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Study on “Micro-Participation” of the City – Emergency Management in the Age of Micro-Blogging

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1 ABSTRACT

With the rapid development of information technologies, the Internet and mobile terminal facilities, the network information platform has been widely used, and the number of micro-blogging users (such as twitter, Sina micro-blogging,...) is growing rapidly as well. By the end of June 2012, the number of micro-blogging users had reached 274 million, accounting for 50.9 % of netizen based on the statistical report of Internet development in China. The dissemination of information with micro-blogging is more timely and interactive than traditional Internet platforms. Micro-blogging is playing an increasingly important role in the dissemination and diffusion of urban hot topics. Some local governments and urban planning experts use Micro-blogging to interact with the public and respond to local residents' needs. So, how are we to use micro-blogging in dealing with city emergency and help facilitate government management?

The rainstorm on 21 July 2012 in Beijing caused serious disaster in the whole city, especially on infrastructure. Roads, bridges, water conservation projects as well as some landscape and historical sites were destroyed. Meanwhile, the rainstorm also caused great losses of lives and property, totalling an economic loss of nearly ten billion. Fortunately, different parties such as the government, the media and the public were able to use different Internet platforms to disseminate information related to the rainstorm disaster through interaction and discussion of relief hot topics, that finally led to efficient emergency management in the rainstorm disaster.

Taking Sina micro-blogging as an example, this paper researches emergency management process with micro-blogging during the "7.21" rainstorm disaster in Beijing, analyzes the different stages and the main content of the micro-participation, and focuses on the participation method of different subjects, such as the government, media, the public and experts. Meanwhile, this paper puts forward a mechanism for information dispersion and interactive communication, the mechanism of public participation and public opinion guidance. Lastly, some strategies for enhancing the level of urban management are given, and they are, the new paradigm of public participation in urban management, improving system security mechanisms, the real-time public participation and smart city service management system.

2 BACKGROUND

New media based on network and mobile information plays more and more important roles in urban emergency management, especially in the Sanlu milk powder scandal, the Wenchuan and Yushu earthquake, the Wenzhou high-speed rail accident. New media can be used as a way of hot topic dissemination and diffusion. People can receive information more quickly as well as interactive communication with others through the new media platform compared to the traditional media (e.g., Newspaper, TV, Radio, ...). So, it is very important to adapt to the new media such as micro-blogging network to build an urban emergency management system in the network and information age (Gu fumei, Zhai Guofang, 2012). The Beijing storm disasters on July 21, 2012 caused significant damage on roads, bridges and water conservation projects. Many houses collapsed, hundreds of cars and many scenic spots were ruined, causing huge economic loss in the storm. The government, the media and the public body interchanged the rainstorm disaster information through micro-blogging information platform, delivered rainstorm information and discussed the hot topic of disaster relief. Micro-blogging played a key role in the storm disaster emergency management.

Domestic and foreign scholars have conducted research on public participation in urban management in the network and information era, analyzed the realization method of participation in urban planning, and designed the public participation geographic information systems (PPGIS) with network, and was applied to public participation in urban planning (Emma J. Stewart, et al, 2008). With public participation geographic information systems, e-government was developed in the city (Sukumar Ganapati, 2011; Milan Tung-Wen Sun, et al, 2009), and the governments monitor the dynamic process of urban development (Gregory Brown, Delene Weber, 2013). New information technology offers new possibilities for public participation in urban planning, and provides an interactive communication platform that can be used for long-distance

communication (Malgorzata Hanzl, 2007). The researchers analyzed the methods of public participation in urban planning, mainly through public government information, television and online media, and studied on their characteristics and existing problems (Xu MY, Tao Dekai, 2012; Zhou CS, Wang F., 2006). Using the theory of association planning, they summarized the characteristics of public participating in urban planning with network mass media, and advised that the departments and the staff members of urban planning should learn to integrate mass media into the public, and exchange opinion with other public participants (Chen Yao, 2007). With network and information platform, we can break the traditional “top-down” mode, and build the “bottom-to-top” participation mechanism in information dissemination of urban planning and urban disaster outbreaks.

