International Journal of Frontiers in Engineering Technology
ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

Analysis of University Network Public Opinion Management Based on Big Data

Xinchen Zhao*

Northwest University of Political Science and Law, Xi'an 710122, China
**Corresponding author e-mail: 463491900@qq.com*

ABSTRACT. *In the era of big data, the causes of network public opinion in Colleges and universities are more diverse, more far-reaching and more complex governance. It is particularly important to strengthen the management of university network public opinion. This paper explores the new characteristics of network public opinion in Universities under the background of big data era, analyzes the existing problems in the management of network public opinion in universities, and through the construction of the evaluation system of public opinion management in universities, and takes the Tongling University as an example to analyze the effect of the current management of network public opinion in universities.*

KEYWORDS: *Big data, Universities, Network public opinion*

1. Introduction

According to the thirty-ninth "statistics report on the development of China Internet network" published in January 2017, the network media has become the main channel for college students to obtain news information, and is also the main medium of information dissemination for college students. The attitude and speech of teachers and students in universities are almost all with the help of the new network media. The scale of the information data carried by the network is becoming more and more huge, which greatly increases the difficulty of the management of network public opinion in universities. The high development of Internet and computer technology at the same time hastened the emergence of big data, data is no longer just a simple object to deal with, and began to become a basic resource. The high development of Internet and computer technology at the same time hastened the emergence of big data, data is no longer just a simple object to deal with, and began to become a basic resource. In addition, the understanding and application of university public opinion management to big data technology is not enough, and it will also bring new challenges to the management of public opinion based on big data.

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

2. Influence of Big Data on the Management of Network Public Opinion in Universities

Big data is supported by massive data. It is a collection of data, which can be collected, stored, analyzed, processed and shared through existing software tools. Its data are large, various types, low value density and fast processing speed.[1] Teachers and students in universities are a group with high network utilization rate. Their public opinion information on the network also belongs to big data. The network public opinion of universities is more diverse and more far-reaching because of the characteristics of the crowd and environment, and the influence of public opinion is more far-reaching, especially with the development of mobile customers and self media, and the University Network The volume of the data of the information of the public opinion is getting bigger and bigger. Compared with the traditional public opinion in the past, the Internet public opinion of University in the era of big data will be endowed with new characteristics.

2.1 Dissemination of NETWORK public opinion is fast and wide

In the era of big data, with the rapid development of smart phone and mobile communication technology, teachers and students can communicate information through WeChat, micro-blog, QQ group, forum and other social media. Compared with the traditional public opinion information dissemination way, the information transmitted by the main body of the big data age is more fragmented, as long as simple words, The relevant pictures, videos and other content can be quickly disseminated in the homogenized college students. The real-time and high efficiency of the network media makes the students in the scene of the event live broadcast, and the other netizens will review and reprint the scene, and the Internet public opinion crisis will be caused by the "Butterfly Effect". The transmission mode of traditional media is a pair of multi-layer communication mode, and the transmission mode of the network new media is transformed into a multi - to - many interactive mode of communication, which will produce an explosive influence of communication. Teachers and students can spread the events of universities anytime and anywhere. In a short time, a message can reach hundreds of millions of communications, which means the dissemination of network public opinion in universities has become rapid and extensive.

2.2 Carrier of NETWORK public opinion is plural and rich

In the era of big data, the network is everywhere, and the functions of the shooting and video of the intelligent terminal equipment can be spread at any time. University students begin to use WeChat, micro-blog, public number, super curriculum, live platform and other media transmission carrier to spread the information, publish their own opinions and views, and the network public opinion carrier has shown a variety of characteristics of diversity and richness. The emergence of new media and new technology disintegrates the absolute right of

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

utterance that traditional media has before, allowing everyone to have the opportunity and channel to speak. The audience is no longer satisfied with the traditional one-way communication mode that can only be forced to accept information. It is now convenient to communicate and discuss with his audience. College students themselves become information publishers, this model can meet the internal needs of college students, make their feelings of public opinion fully satisfied, and realize a new form of "everyone is a reporter".

