

Research on the Measure Method of Netizens Complaint Theme Influence for Public Decision- making

Jianmin He^{1,2}, Dongming Tian^{1,}, Yezheng Liu^{1,2}*

¹ School of Management, Hefei University of Technology, Hefei 230009, PR China

² Key Laboratory of Process Optimization and Intelligent Decision-making, Ministry of Education, Hefei 230009, PR China

Objective:

This paper studies the measure method of netizens group complaints influence on online social network, in order to find out the complainers and themes that have influence on public decision-making and provide public policy decision-maker with theoretical basis and practical methods.

Context:

More and more public complaints information about the formulation and implementation of public policy appears on online social network. Through information gathering, frequently interaction, word-of-mouth communication and emotional resonance, these complaints on online social network quickly become group complaints that can hurt public interests, easily lead to public safety issues and bring troubles and challenges to the public policy decision-making organization.

Methods:

On the basis of our previous studies on complaint text's quality, transmission timeliness and user interaction degree, this paper introduced a new factor emotional resonance which is caused by the emergency and has an important impact on the complaint theme to build four-dimensional evaluation index system. We rebuilt the dynamic influence measure model of online netizens complaint theme based on entropy weight model. The method was proved to be reasonable and effective by the empirical research of Sina Weibo data.

Methods:

Index state	First grade index	Second grade index
Static state	The quality of complaint text	Rank of the complainer
		Words number of complaint text
		Keywords number in complaint text
	The transmission timeliness of complaint text	Forwarding frequency of complaint text
Dynamic state	The interaction degree of complaint text	Clicks number of complaint text
		Forwarding number of the complaint text
		The number of effective reply texts
		Participants number of complaint text
		The number of high rank repliers and forwarding people
	The emotional resonance degree excited by emergency	Clicks number of emergency information
Forwarding number of emergency information		
Participants number of emergency information		

Methods:

The dynamic measurement model of complaint context's influence is given as:

$$\begin{aligned}
 In(A_{t_j}) &= \sum_{i=1}^{j-1} \sum_{p=1}^{p_i} Ic[A_p(t_{i \rightarrow j})] + \sum_{p=1}^{p_j} In[A_p(t_j)] \\
 &= \sum_{i=1}^{j-1} \sum_{p=1}^{p_i} Ic[A_p(t_{i \rightarrow j})] + \sum_{p=1}^{p_j} \{Iq[A_p(t_j)] + It[A_p(t_j)] + Ic[A_p(t_j)]\}
 \end{aligned}$$

Methods:

The dynamic measurement model of emergency emotional resonance influence is given as:

$$\begin{aligned} \ln(E_{t_j}) &= \sum_{i=1}^{j-1} \sum_{q=1}^{q_i} \text{Ir}[E_q(t_{i \rightarrow j})] + \sum_{q=1}^{q_j} \ln[E_q(t_j)] \\ &= \sum_{i=1}^{j-1} \sum_{q=1}^{q_i} \text{Ir}[E_q(t_{i \rightarrow j})] + \sum_{q=1}^{q_j} \text{Ir}[E_q(t_j)] \end{aligned}$$

Methods:

The dynamic measurement model of complaint theme's influence is given as:

$$\ln(T_{t_j}) = \ln(A_{t_j}) + \ln(E_{t_j})$$

Results:

Dynamic influence measure model of online netizens complaint theme can effectively solve the measure problem of group complaints influence when the emergency excited social emotional resonance. Meanwhile, it is found that the emergencies which are not related to the complaint theme are difficult to excite emotional resonance, the degrees of emotional resonance excited by different related emergencies are different .