It is timely and interactive to communicate and disseminate information with each other by Micro-blogging. Micro-blogging has more advantage than traditional information platforms in public participation in urban management. According to the 30th China Internet Development Statistics Report surveyed by the China Internet Network Information Center, micro-blogging users in China reached 274 million, accounting for 50.9 % of Internet users, and cellphone micro-blogging users reached 170 million by the end of June 2012. China has fully entered a micro-blogging era. With the rapid growth of users, micro-blogging plays an increasingly important role in information dissemination of urban government management and emergencies such as mudslides, earthquakes and other disaster outbreaks (Liu Hua, 2011). Administrative departments can release information and communicate with the public through official e-government micro-blogging platforms (Seong Eun Cho, Han Woo Park, 2012; Li Xiaofang, 2011). The use of Sina and Tencent micro-blogging platform greatly promoted public participation and interaction on hot topics of urban security, urban planning, public services, and urban management.

3 MICRO-PARTICIPATION IN URBAN EMERGENCY MANAGEMENT

3.1 The connotation and characteristics of micro-participation

Micro-blogging is a platform for freely sharing, disseminating and accessing information based on user relationship. Micro-blogging sites are always operated and managed by some enterprises, but the governments keep the power of supervision on public opinion. Micro-participation in urban emergency management, an information releasing and interactive discussing process involved in urban emergencies through the micro-blogging platform, is a new network form for public participation in urban emergency management. Micro-blogging shares the characteristics of the civilian interaction, interactive and fragmented, and its information is shorter than others. Ordinary people can be free to release and disseminate information, so micro-blogging participation in urban emergency management can be called the “micro-participation” process.

Receiving and transmitting information by means of Internet based mobile terminal equipments, micro-participation can happen anytime and anywhere, therefore it has the following characteristics: Firstly, information about urban disaster outbreaks can be published freely. Anyone who uses internet and its terminal equipment can use micro-blogging to release information of urban sudden disasters timely, and prompt administration to respond actively and reduce losses. Secondly, it can help realize immediate interaction with micro-blogging. Being highly interactive, micro-blogging can realize the sharing and communication of unexpected disasters between different populations, shorten the reacting time for urban emergent disasters, and improve the efficiency of disaster response and preparedness. Thirdly, it is easy to generate recognition on disaster information. There are some linkage between social networking in micro-blogging and the actual social intercourse circle, and the majority of users can be identified, so it is easier for people to trust the interaction content in micro-blogging, and behaving accordingly. Micro participation in urban emergency management can generate attention and induce actual rescue efforts from those involved.

3.2 The significance of micro-participation in urban emergency management

The popularity of the network changed the traditional social imbalances that was caused by lack of the public rights to speak in real life (Hu Yi, Zhang Jingxiang, 2010). Micro-participation can play the role of diffusing information, hot topic discussions and supervising public opinion. Micro-participation also has the characteristic of active participation, and netizens achieve social management through the care of their own interests and the interests of the social community. Through the diffusing effect of micro-blogging, information on disaster warning, the disaster situation and the rescue situation could be disseminated timely,

and can alert urban residents to take action and help improve efficiency of relevant departments' rescue efforts in disaster prevention and reduce disaster losses. As a method of social management, network mobilization can be used for mobilizing resources and efforts of social organizations, civil society and individual citizens of all sectors of society in a short time to form a huge disaster relief force (Liu Xiaolan, Li Jun,2011). Micro-blogging involved in disaster discussions can play the role of the public participation in the management of the public domain to promote the mode of government administration to shift from the traditional top-down governance to modern management (Zhao Min,Liu jing,2010). Meanwhile, Micro-blogging information often forms a certain public opinion against bad behaviors and promote the city spirit, which is another aspect of urban society management.

4 DATA AND ANALYSES

4.1 Samples

Using "rainstorm" as key words, the author adopted the methods of hierarchical statistics and hot micro-blogging ranking to search and record real-time posting status and popular Sina micro-blogging from 20 to 31, July 2012. The process of data collection include three steps. First, recorded number of original real-time daily micro-blogging in whole China and Beijing. Second, after sorting the daily blogging information by relevance, more than 1,000 pieces of representative information were chosen from the browsed total of nearly 10,000 entries of hot topic information. Finally, Selected four types of identifiable micro-blogging users (government departments, media, planners and ordinary Internet users) and their entries for indepth understanding and recorded the micro-blogging status, the discussions involved and comments of 53 micro-blogging users about the Beijing rainstorm.

