis 2 is also supported. Brand awareness based on edge path considerations ($\beta=0.261$, $p<0.001$) also has a positive impact on consumers' willingness to forward, and hypothesis 3 is supported.

In terms of user-generated content, the test results show that the usefulness of comments ($\beta=0.135$, $p<0.01$) has a significant positive impact on consumers' willingness to forward, so hypothesis 4 is supported. In the analysis based on the edge path, the number of comments ($\beta=0.360$, $p<0.001$) and the number of likes ($\beta=0.378$, $p<0.001$) have a significant positive impact on consumers' reposting willingness, so hypothesis 7 and hypothesis 8 get support. The consistency of comments ($p>0.05$) has no significant impact on consumers' willingness to forward, so hypothesis 5 is not supported. The reason may be that consumers are often skeptical of consistent statements in reviews and will not attract special attention to them. In addition, the influence of the reviewer in hypothesis 6 ($p>0.05$) has no significant effect on the consumer's willingness to forward. When consumers perceive that there are too many V-users in the reviews, they will feel a sense of distance from the company and suspect that they are

trapped in a certain marketing scenario, so it is not as good as when there are more ordinary users in the reviews that can promote consumers' reposting willingness.

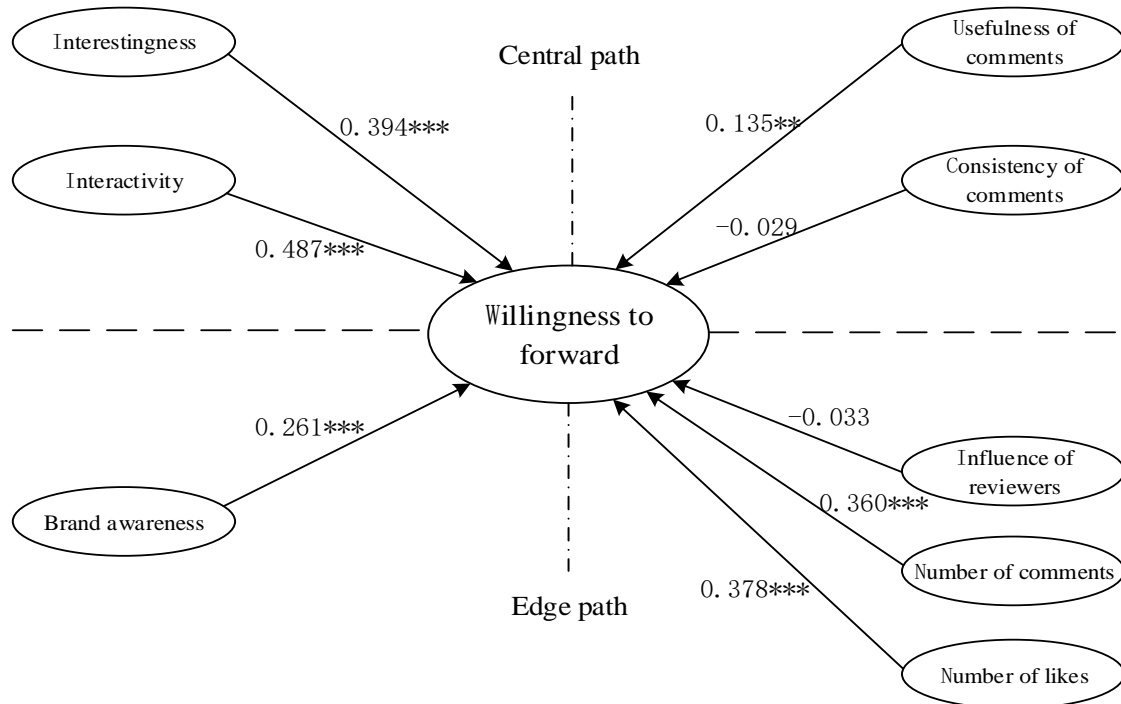


Fig 2: Research model results

Note: * means 0.05 is significant; ** means 0.01 is significant; *** means 0.001 is significant.

3.3 Neural Network (NN) Analysis

This research uses SPSS 20 to establish a NN model and trains it through a multi-layer perception training algorithm. The input layer consists of six independent important variables, which are the output of PLS-SEM (interestingness, interactivity, brand awareness, comment usefulness, number of comments and number of likes), while the output layer consists of an output variable (Willingness to forward). This study examined a network with 1 to 10 hidden nodes, set the node number in one hidden layer to 2, and used the sigmoid function as the activation function of the neurons in the hidden layer and the output layer. In order to improve the effectiveness of training, both input and output are standardized to [0,1] [42].