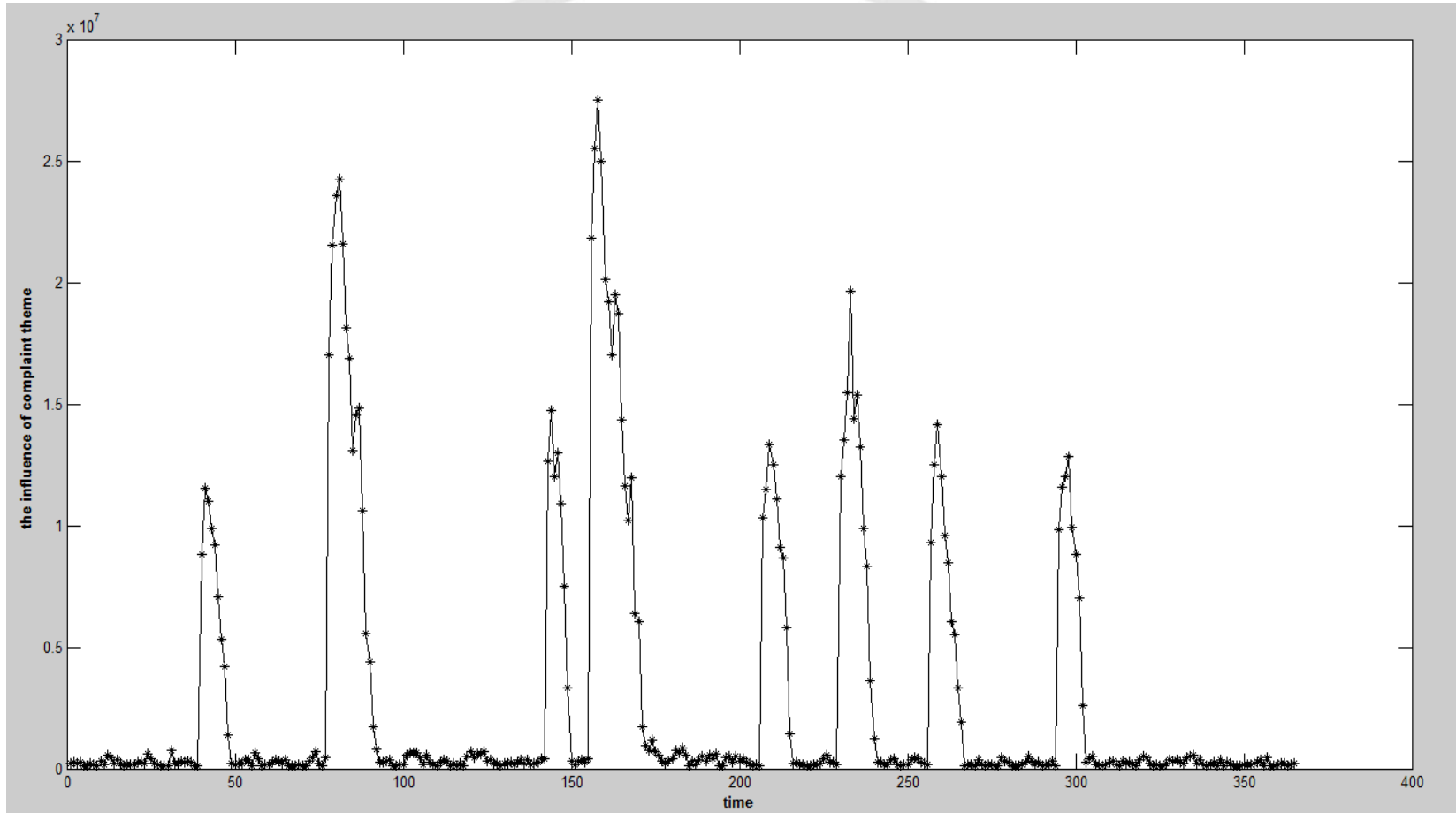


Figure 1. The influence changing trend of complaint themes T " food security".