4.2 Descriptives of samples

The real-time original micro-blogging was recorded from 20 to 31, July in China and Beijing. According to the general stages of disaster emergency management and the collection dates, rainstorm disaster outbreaks in Beijing is divided into four stages: warning period (July 20,2012), disaster outbreak (July 21-22,2012), spreading(July 23-26) and recovery period (27-31 July). The number of micro-blogging in whole China in different stages shows that only 26 pieces of micro-blogging information in the warning period, a large number of original micro-blogging in disaster outbreak period and spreading period, and that is 52,214 and 97,701 respectively, and 32,972 original micro-blogging in disaster recovery period. This suggests that the number of people involved in micro-participation and degree of concern are relatively higher during disaster outbreak period and its spreading period.

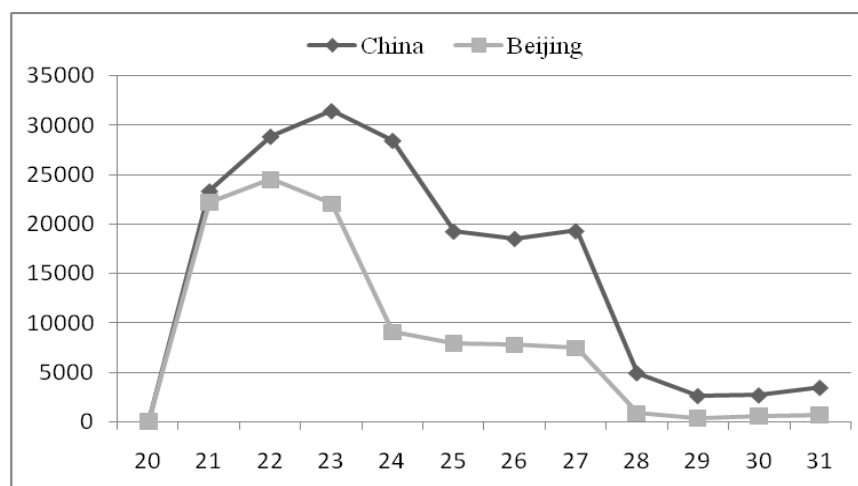


Fig 1: The number of original micro-blogging about Beijing rainstorm

993 pieces of blogging entries were picked from over 1,000 entries based on their relevance with the Beijing rainstorm disaster, then the selected blogging entries were coded according to the text content of its recorded information. First, the themes that best represent the meaning of micro-blogging content was explored, and a total of 37 basic themes were identified and named as thematic content. Second, themes with the same meaning were sorted into one class according to the logical relationship between different themes, and 12 types was formed (Tab.1).

Themes(number of micro-blogging)	Types(number of micro-blogging)	themes(number of micro-blogging)	types(number of micro-blogging)	themes(number of micro-blogging)	types(number of micro-blogging)
Rainstorm forecasting (77)	Rain condition (141)	Help seeking information (10)	Disaster relief Information (56)	drainage (23)	urban construction (37)
Rain characteristics (61)		People and object searching (13)		urban infrastructure (5)	
Causes of rainstorm disaster (3)	Warning and Contingency (67)	Offering help of disaster relief (23)	Coping strategy (104)	urban planning and construction (9)	Social performance (76)
Rainstorm warming (57)		Offering living services (5)		Action of government (23)	
Contingency plans (2)		Appealing for disaster aid (5)		deed of helping disaster (47)	
Flood control and emergency questions (8)	Disaster condition (172)	Safety strategies (74)	Urban emergency management (105)	Bad behavior (6)	personal emotion (36)
Disaster scenes (24)		Suggestion for precaution and help disaster (30)		Society and economics influence (6)	
Disaster broadcasting situation of disaster (112)		donation (8)		Government regulation (4)	
damage statistics (12)	Disaster rescue operations (83)	recovery after disaster (66)	Urban emergency management (105)	post-disaster impact (10)	personal emotion (36)
The number of death toll (24)		urban emergency management (30)		ridicule (6)	
The actions of disaster relief (48)	Disaster relief Information (68)	Urban infrastructure management (7)	Urban emergency management (105)	touching (19)	personal emotion (36)
Progress of disaster relief (31)		Road and traffic Condition (68)		Criticism (5)	
Organizing disaster relief spontaneously (4)				praising (6)	