The NN is verified by calculating the root mean square error (RMSE) in the training and test data sets. RMSE can predict errors by comparing specific data sets, so it can be used to measure prediction accuracy. RMSE is always positive. In practice, a value of 0 (indicating a perfect fit) has never occurred. The lower the value of RMSE, the better. In addition, the

average value and standard deviation are calculated, as shown in TABLE IV. In order to avoid over-fitting, ten times of cross-validation were implemented, in which 90% of the data was used to train the NN, and the remaining 10% of the data was used to measure the prediction accuracy of the trained network.

TABLE IV. RMSE for the neural networks

Network	Training	Testing
ANN1	0.084	0.085
ANN2	0.095	0.104
ANN3	0.091	0.087
ANN4	0.098	0.086
ANN5	0.085	0.096
ANN6	0.079	0.108
ANN7	0.081	0.104
ANN8	0.082	0.102
ANN9	0.078	0.072
ANN10	0.079	0.088
Average	0.085	0.093
Standard deviation	0.007	0.011

From the above results, it can be seen that the average RMSE of the neural network model is very small (training data is 0.007, test data is 0.011), indicating that the prediction is very accurate.

Sensitivity analysis provides information about the importance of each predictor variable, and the importance of each independent variable is the degree to which the value predicted by the network model changes with different values of the independent variable. The normalized importance value is the ratio obtained by dividing the importance value of each predictor variable by the maximum importance value. Sensitivity analysis performance is shown in TABLE V.

TABLE V. Normalized variable importance

Predictors	Normalized Importance (%)
Interestingness	0.761
Interactivity	1.000
Brand awareness	0.778

Usefulness of comments	0.288
Number of comments	0.425
Number of likes	0.687

According to the performance of sensitivity analysis, interactivity is the most important predictor of consumers' willingness to spread new product information, followed by brand awareness, interestingness, number of comments and Number of likes, and usefulness of comments.

IV. ANALYSIS CONCLUSION

In the initial stage of a new product's launch, consumers did not know enough about it. The use of Microblog for promotion by enterprises can effectively expand the awareness of new products and allow more potential consumers to learn about new products. Compared with the traditional communication media, the spread of information in Microblog presents a fission-like spread, which has the advantages of speed and wideness. How to promote the widespread dissemination of new product information in corporate microblog, in addition to the impact of corporate-generated content, user-generated content also plays an important role in it. Therefore, this article is based on the ELM theoretical framework and adopts the SEM-Neural Network method to discuss the impact of the diffusion of new product information in enterprise microblogs from the two dimensions of enterprise-generated content and user-generated content. In addition, this study combines the multiple analysis methods of PLS-SEM and NN to test the research model, which provides a new way to solve analysis problems in other related research fields.

1. The interactivity and Interestingness of corporate microblog content have the most obvious impact on consumers' reposting willingness. The evaluation of the characteristics of these two corporate microblogs belongs to the central path of information processing. By publishing interesting new product information content, companies hope to promote and maintain contact with consumers, activate the atmosphere, and increase consumers' interest and attention to products. From the perspective of emotional transfer, when the content of the company's new product information on Microblog is humorous and interesting, it will bring positive and pleasant emotions to consumers, thereby increasing consumers' willingness to forward corporate Microblog information. Corporate Microblog uses interactive methods to increase contact with consumers, expand the scope of influence of information, and maintain consumer stickiness. Or use some marketing strategies and methods to give consumers certain rewards and returns. These measures will increase consumers' participation in the process of new product information dissemination.

2. A company's brand awareness also has a positive impact on consumers' willingness to forward, and information processing for this characteristic belongs to the edge path. Since the brand is the consumer's established impression of the product, consumers will evaluate the product based on the brand. Companies with high brand awareness tend to receive more attention, so when new product information is released, consumers are more willing to forward it. For example, for many well-known electronic products, when a new product is released, everyone has long expected it. Once the information is released, they will actively participate in the discussion and share information about the new product.

3. The usefulness of comments has a positive impact on consumers' willingness to forward. One of the characteristics of Microblog, which is different from other social media, is that comments can also be forwarded. When consumers obtain new product information in corporate microblogs, they basically browse the content of reviews, and in this process they may obtain information that is useful to them. This useful information can not only deepen consumers' understanding of new products, but also enable consumers to gain a sense of improvement in their own knowledge and mutual benefit to others. Therefore, when consumers perceive the usefulness of this information, they will forward and disseminate, and the process of forwarding will be accompanied by the proliferation of enterprise-generated content.