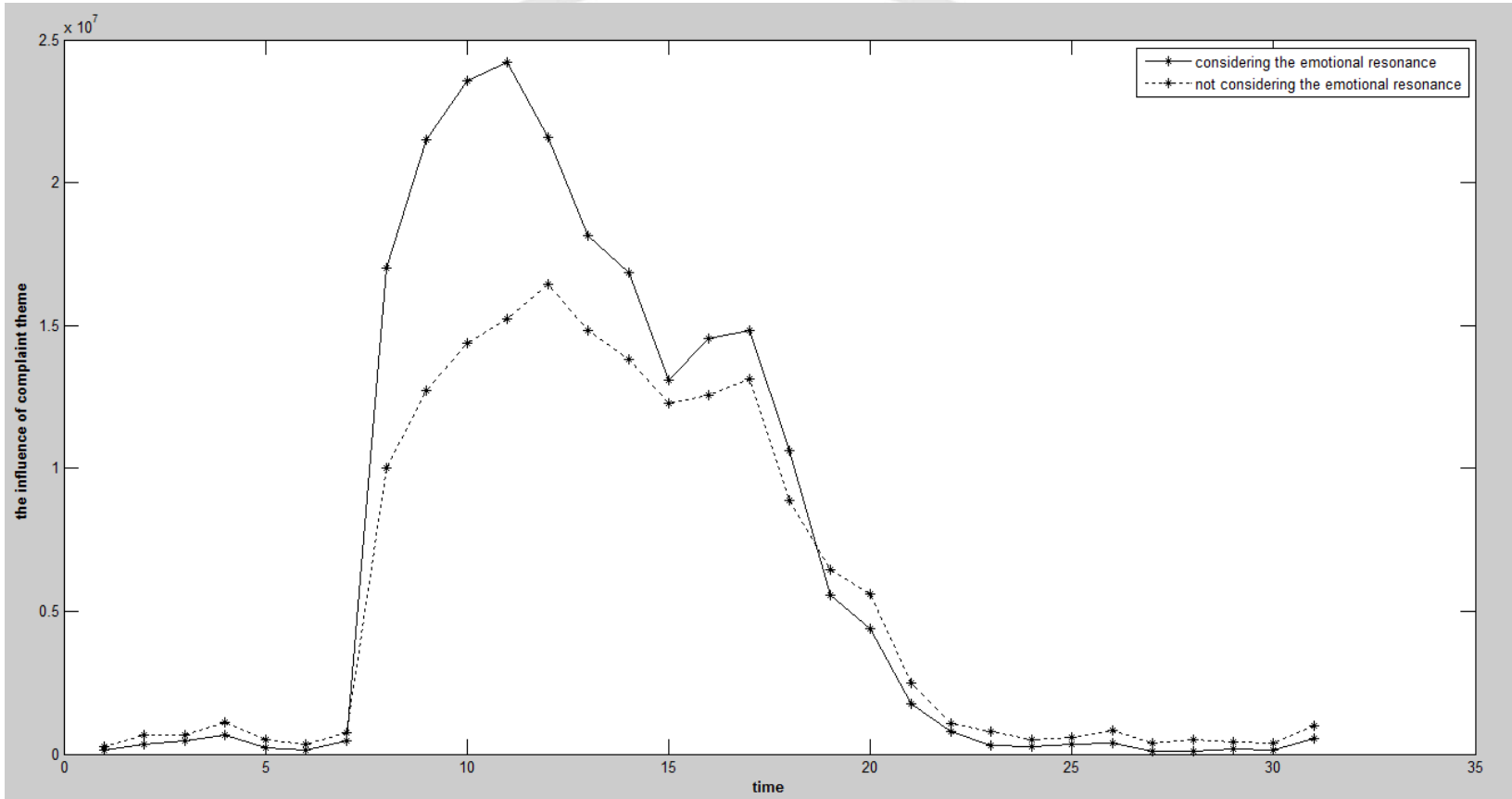


Figure 2. The complaint theme influence comparison in “cadmium rice ”event procedure in the situations of considering and not considering the emotional resonance coursed by emergency.