Table 1: The themes and types of micro-blogging information

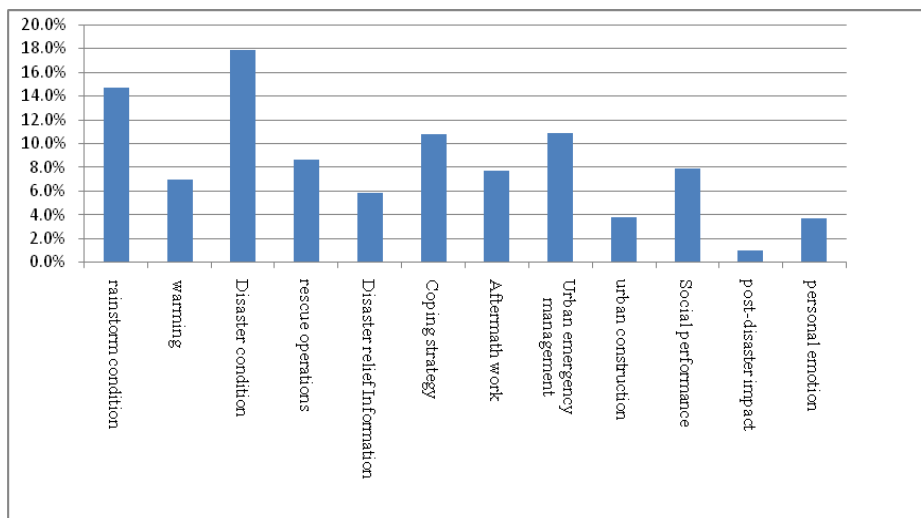


Fig 2: Main content of micro-participation in rainstorm disaster

5 EMPIRICAL STUDY ON MICRO-PARTICIPATION OF BEIJING “7.21” RAINSTORM DISASTER EMERGENCY MANAGEMENT

Taking micro-participation of Beijing rainstorm disaster as an example, we analyzed the process, different means and mechanisms of micro-participation, and explored urban emergency management in the micro-blogging information age.

5.1 Main content and process of micro-participation

Micro-participation content of the rainstorm in Beijing suggests that the proportion of micro-blogging information about disaster situation, rainstorms, coping strategies and urban emergency management is relatively high, accounting for 17.9 %, 14.7 %, 10.8 % and 10.9 % respectively, and the proportion about warning, emergency relief, rescue operations, aftermath work and social performance ranks medium, and

less blogging entires relate to urban construction, personal emotional expression, and post-disaster impact. It shows that micro-blogging plays a huge role in weather forecast, reporting rain condition, disaster coping strategies and the urban emergency management process, and helps inform the public and the government of the rainstorm, disaster-related information, disaster responses, and the implementation of the rescue timely. Micro-blogging platforms can also be used to release information of helping, rescuing, and rehabilitation efforts to improve the efficiency of disaster relief, and reduce social and economic loss. At the same time, publishing social efforts and personal emotion in rainstorm disaster through micro-blogging platforms could boost the spirit of the urban society. Discussions on city building and socio-economic impact triggered by rainstorm disasters can help promote urban planning and construction, and guide socio-economic operations gradually to more sustainable and scientific direction.

Based on the analysis of the content of micro-participation in Beijing rainstorm disaster, the main content of micro-blogging information was divided into six aspects of hot topics, including disaster forecasting and emergency, disaster situation, relief process, and urban construction management. Then the hot topics and features of each micro-participation stage were summed up as follow:

5.1.1 Disaster warning period

The hot topic of this stage was disaster possibility forecasting. The government and media released weather forecast, warning information for rainstorms, and alerted the residents of travel safety. Meanwhile, residents adjusted their travel activities in advance, changed travel plan and means of transportation.

5.1.2 Disaster outbreak period

This period has the highest degree of micro-participation. The hot topics include disaster forecasting and emergency coping strategies, disaster situation, relief process, management of urban construction, the spirit of the city and the quality of residents. The government, the media and the public released disaster information (such as disaster scenes, disaster broadcast, etc) and disaster relief information (such as Help seeking, people and object searching, rescue scenes, etc) with different concerns. At the same time, the information about urban emergency management, urban public services, test of urban drainage facilities and other topics was released, including the good deeds and bad behaviors in the rainstorm.