2.3 Concealment and autonomy of NETWORK public opinion subject

From the big data analysis and statistics, college students and teachers in the Internet express the expression of the expression of emotion, many times are the use of virtual net names, not their legal names and effective addresses, so the main body of network public opinion in universities has different degrees of concealment. At the same time, as the main body of college internet public opinion, college students are different from the general network public opinion subject. College students are more educated and more active in their thinking. They are often the most active and sharpest people on the network. They "desire to maximize the value of self-worth by using their knowledge." It is often thought that an effective way to achieve self worth is to express their views, opinions and opinions through the Internet[2]. In the era of big data, because of the powerful function of the Internet media, students do not need to disseminate and discuss information through traditional media. They can choose information according to their interests and needs, get any information of their own interest, and understand the opinions that correspond to their own values. A self perspective analysis of the content of the information concerned can also be involved in the production and distribution process of information through the network media as the publisher of information. Therefore, the main body of Internet public opinion in universities also has an unprecedented autonomy.

3 Analysis on Influence Factors of Network Public Opinion Management in Universities

3.1 Research ideas

The AHP method is a method of quantifying qualitative problems. The basic idea is to decompose a complex problem into a number of combination factors, and then divide these factors into hierarchical hierarchies according to their domination relations. The relative importance of the factors in the hierarchy is determined by the 22 comparison method, the comparison decision matrix is constructed, and the expert evaluation method gives a certain measure value. The consistency of the decision matrix is checked, and the weight of each index is obtained by ej.

Entropy is a concept of physics, which is introduced by Shannon (1948) into information theory. It is a measure of the degree of disorder of the system. The smaller the information entropy of an index, the greater the variability of its index

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

value, and the greater the amount of information provided, the greater the index weight. On the other hand, the weight of the index is smaller. Entropy weight method is an objective method of empowerment.

The entropy of item j is defined as

$$H_j = -K\sum_{i=1}^{m} y_{ij} * \ln y_{ij} (\mathrm{j} = 1, 2, \cdots, \mathrm{n}) \tag{1}$$

Among them, $K = \frac{1}{\ln n}$

The index difference of item j is

$$h_j = 1 - H_j \tag{2}$$

Order wj as the index weight of item j,then

$$w_j = \frac{h_j}{\sum_{j=1}^{n} h_j} \tag{3}$$

:

Combining the objective weight of subjective weight and entropy weight method obtained by AHP method, the combined entropy weight of each index is obtained.

$$\theta_j = \frac{W_j * e_j}{\sum_{j=1}^{n} w_j * e_j} (\mathrm{j} = 1, 2, \cdots, \mathrm{n}) \tag{4}$$

3.2 Hierarchical structure map of evaluation index

According to the analytic hierarchy process (AHP), the general objective A is defined as "the effect of university public opinion management", which is divided into 3 levels (as shown in Figure 1). A={B1， B2， B3， B4},among them, Efficiency of big data platform B1={C1，C2，C3，C4}，Characteristics of public opinion B2={C5， C6}, Big data talent efficiency B3={C7， C8， C9， C10},Audience characteristics B4={C11，C12，C13}，Ci is the evaluation index （i=1,2，…，13）.

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

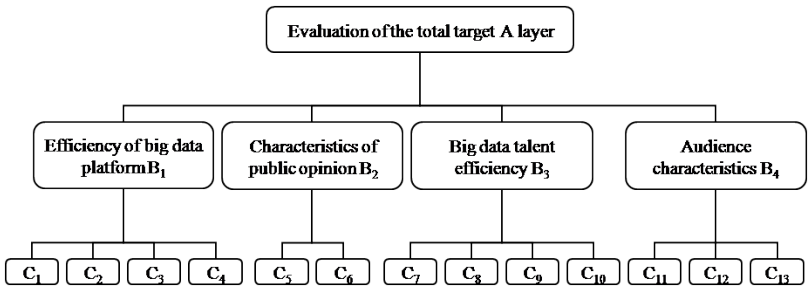

Fig.1 Hierarchical structure diagram of evaluation indicators for public opinion management in Universities

3.3 Construction of evaluation model

According to the expert investigation method, the expert group evaluated the indexes given by the expert group. The frequency of each grade appeared as the element, which could form the judgment matrix Ri (i=1,2,3,4) of the secondary evaluation target Bi.

According to the scale method, the weight vector of the C level index to the B layer index Bi is Wi (i=1,2,3,4), then the fuzzy judgment matrix of Bi, which the $S_i = W_i^T * R_i (\mathrm{i} = 1, 2, 3, 4)$ is obtained. The total target level A=（S1，S2，S3，S4）T is synthetically evaluated. According to the secondary evaluation results, the fuzzy judgment matrix of the total target S=（S1，S2，S3，S4）T is constructed. According to the scaling method, the weight vector of the B level index relative to the total target is W= (W1, W2, W3, W4) T, and the comprehensive evaluation result of the total target can be calculated as $P = W^T * S$.

