

Research on the Correlation Between The Identity of Opinion Leaders and Information Diffusion in Online Public Opinion

-- Using Correlation with Public Opinion Events as A Moderating Variable

Ming Wei^{1, a, *}, Lingbo Fu^{1, b, *}

¹Communication University of China, Beijing, 100024, China

^acuc_weiming@cuc.edu.cn, ^bfulingbo@cuc.edu.cn

Abstract

This paper employs multiple linear regression analysis to investigate the influence of opinion leader identity characteristics on online public opinion information diffusion, with a focus on their correlation with public opinion events as a moderating variable. Data from Sina Weibo gathered through web crawler software, will be analyzed using SPSS. Specifically, when opinion leaders are associated with public opinion events, five factors or variables, including the number of comments, the number of likes, the number of fans, "V" certification, and Weibo rating, may affect the diffusion of public opinion information. Conversely, if not relevant, three factors or variables will be considered: the number of comments, the number of likes, and "V" certification. This study reveals that, except for the variable of the number of fans, the remaining four variables exhibit a noticeable positive correlation with the diffusion of public opinion information when opinion leaders are linked to public opinion events. However, when opinion leaders are unrelated to public opinion events, two factors, the number of likes and "V" certification, display a negative correlation with the diffusion of public opinion information, while the number of comments remains a relevant factor. This study underscores the pivotal role of opinion leaders in shaping public opinion and highlights the importance of exploring the impact of their identity characteristics on the diffusion of public opinion information, with practical implications for government social governance.

Keywords

Opinion leader; Identity characteristics; Public opinion; Information diffusion; Social governance.

1. Introduction

Opinion leadership has been a longstanding subject of research within communication studies [1,2], initially introduced from two-step flow theory of persuasion in the 1940s[3]. Opinion leaders, defined as individuals who wield disproportionate influence over public opinions, attitudes, beliefs, motivation, and behaviors[4,5], serve as a conduit for information dissemination. In the digital era, public opinion has evolved from a mere aggregation of individual viewpoints collected through survey-based polls into a dynamic interaction among the public itself [6]. The affordance of social media platforms and their rapidly expanding user bases have revolutionized information acquisition and interpersonal communication[2], significantly amplifying the impact of opinion leaders on shaping public opinions[7]. By closely examining opinion leaders on social network services (SNS), it becomes possible to better strategize and manage information diffusion and public sentiment[8]. To harness the influence

of opinion leaders, scholars have conducted investigations into their pivotal role in shaping public opinion on various SNS platforms. For instance, Winter and Neubaum[7] conducted an online survey on Facebook, uncovering the significant role of self-presentational motives and their implications for identifying opinion leaders in social media. Wang et al. [9] analyzed the process of information dissemination in Sina Weibo communication and proposed a SEINER model. Choi[10] used network analysis and statistical measures on Twitter-based discussion groups in South Korea and found that opinion leaders were found to be influential but not content creators. Despite the considerable emphasis placed on the role of opinion leaders on SNS, there exists a critical gap in exploring the relationship between the identity of opinion leaders and their influence on information diffusion.