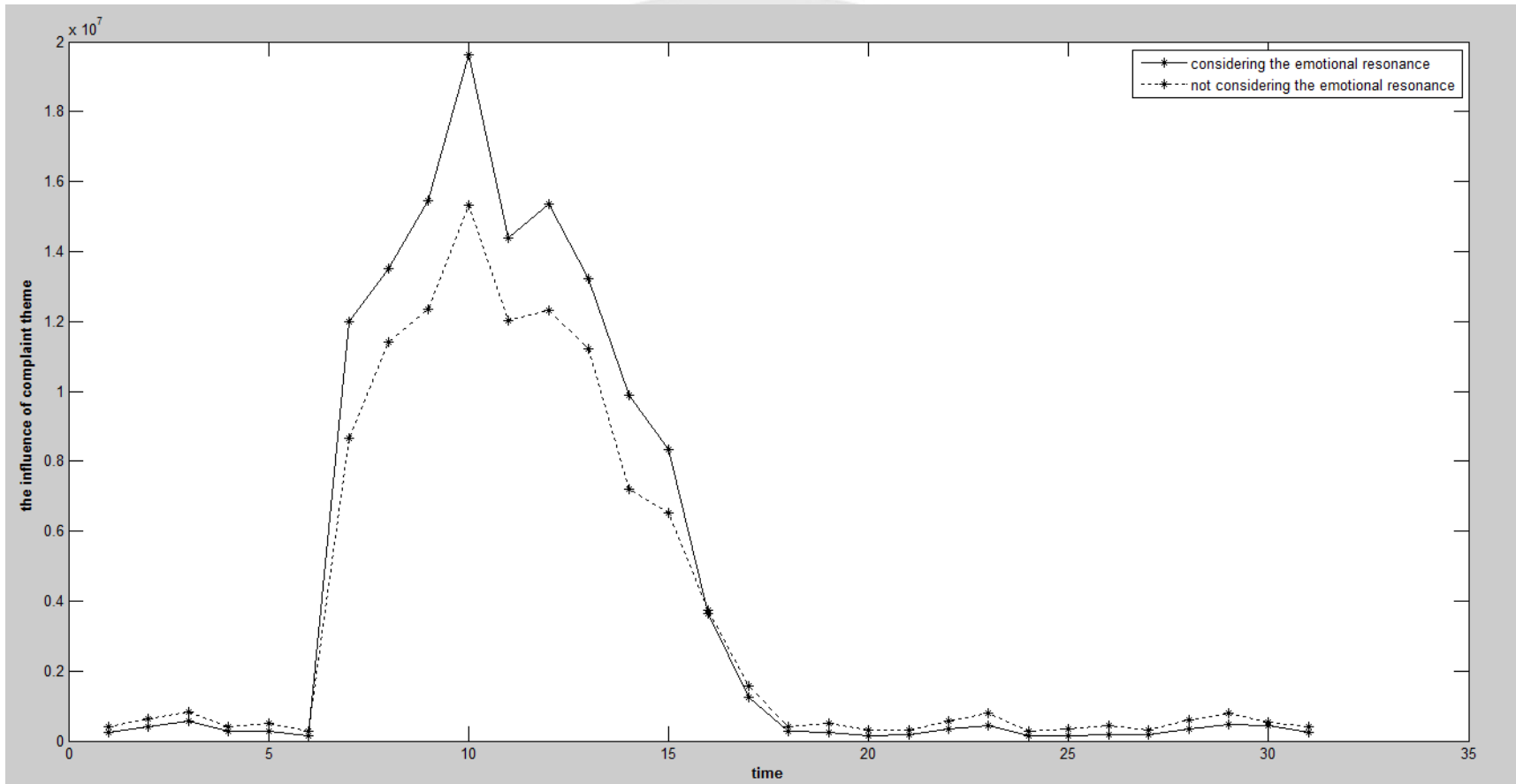


Figure 3. The complaint theme influence comparison in “Taiwan Datong evil oil ”event procedure in the situations of considering and not considering the emotional resonance coursed by emergency.

Conclusions:

The proposed four-dimensional dynamic influence measure model has important theoretical significance and practical value for public policy decision-maker on listening to online group complaints, understanding public opinion, and making public policy.

Conclusions:

Future studies could be considered from the following aspects. One is the relationship between netizens groups and complaint themes on online social network in a big data environment. Another is complaint themes influence measure method of different netizens groups with social emotional resonance. All these problems are important for the public information security management in the internet environment.