3.4 Determining the weight vector

The B level indicators and C level secondary indicators were scored by the expert group and their average scores were scored. On the basis of the index data, we compare the factors in the B layer and the secondary indexes of the C layer by the analytic hierarchy process (AHP) and the scale method, and calculate the judgment matrix, which is in the space reason, and the calculation process is omitted. The weight of each index is calculated, as shown in Table 1.

4 Empirical Analysis

Taking Tongling University as an example, we demonstrate concretely the application algorithm of public opinion management in universities and verify its effectiveness.

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

4.1 Construction of fuzzy comprehensive judgment matrix

The members of the expert group investigated the effect of the university public opinion management on the Tongling University, and judged the grade of the secondary indexes of the C layer of the Tongling University, and the frequency of the grade of each index, and the proportion of the occurrence frequency of each index and the total number of the members of the evaluation group as the degree of membership of each index. The fuzzy judgment matrix of each index is constructed.

Table 1 Evaluation index weight and grade score

B level indux	Weight Wi	C level index	Weight wj	Evaluation hierarchy V				
				Highest	Higher	Commonly	Lower	Lowest
Efficiency of big data platform （B1）	0.2795	C1	0.2000	0.2	0.4	0.2	0.2	0.0
		C2	0.2710	0.6	0.3	0.1	0.0	0.0
		C3	0.2742	0.7	0.3	0.0	0.0	0.0
		C4	0.2548	0.5	0.2	0.1	0.2	0.0
Characteristics of public opinion （B2）	0.2388	C5	0.2820	0.4	0.2	0.3	0.1	0.0
		C6	0.2637	0.3	0.4	0.3	0.0	0.0
		C7	0.1705	0.1	0.2	0.5	0.1	0.1
		C8	0.2894	0.4	0.1	0.4	0.1	0.0
Big data talent efficiency （B3）	0.2155	C9	0.1412	0.1	0.1	0.5	0.3	0.0
		C10	0.2706	0.2	0.5	0.2	0.1	0.0
		C11	0.3059	0.3	0.5	0.2	0.0	0.0
		C12	0.2824	0.5	0.1	0.4	0.0	0.0
Audience characteristics （B4）	0.2660	C13	0.2945	0.8	0.1	0.1	0.0	0.0
		C14	0.2534	0.2	0.	0.4	0.0	0.0

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

					4			
		C15	0.2158	0.3	0.3	0.3	0.1	0.0
		C16	0.2363	0.5	0.3	0.1	0.1	0.0

4.2 Calculation of evaluation results and fuzzy comprehensive evaluation

According $S_i = W_i^T * R_i (\mathrm{i} = 1, 2, 3, 4)$, it can get the following:

$$S_1 = W_1^T * R_2$$

$$= \begin{vmatrix} 0.2000 & 0.2710 & 0.2742 & 0.2548 \end{vmatrix} * \begin{vmatrix} 0.2 & 0.4 & 0.2 & 0.2 & 0 \\ 0.6 & 0.3 & 0.1 & 0 & 0 \\ 0.7 & 0.3 & 0 & 0 & 0 \\ 0.5 & 0.2 & 0.1 & 0.2 & 0 \end{vmatrix}$$

$$= \begin{vmatrix} 0.5219 & 0.2945 & 0.0926 & 0.0910 & 0 \end{vmatrix}$$

Then it can get the S2,S3 and S4, and it get the fuzzy judgment matrix B layer,which is:

$$S = \begin{vmatrix} 0.5219 & 0.2945 & 0.0926 & 0.0910 & 0 \\ 0.3247 & 0.2249 & 0.3647 & 0.0742 & 0.0171 \\ 0.3012 & 0.3306 & 0.2989 & 0.0694 & 0 \\ 0.4692 & 0.2664 & 0.2192 & 0.0452 & 0 \end{vmatrix}$$

The overall evaluation result of the evaluation of the total target A layer is the Following:

$$P = W^T * S = \begin{vmatrix} 0.2795 & 0.2388 & 0.2155 & 0.2660 \end{vmatrix}^T * \begin{vmatrix} 0.5219 & 0.2945 & 0.0926 & 0.0910 & 0 \\ 0.3247 & 0.2249 & 0.3647 & 0.0742 & 0.0171 \\ 0.3012 & 0.3306 & 0.2989 & 0.0694 & 0 \\ 0.4692 & 0.2664 & 0.2192 & 0.0452 & 0 \end{vmatrix}$$

$$= \begin{vmatrix} 0.4131 & 0.2781 & 0.2357 & 0.0701 & 0.0041 \end{vmatrix}$$

According to the principle of maximum membership, 0.4131 is the largest, indicating that the evaluation of public opinion management in Tongling University is "very high". This result is benefited from the investment and harvest of the college's public opinion management in the past two years.