In China, Sina Weibo stands as a prominent example of an SNS platform akin to Twitter, serving as a significant source for information acquisition and opinion formation due to its concise content and real-time interactivity [2]. An impressive 80.3% of its users actively engage with news and global trending topics. Similar to other SNS platforms, Sina Weibo offers users a platform for communication, tweeting, and sharing personal experiences [2]. Since its launch in 2009, Sina Weibo's significance of online public opinion formation reached its peak [11]. As of the end of the second quarter in 2023, Weibo boasted 599 million monthly active users (MAU), with a year-on-year net increase of 17 million users. In other words, Sina Weibo is used by 55.5% of Chinese internet users, who make up 76.4% of the entire population. Scholars have employed Sina Weibo as a valuable resource for exploring the formation, dissemination, and management of public opinion. For example, Nip and Fu [11] analyzed 29 corruption cases exposed on Sina Weibo, defining opinion leaders from users as Initiators, Agenda setters, or Disseminators. Stockmann and Luo [12] drew 92 semi-structured expert interviews with professionals at Tencent, Weibo, and Baidu, concluding that Sina Weibo has the greatest potential to facilitate the rise of online public opinion on politics-related topics. Pu et al. [13] used sentiment analysis and LDA to find that the government should keep up-to-date with the latest news of the incident to raise public awareness on Sina Weibo. Similarly, Jiang et al. [14] also proposed a rumor model using Sina Weibo as an example emphasizing the necessity of official statements to establish the truth during public events. Thus, Sina Weibo has empowered scholars to explore the dynamic mechanisms of online public opinion, as it was designed to enable users to become information sources and disseminate information online. Despite the importance and processes involved with Sina Weibo and public opinion, there remains a paucity of studies investigating the relationship between opinion leader identities and information diffusion on Sina Weibo, limiting our understanding of the underlying mechanisms influencing the spread of public opinion.

To fill the gap, the present study has chosen Sina Weibo as its focal platform to analyze the connection between opinion leader identities and their impact on public opinion diffusion. The remainder of this study is structured as follows: Section 2 presents the literature review, Section 3 outlines the hypothetical model and methodology, Section 4 details the data analysis, and Section 5 concludes with a discussion of the research findings.

2. Literature Review

2.1. Opinion Leader

The concept of opinion leadership originated with Lazarsfeld, Katz, and their colleagues in the field of communication studies, as part of the two-step flow theory of persuasion [3,15]. They posited that opinion leaders functioned as intermediaries between mass media and society, conveying ideas from the mass media to their peers [3]. As Katz noted, opinion leaders are related to the personification of certain values, competence, and strategic social location [15]. Over time, subsequent studies have refined and expanded upon the notion of opinion

leadership, elevating it to one of the most prominent theories within the realm of communication studies [11].

In the digital age, opinion leaders refer to individuals who have an influence on the opinions, attitudes, beliefs, motivations, and behaviors of others on social networks [3,8]. Recognizing the significance of opinion leaders, scholars have endeavored to explore methods for identifying them. For example, Chan and Misra [1] used discriminant analysis to find that personal involvement, product familiarity, and public individuation are important to distinguish opinion leaders. Choi [10] utilized network analysis to uncover that opinion leaders held influence but were not necessarily creators of content within South Korean Twitter groups. Li et al. [16] ranked opinion leaders based on four distinguishing features: expertise, novelty, influence, and activity. Rehman et al. [5] adopted the Louvain algorithm to identify opinion leaders in social media. However, despite the considerable attention devoted to understanding the importance and identification of opinion leaders within SNS, there remains a notable scarcity of studies that delve into the identity of opinion leaders in the context of information diffusion. This gap in the literature inhibits our ability to unveil the mechanisms through which their identity impacts the dissemination of opinions [2].

2.2. Identity of Opinion Leader and Information Diffusion

Within the realm of SNS, the identity of opinion leaders is conveyed through a series of characteristics that manifest both on their profiles and within their content [17]. These attributes encompass elements such as social influence, verification, ranking, and more, all of which contribute to their impact on social media platforms. Numerous studies have endeavored to identify potential opinion leaders and discern the traits that set them apart from their followers [18]. For example, Chan and Misra [1] employed discriminant analysis and revealed that personal involvement, product familiarity, and public individuation as key identifiers of opinion leaders. Liu et al. [19] utilized log-linear and Poisson regression models to demonstrate that the engagement of opinion leaders in online group knowledge sharing hinges on their interactivity and authority. Chen et al. [20] based on a bounded confidence model that considered reputation, stubbornness, appeal, and extremeness to reveal the nuanced impact of reputation, with higher reputation levels enhancing the ability of opinion leaders to attract followers.