5.1.3 Disaster spreading period

The hot topics of this stage include disaster response strategies, disaster statistics, urban construction, daily management and socio-economic impact. The information related to detailed distribution of disaster, socio-economic loss, real-time progress of the relief operations and rehabilitation work were released accordingly. People began to reevaluate the existing problems on urban planning, daily maintenance of urban facilities and the model of urban development, and discussed the socio-economic impact of disaster such as rising prices.

Hot topics	Disaster warning period	Disaster bursting period	Disaster spreading period	Disaster recovery period
Disaster forecasting and emergency	Rainstorm forecasting, rainstorm warning, resident's travel activities adjustment	rainstorm warning, contingency plan, protection of rainstorm, trip reminder	Rainstorm coping strategies, questions in flood prevention	Disaster consciousness and learning security, emergency management approach
Disaster condition	—	Rainfall characteristics, disaster scene, disaster broadcasting	Distribution of disaster, statistics for loss, disaster situation reporting	Statistics and analyzing disaster
Process of disaster relief	—	Information of calling for help, People and object searching, rescue scene	Rescue operations, donation for disaster area, rehabilitation work	donation for disaster area, maintenance recovery, victims placed
urban construction management	—	Urban emergency management, urban public services, urban drainage facilities	Problem of urban planning and construction, daily management of urban infrastructure, urban developing mode	Urban building strategies, formulating urban construction and management standard
social performance and personal emotion	—	Positive action of government, praising good people and deeds in rainstorm, criticizing bad behavior in rainstorm	Touching story, condemning bad behavior	Investigation on bad behavior
Socio-economic effection	—	—	Rising price, stock market volatility	Stable prices

Table 2: The hot topics of micro-participation in different rainstorm disaster stage

5.1.4 Disaster recovery period

The information in micro-blogging mainly concerns the problems of disaster exposure and follow-up efforts. Micro-blogging users published knowledge of security education and disaster prevention, disaster statistics and compensation, discussed more scientific and rational city emergency management approaches, urban construction & management standards and urban building strategies. The government carried out investigation on those involved in the blaming and bad behaviors.

5.2 Different roles of micro-participation in urban emergency management

Different users played different roles on micro-blogging platforms, the number of concerns and follows were different among micro-blog users, and the number of posts was also different, which led to the different manner and extent of micro-participation(Fig.3, Fig.4).

5.2.1 Government: micro-participation in affairs management

Through announcing official micro-blogging accounts (such as Beijing released, Beijing meteorological, Beijing planning, etc), government departments played positive roles in social management innovation, government information opening up, offering guidance to news report and the media, political participation of the civilian matters, listening to the voice of public and establishing the image of government. Beijing government departments at all levels, especially the Beijing Municipal Government, planning & construction bureau, transportation bureau, public security bureau and district-level departments, played an important role in urban management during the Beijing "7.21" rainstorm through the Sina micro-blogging platform.

With micro-blogging platforms, government departments released contingency plans according to real-time weather forecasts timely, and prompted city residents to take rainstorm prevention action, ensure the safety of travel and prevent landslides and other secondary disasters. During the rainstorm, government departments posted the information of urban emergency management, such as urban disaster emergency plan, locations of damaged roads and other infrastructure, urban emergency transportation and services. During the recovery period, government departments actively responded to hot topics of urban planning & construction and urban management to which residents showed concern. Through micro-participation in the process of urban sudden disasters, government departments could timely disclose the information, strengthen the coordination of work between government departments, and follow disaster information of the public, and this played an important role in reducing disaster losses and improving the city's public service capacity.

5.2.2 Media: micro-participation in disaster spreading

Mobile Internet and interactive media are the main trend of modern media, With the help of micro-blogging platforms, traditional media and online media can disseminate information more timely and conveniently to provide services for urban residents. News media, such as Beijing TV, Beijing News, Financial Network and ordinary people, all participated in information dissemination of Beijing "7.21" rainstorm sudden disaster through the Sina micro-blogging platform. During disasters, the micro-blogging of news media spread information of rainstorm, disaster and rescue conditions and provided the information quickly through different channels to the public. Media micro-blogging reported the touching stories and positive behaviors in the rainstorm disaster, which can improve urban cohesion and enhance urban disaster emergency response capability. During the recovery period, the media conducted investigations on hot topics that the public showed concern for and the surveyed results announced by media micro-blogging to promote urban planning and construction management in a scientific, fair and efficient way.