4. The consistency of comments in corporate microblogs has no significant positive impact on consumers' willingness to forward. For users who browse corporate Microblog information, comments are an important way to further obtain new product information. If the comments on the company's Microblog are too consistent with the original blog content, consumers may be suspicious of the authenticity of the information, and they may refuse to forward their uncertain information.

5. The influence of reviewers has no significant positive effect on consumers' willingness to forward. Microblog is a social media with a relatively high degree of freedom. Most users are not real-named, so many users dare to express their opinions or express their attitudes on the platform. Therefore, the influence of commenters may not be one of the reasons why users repost Microblog content. Consumers pay more attention to the effects of information content, rather than relying on the so-called "celebrity effect" to forward information content.

6. The number of comments and the number of likes have a significant positive impact on consumers' willingness to forward. The number of comments and the number of likes is a more intuitive manifestation of the effectiveness of the discussion and diffusion of the content of the new product Weibo released by the company. The number of comments shows the total amount

of information content to a certain extent. Generally speaking, the more the number of reviews, the richer the information about the product, the more information and clues that can help consumers obtain from the edge path, and other users will be willing to forward it based on their psychology. Similarly, the number of likes will also affect the psychology of information audiences. The more likes, Microblog with more likes will also have the psychology of following the trend and attract consumers to forward it.

V. RESEARCH CONTRIBUTION

5.1 Theoretical Contribution

Based on the ELM theory, this research analyzes the factors that affect consumers' forwarding of new product information in corporate microblogs from the perspectives of the central path and the edge path. Different from the existing research, this study not only researches the content published by the enterprise microblog itself, but also studies the influence of the attached user-generated content on the willingness of consumers to forward the information during the process of information publishing and dissemination. All of these have made important contributions to the study of behavioral theory. In addition, although PLS-SEM is often used to verify the hypothetical relationship in social sciences and behavioral sciences, few studies integrate it with neural networks, and even fewer are applied to consumer behavior research. Therefore, in order to expand the research field, this study discovers the factors that affect consumers' willingness to disseminate new product information by combining SEM and NN methods. The combination of this method offsets their respective shortcomings, increases the validity and persuasiveness of the empirical results, and also provides new ways and methods for the study of social behavior.

5.2 Management Implications

The research results of this article have the following management implications:

First of all, companies should introduce new product information as interesting as possible. Microblog audiences are mostly young people. Simple introductions may not attract the attention of users, and humorous copywriting may increase the willingness of information audiences to forward them. Therefore, when companies release new product information on Microblog, they should try their best to be humorous and interesting under the premise of clear and clear presentation. In addition, when releasing information about new products, rigid statements and introductions should be avoided, interactive communication with consumers should be strengthened, and the functional attributes and innovative features of new products

should be conveyed to consumers in the process of interaction. For example, companies can use Microblog to forward new product information to draw a lottery to increase consumers' willingness to forward it. Secondly, with regard to brand awareness, companies may not be able to increase significantly in a short time, but consumers believe that companies with high reputations are nothing more than guaranteeing products and services, so companies must ensure the quality and reputation of new products, and at the same time they must be appropriate Increase brand exposure and gradually increase brand awareness.

Second, pay attention to the useful information provided by the users in the comments. The information provided by the users tends to gain the trust of the information audience. Companies can make them a popular comment by replying or liking useful information, which is convenient for more consumers to see and attract consumers to forward it. In addition, although influential V users play a small role in corporate Microblog, they can be appropriately invited to publish original content to promote the dissemination of new product information. At the same time, you can also encourage ordinary users to like and comment by inviting participation, asking questions, etc., to increase their enthusiasm for participation, so as to cause more users to join the team of information diffusion, and promote the diffusion of product information.

VI. LIMITATION

At the same time, there are still some shortcomings in this study. The research object of this study is the dissemination and diffusion of new product information in corporate microblogs. The research results may not be so applicable to other social media. In the future, you can choose other types of social media to conduct research, improve the applicability of the results, and expand more channels for the diffusion of enterprise new product information. Secondly, this research adopts the method of questionnaire survey, which has a certain error with the actual decision-making scene of consumers, so future research can consider the method of observation or process tracking.

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