The potential of SNS to shape public opinion has garnered significant scholarly attention [21]. Previous studies have unveiled the ways in which the characteristics of opinion leaders influence the formation of public opinion. For example, Park [22] used a web-based survey to find that the identity of opinion leaders significantly affects the individuals' involvement in the political process on Twitter. Lyons and Henderson [23] investigated characteristics of opinion leaders within a computer-mediated environment and found that online opinion leaders possess significantly higher levels of enduring involvement, innovativeness, exploratory behavior, and self-perceived knowledge. Park and Kaye [24] conducted an online survey involving 648 college students in the US, concluding that Twitter opinion leadership is rarely predicted by socio-demographics. Li et al. [19] analyzed the opinion leaders from online learning communities and found that network-level characteristics are different from their intrinsic characteristics in society. While extensive attention has been devoted to exploring the subjective characteristics of opinion leaders and their influence on public opinion, studies that delve into the relationship between the identity of opinion leaders and their impact on information diffusion remain notably scarce.

3. Hypothetical Model and Methodology

This study delves into the relationship between the identity of opinion leaders, whether they are event-related or unrelated, and the diffusion of information in online public opinion. In this

study, the indicator of the degree of information diffusion in online public opinion is the *forwarding number* of microblogs which was released by opinion leaders relating to public opinion events. The factors that affect the forwarding number include *the number of comments, the number of likes, the number of fans, "V" certification, membership identity, ranking, expert identity, and education level*.

To analyze this correlation, our research employs stepwise regression within the framework of linear regression analysis. Stepwise regression introduces relevant variables one by one, enabling us to assess the existence of correlations between these variables. While univariate linear regression models are well-suited for testing relationships between a dependent variable and a single independent variable, real-world data often involves multiple variables influencing the dependent variable. This necessitates the use of a multiple linear regression model, which allows for the exploration of relationships among multiple variables. The main models can be expressed as:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \dots \quad (1)$$

Where β_0 is called the regression constant. $\beta_0, \beta_1, \beta_2, \dots, \beta_n$ are called regression coefficients of multiple linear regression equations. X_1, X_2, \dots, X_n are called the explanatory variables for prediction.

The fitting degree test and significance test of multivariate linear models are roughly the same as those of univariate linear regression models. *t test* or *F test* are used to judge whether there is significance between variables, and finally the final research results are judged according to the confidence interval. Using linear regression to analyze the correlation of samples is to use relevant analysis software to verify the correlation degree between data. The index for measuring goodness of fit is generally expressed by the determinable coefficient (judgment coefficient) R^2 . For example, the sample regression line (equation 3) is obtained from a group of sample observations (equation 2):

$$(X_i, Y_i), i = 1, 2, \dots, n \quad (2)$$

$$\hat{Y}_i = \hat{\beta}_0 + \hat{\beta}_1 X_1 \quad (3)$$

The deviation between the *i*th observation value of Y and the sample mean (equation 4) can be decomposed into the sum of two parts (equation 5):

$$y_i = (Y_i - \bar{Y}) \quad (4)$$

$$y_i = Y_i - \bar{Y} = (Y_i - \hat{Y}_i) + (\hat{Y}_i - \bar{Y}) = (e_i + \hat{Y}_i) \quad (5)$$

$$\hat{y}_i = (\hat{Y}_i - \bar{Y}) \quad (6)$$

$$e_i = (Y_i - \hat{Y}_i) \quad (7)$$

Equation (6) is the difference between the regression fitting value of the sample and the average value of the observed value, which can be considered as the part explained by the regression line. Equation (7) is the difference between the observed value and the regression fitting value, which cannot be explained by the regression line. If $y_i = \hat{y}_i$, that is, the actual observed value falls on the sample regression line, the fitting degree is good. For all sample points, it is necessary to consider the sum of squares of deviations between these points and the sample mean, which can prove that:

$$\sum y_i^2 = \sum \hat{y}_i^2 + \sum e_i^2 + 2\sum \hat{y}_i e_i = \sum \hat{y}_i^2 + \sum e_i^2 \quad (8)$$