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

5 Network Public Opinion Management Mechanism of University Based on Big Data

5.1 Improving the consciousness of big data and strengthening the application of big data

In the era of big data, as a base for training talents, the network public opinion management personnel should have big data concepts, and should integrate this concept into ideological consciousness and practical work, and have the ability to obtain data, analyze data and use data. It can find the particularity in the mass of information and information, and in the large number of data. Finding the regularity in complex data, and from the strategic level of building the core competitiveness of universities, university administrators must have the ability to apply big data technology. Under the background of the era of big data, the media literacy of network public opinion managers in universities should be improved continuously. It is necessary to learn new media and new technical knowledge actively, walk into the student group, understand the current situation and characteristics of their network life, and learn to use big data knowledge to carry out the management of network public opinion in universities. Universities should regularly carry out big data knowledge training, carefully design the training curriculum system, employ experts in the field of big data to teach, and train a batch of full-time staff of network public opinion management with big data application ability as soon as possible.

5.2 Compile the keyword Dictionary of network public opinion in universities, and establish a public opinion database.

In the era of big data, in order to grasp the key issues of public opinion that the users care about in time, universities can take the attention degree of the hot events of the network public opinion on the basis of the automatic keyword search, analyze the attention degree of the theme key words in the different periods of public opinion development, to judge the development stage of the network public opinion and do the network public opinion well. Guide. Because the social scope of teachers and students in universities is relatively real and centralized, this special group has a unique discourse system and strong relevance of discourse, so we can use big data technology to data of the students and teachers in the network[3], such as click, forward, comment and so on, and Preview the original data based on this Reason. Therefore, in order to supervise the network public opinion events in time, we can consider the text classification of data information, compile the key words dictionary of network public opinion in universities, and establish a special database of network public opinion in universities.

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

5.3 Establishing the risk prevention and control early warning mechanism of university network public opinion based on big data technology

At present, college students are mostly "95" and even "00". This generation is growing up with the development and transformation of China's economic and social development. Their self-protection consciousness and self-protection consciousness are generally enhanced, and their opinions and ideas are expressed through the network platform. Therefore, universities should establish a network public opinion early warning mechanism based on big data technology, set up a special network public opinion monitoring department, pay attention to the high frequency of social media platform for students to browse, monitor the problems of specific groups in real time, enhance the communication between public opinion departments and increase the technical aspects. In the form of four levels of public opinion monitoring platform for schools, two level departments, classes and dormitories, the effective early warning mechanism of risk prevention and control of network public opinion in universities is established with the advantage of big data technology.

5.4 Construction of a big data management platform for network public opinion in Universities

In the era of big data, to build a university network public opinion governance model with big data as the core resource, universities should establish a big data management platform for network public opinion. This platform not only can effectively store and manage all aspects of public opinion data, but also have process monitoring, trend prediction, risk early warning and wisdom. Data processing capabilities such as governance, to achieve precise and efficient governance of public opinion. In the era of big data, the management of network public opinion in universities must also be a whole process of participation and cooperation. The information of various departments must be included in the big data management platform of network public opinion, and the unified data sharing platform of the whole school should be set up to ensure the timely and comprehensive public opinion monitoring. Through this platform to integrate the data and information of various departments in universities, break the data independent phenomenon produced by the segmentation of the traditional university management, through the effective connection to the database, overcome the "data island" phenomenon[4], integrate the whole school resources, and provide comprehensive and accurate numbers for the timely management of network public opinion in universities. It is supported.

References

[1]X.L. Chen (2016). Guidance of Network Public Opinion in Colleges and Universities under the Background of Big Data. Shandong Social Sciences,no.6,pp.276-277.

ISSN 2706-655X Vol.1, Issue 1: 38-47, DOI: 10.25236/IJFET.2019.010104

[2]J.F. Zhan (2016).Characteristics and Countermeasures of Network Public Opinion in Colleges and Universities under the New Situation. Academic Research, no.9,pp.50-51.
[3]L.L. Sun (2016). College Network Public Opinion Research and Management in the Era of Big Data. Jianghai Academic Journal, no.3,pp.204-209.
[4]H.J. Wang (2015). Construction of University Network Public Opinion Governance Capacity in the Era of Big Data. Journal of Xinyang Normal University, no.3,pp.85-88.