Record as:

$$TSS = \sum y_i^2 = \sum (Y_i - \bar{Y})^2 \quad (9)$$

$$ESS = \sum \hat{y}_i^2 = \sum (\hat{Y}_i - \bar{Y})^2 \quad (10)$$

$$RSS = \sum e_i^2 = \sum (Y_i - \hat{Y}_i)^2 \quad (11)$$

Where TSS represents the total square sum, ESS represents the regression square sum, and RSS represents the residual square sum. $TSS = ESS + RSS$, the total deviation of the observed value of Y around its mean value comes from the regression line (ESS) and random forces (RSS). The TSS in a given sample remains unchanged. The closer the regression line of the sample at the actual observation point is, the greater the proportion of ESS in the TSS. Therefore, the goodness of fit is the total deviation TSS of ESS/Y.

Besides *t* test, there is also *R* test. Main notes:

$$R^2 = \frac{ESS}{TSS} = 1 - \frac{RSS}{TSS} \quad (12)$$

R^2 is called as the decisive coefficient of the sample, and the value range of R^2 is [0,1]. The closer the value of R^2 is to 1, the final result can judge whether the initial research purpose is feasible.

4. Data Analysis

This study focuses its empirical analysis on the topic of "Housing purchase restrictions in Xiong'an New Area", a subject of recent extensive discussion. To gather data for analysis, web crawler software was employed to extract relevant microblog posts. During the data collection process, specific criteria were set to ensure data relevance. Each microblog post selected for analysis had to meet the following conditions: it should have been forwarded at least 50 times, include a clear tag #Housing purchase restrictions in Xiong'an New Area#, and the blogger should have a follower count of over 5,000. In total, 700 pieces of data satisfying these criteria were collected. Subsequently, each blogger's identity was meticulously determined, and the search function on Sina Weibo was utilized to ascertain whether bloggers held "V" certification and possessed expert identities, such as economists, investors, stock evaluators, financial practitioners, or other relevant qualifications. Additionally, bloggers were categorized based on their geographical location and other pertinent blog-related information. Ultimately, the dataset comprised 298 bloggers directly relevant to the public opinion event and 402 bloggers unrelated to it.

Table 1 shows the correlation between the variables of the microblog information published by the event-unrelated individuals, and Table 2 shows the event-related individuals. It can be seen from Table 1 that there is a significant positive correlation between the number of forwarding, the number of comments, and the number of likes.

Table 1 Correlation Analysis of variables of irrelevant opinion leaders

	<i>forwarding number</i>	<i>comments number</i>	<i>likes number</i>	<i>"V" certification</i>	<i>fans number</i>	<i>ranking</i>	<i>membership identity</i>	<i>education level</i>	<i>expert identity</i>
<i>forwarding number</i>	1								
<i>comments number</i>	0.564**	1							
<i>likes number</i>	0.218**	0.580**	1						
<i>"V" certification</i>	0.044	0.081	0.04	1					
<i>fans number</i>	0.07	0.101	0.07	0.153*	1				
<i>ranking</i>	0.078	0.128**	0.087	0.254**	0.158**	1			
<i>membership identity</i>	-0.082	-0.053	0.072*	-0.013	-0.153	-0.013	1		
<i>education level</i>	0.002	0.04	0.037	-0.034	0.031	-0.002	-0.011	1	
<i>expert identity</i>	0.037	0.034	0.056	-0.034	-	-	-0.085	0.061	1

Notes: * p < 0.05; ** p < 0.01.

Table 2. Correlation Analysis of variables of relevant network opinion leaders

	<i>forwarding number</i>	<i>comments number</i>	<i>likes number</i>	<i>"V" certification</i>	<i>fans number</i>	<i>ranking</i>	<i>membership identity</i>	<i>education level</i>	<i>expert identity</i>
<i>forwarding number</i>	1								
<i>comments number</i>	0.568**	1							
<i>likes number</i>	0.542	0.660**	1						
<i>"V" certification</i>	-0.77	0.017	-0.031	1					
<i>fans number</i>	0.115**	0.105**	0.101	0.158*	1				
<i>ranking</i>	-0.002	0.111	0.003	0.281**	0.116**	1			
<i>membership identity</i>	-0.014	-0.034	0.045	0.131*	-0.08	-0.040*	1		
<i>education level</i>	0.001	0.044	0.012	0.106	0.067	0.051	-0.015	1	
<i>expert identity</i>	-0.027	-0.057	-0.027	-0.122**	-0.008*	-0.017*	0.035	-0.216**	1

Notes: * p < 0.05; ** p < 0.01.

Table 3 presents the regression analysis model summary of the impact of event-related network leaders on the spread of network public opinion. As can be seen from Table 3, the five variables that have the greatest impact on the dissemination of relevant microblog content of network opinion leaders related to events are the number of comments, the number of likes, microblog V certification, the number of fans and whether they are microblog members, while other variables have no significant impact on the forwarding volume and have not entered the impact model. Specifically, the explanation rate of comments to forwarding volume is 46.1%; After adding the number of likes, the interpretation rate of forwarding volume increased by 4.2%. On this basis, V certification and the entry of the number of fans also increased the interpretation rate of microblog content transmission by 1.2% and 1.7% respectively. The last step to enter the model is whether the network opinion leaders are microblog members. The final model has a total interpretation rate of 54.1%.

Table 3. Summary of regression analysis model of event-related network opinion leaders on public opinion communication

Model	R	R ²	Adjust R ²	Standard estimation error	Change statistics
1	0.568	0.351	0.348	212.040	0.461
2	0.608	0.402	0.388	203.461	0.042
3	0.606	0.404	0.410	201.238	0.012
4	0.618	0.421	0.414	208.008	0.016
5	0.624	0.431	0.421	206.247	0.008

From the above analysis, it can be seen that the influence of event-related and event-unrelated network opinion leaders on the spread of network public opinion is different, as shown in Table 4:

Table 4. The correlation between variables and information diffusion

Variable	Event-irrelevant		Event-related	
	Whether it affects	<i>forwarding number</i> influence coefficient	Whether it affects	<i>forwarding number</i> influence coefficient
<i>comments number</i>	have	positive	have	positive
<i>likes number</i>	have	negative	have	positive
<i>"V"</i>	have	negative	have	positive
<i>certification</i>	nothing	—	have	negative
<i>fans number</i>	nothing	—	have	positive
<i>ranking</i>	nothing	—	nothing	—
<i>membership</i>	nothing	—	nothing	—
<i>identity</i>	nothing	—	nothing	—
<i>education level</i>	nothing	—	nothing	—
<i>expert identity</i>	nothing	—	nothing	—

It can be seen from table 6 that for each additional comment from the public opinion leaders unrelated to the event, the forwarding number will increase by 1.067 times; For each additional comment of the network opinion leader related to the event, the forwarding volume will increase by 0.428 times. In terms of the number of likes, the number of likes of the public opinion leaders not related to the event has a negative impact on the forwarding number, while the number of likes of the network opinion leaders related to the event has a positive impact on the microblog forwarding volume, and also has a greater impact on the network opinion leaders related to the event. The number of fans has a negative impact on the spread of public opinion of Internet opinion leaders not related to the event, but it has a positive impact on the spread of Internet public opinion of Internet opinion leaders related to the event, and the number of fans has a greater impact on Internet opinion leaders related to the event.

5. Conclusion and Discussion

From the perspective of communication studies, all communication activities take place within specific contexts, with social context serving as the foundation for understanding communication phenomena. Encouraging people's way of thinking to transcend the constraints of hierarchical systems and reconstruct the traditional logic of ideological identification and development trends is paramount. As the builders of online ideology, the rise of online opinion

leaders is also inherently rooted in the practical context of ecological changes in ideological construction.

Online opinion leaders are the information axis figures in cyberspace. This group possesses the capability to infiltrate specific ideologies across various platforms, including portal websites, forums, Weibo, and WeChat through multi-level information dissemination. In doing so, they construct an "ideological climate" that can prompt the "silent majority" to blindly follow the prevailing "dominant opinions", thereby potentially eroding their individual subjectivity.

The ideological information diffusion orchestrated by online opinion leaders operates on three levels: *firstly*, there exists an elite alliance among online opinion leaders. The influence of online opinion leaders is dynamic, contingent on their ability to consistently provide high-quality opinions to the public. Failure to do so can result in "losing fans" and even losing their "leader" status. Online opinion leaders often follow, forward, and comment on each other, sharing their "fan" resources, and forming alliances to consolidate and expand their influence [25]. American sociologist Mills once pointed out that an important foundation of the power elite alliance is the existence of homogeneity and values among the alliance members. The most important fact about a person's circle is the standards of recognition, praise, honor, and promotion that prevail within it... Within these elite circles, common symbols and standards of recognition, praise, honor, and promotion prevail. The internal alliance of online opinion leaders is underpinned by shared values, enabling them to jointly propagate opinions imbued with specific value orientations, thereby reinforcing these values.

Secondly, Online opinion leaders and "fans" echo each other. Netizens often have ideological biases, and if the value stance of an opinion leader aligns with the value preferences of netizens, they will gravitate toward that leader. Consequently, there are large and small opinion circles centered around leaders with varying viewpoints in the online sphere. Opinion leaders have obvious ideological and religious labels, and "fans" opt to follow different online opinion leaders, which are actually distributed around different ideological and religious beliefs. As "fans" engage in observing and sharing, the ideological and belief dissemination power of online opinion leaders continues to proliferate. The strength of ideological communication among opinion leaders depends on the size of the circle group: the larger the circle group size, the more frequent "fan" interaction, and the farther the ideology spreads.

Finally, the interaction between online opinion leaders and mass media. Through continuous information dissemination and opinion expression, online opinion leaders have become influential "opinion self-media". They are not only the center of information dissemination but also the source of opinions. In the evolution of online public opinion, traditional mass media often amplify the views of well-known opinion leaders to enhance the depth and reach of their news reporting. Online opinion leaders generate "advantageous opinions", which can easily create an "opinion climate" and influence social public opinion through the interactive dissemination of "opinion self-media" and mass media. The 'climate of opinion' is often dominated by ideology, with specific ideologies carried by robust social public opinion exerting a potent assimilative force on the political convictions of the masses.

References

- [1] Chan, K.K.; Misra, S. Characteristics of the Opinion Leader: A New Dimension. *Journal of Advertising* 1990, 19, 53–60
- [2] Wang, Z.; Liu, H.; Liu, W.; Wang, S. Understanding the Power of Opinion Leaders' Influence on the Diffusion Process of Popular Mobile Games: Travel Frog on Sina Weibo. *Computers in Human Behavior* 2020, 109, 106354.

- [3] Lazarsfeld, P.F.; Berelson, B.; Gaudet, H. *The People's Choice: How the Voter Makes up His Mind in a Presidential Campaign*; Columbia University Press, 1968;
- [4] Zhao, Y.; Kou, G.; Peng, Y.; Chen, Y. Understanding Influence Power of Opinion Leaders in E-Commerce Networks: An Opinion Dynamics Theory Perspective. *Information Sciences* 2018, 426, 131–147.
- [5] Rehman, A.U.; Jiang, A.; Rehman, A.; Paul, A.; din, S.; Sadiq, M.T. Identification and Role of Opinion Leaders in Information Diffusion for Online Discussion Network. *J Ambient Intell Human Comput* 2020.
- [6] Zhang, Y.; Chen, F.; Rohe, K. Social Media Public Opinion as Flocks in a Murmuration: Conceptualizing and Measuring Opinion Expression on Social Media. *Journal of Computer-Mediated Communication* 2021, 27, zmab021.
- [7] Winter, S.; Neubaum, G. Examining Characteristics of Opinion Leaders in Social Media: A Motivational Approach. *Social Media + Society* 2016, 2, 2056305116665858.
- [8] Cho, Y.; Hwang, J.; Lee, D. Identification of Effective Opinion Leaders in the Diffusion of Technological Innovation: A Social Network Approach. *Technological Forecasting and Social Change* 2012, 79, 97–106, .
- [9] Wang, R.; Rho, S.; Chen, B.-W.; Cai, W. Modeling of Large-Scale Social Network Services Based on Mechanisms of Information Diffusion: Sina Weibo as a Case Study. *Future Generation Computer Systems* 2017, 74, 291–301,.
- [10] Choi, S. The Two-Step Flow of Communication in Twitter-Based Public Forums. *Social Science Computer Review* 2015, 33, 696–711.
- [11] Nip, J.Y.M.; Fu, K. Challenging Official Propaganda? Public Opinion Leaders on Sina Weibo. *The China Quarterly* 2016, 225, 122–144.
- [12] Stockmann, D.; Luo, T. Which Social Media Facilitate Online Public Opinion in China? *Problems of Post-Communism* 2017, 64, 189–202.
- [13] Pu, X.; Jiang, Q.; Fan, B. Chinese Public Opinion on Japan's Nuclear Wastewater Discharge: A Case Study of Weibo Comments Based on a Thematic Model. *Ocean & Coastal Management* 2022, 225, 106188 .
- [14] Jiang, G.; Li, S.; Li, M. Dynamic Rumor Spreading of Public Opinion Reversal on Weibo Based on a Two-Stage SPNR Model. *Physica A: Statistical Mechanics and its Applications* 2020, 558, 125005.
- [15] Katz, E. The Two-Step Flow of Communication: An up-to-Date Report on an Hypothesis. *Public opinion quarterly* 1957, 21, 61–78.
- [16] Li, Y.; Ma, S.; Zhang, Y.; Huang, R.; Kinshuk An Improved Mix Framework for Opinion Leader Identification in Online Learning Communities. *Knowledge-Based Systems* 2013, 43, 43–51.
- [17] Xu, Q.; Yu, N.; Song, Y. User Engagement in Public Discourse on Genetically Modified Organisms: The Role of Opinion Leaders on Social Media. *Science Communication* 2018, 40, 691–717.
- [18] Weimann, G.; Tustin, D.H.; Van Vuuren, D.; Joubert, J.P.R. Looking for Opinion Leaders: Traditional vs. Modern Measures in Traditional Societies. *International Journal of Public Opinion Research* 2007, 19, 173–190.
- [19] Liu, J.; Zhang, Z.; Qi, J.; Wu, H.; Chen, M. Understanding the Impact of Opinion Leaders' Characteristics on Online Group Knowledge-Sharing Engagement from In-Group and Out-Group Perspectives: Evidence from a Chinese Online Knowledge-Sharing Community. *Sustainability* 2019, 11, 4461.

- [20] Chen, S.; Glass, D.H.; McCartney, M. Characteristics of Successful Opinion Leaders in a Bounded Confidence Model. *Physica A: Statistical Mechanics and its Applications* 2016, 449, 426–436.
- [21] Stalder, F. *Manuel Castells: The Theory of the Network Society*; Polity, 2006;
- [22] Park, C.S. Does Twitter Motivate Involvement in Politics? Tweeting, Opinion Leadership, and Political Engagement. *Computers in Human Behavior* 2013, 29, 1641–1648.
- [23] Lyons, B.; Henderson, K. Opinion Leadership in a Computer-Mediated Environment. *Journal of Consumer Behaviour* 2005, 4, 319–329.
- [24] Park, C.S.; Kaye, B.K. The Tweet Goes on: Interconnection of Twitter Opinion Leadership, Network Size, and Civic Engagement. *Computers in Human Behavior* 2017, 69, 174–180.
- [25] Xiong, Y.; Cheng, Z.; Liang, E.; Wu, Y. Accumulation Mechanism of Opinion Leaders' Social Interaction Ties in Virtual Communities: Empirical Evidence from China. *Computers in Human Behavior* 2018, 82, 81–93.