5.2.3 The public: micro-participation during disasters

The public accounts for the majority of micro-participation. They posted micro-blog entries and commented on others' blogging to achieve information sharing. The content of micro-participation of the public in Beijing rainstorm disaster were as follow: (1) releasing disasters and help information. With micro-blogging platform, the public released floods location, the degree of disaster and help tracing information. (2) Organizing activities of rescue. Enthusiastic netizens called for others to provide help for residents trapped in the rainstorm, involve in disaster relief work and offer donations to disaster affected residents. (3) Personal emotional expression. The public published personal views and attitudes of disaster-related things, and commented on the right and wrong of other people's behaviors.(4) urban drainage systems, urban planning management and urban emergency management issues.

5.2.4 Urban planners: micro-participation in urban planning and disaster emergency management

The micro-participation of urban planners was less compared to the above three types. This is because the number of planners involved in micro-blogging is smaller. Most planners in the micro-blog social network had dual identity of the planners and ordinary people, and communicated with similar or the same occupation, so they have limited influence on society. Fortunately, more and more urban planning and design institutions begin to use enterprise microblogging to communication with the public on urban planning and management .

During the Beijing rainstorm disaster, planners posted and discussed on urban planning relevant problems as follow: analyzing the causes of waterlogging disaster from urban site selection and facility layout, discussing on current China's urban drainage system construction standards and the problems with reference to United States, Japan, Germany, France and other cases and ancient China urban drainage system, as well as on the concern for China's future urban construction.

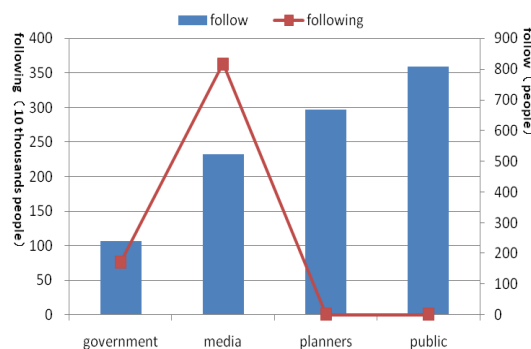


Fig 3: The number of follows and followings of different roles

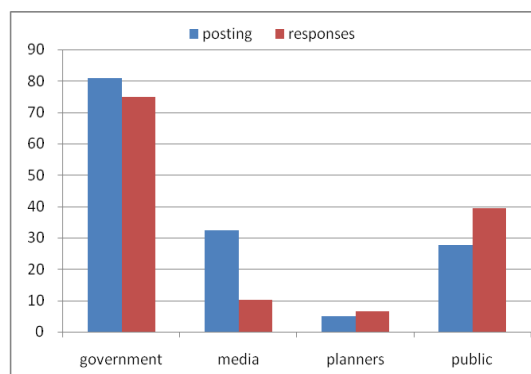


Fig 4: The number of postings and responses of different roles

5.3 The mechanisms of micro-participation in urban emergency management

5.3.1 The mechanism of information diffusion and interactive communication

Information diffusion and interactive communication through the micro-blogging platform is the main operating mechanism of micro-participation in urban emergency disasters. Diffusions of information include the top-down information disclosure mechanisms led by the government and the bottom to top information diffusion mechanisms led by the public. In this process, the government, the media and the public can realize immediate dialogue and interactive communication.

(1) Top-down information disclosure mechanism

The government disclosed the information of rainstorm warning, contingency plans, disaster situations, relief and aftermath work to the public through the official micro-blogging timely. Through media diffusion, direct communication to the public and other ways, the government achieved top-down disaster information diffusion. When the official disaster information and the public demand are consistent, the public will make positive response and participate in disaster prevention and rescue. While when the official public disaster information and the public demand are not consistent, the public will question the official information, and the governments give responses and interpretation on the inconsistencies.

(2) Bottom-up information diffusion mechanisms

The public released information on rainstorm, disaster scene information, rescue information, enquiries and other information with their personal micro-blogging account, and part of the public released information directly to official and media users to attract their attention. If the information released by the public is relevant to the official administrative responsibilities, the government will respond and take appropriate disaster relief operational measures to reduce disaster loss for the public. Although part of information released by the public is not within the scope of the administrative duties of the government, it will lead to information dissemination and cause other social groups to pay attention.

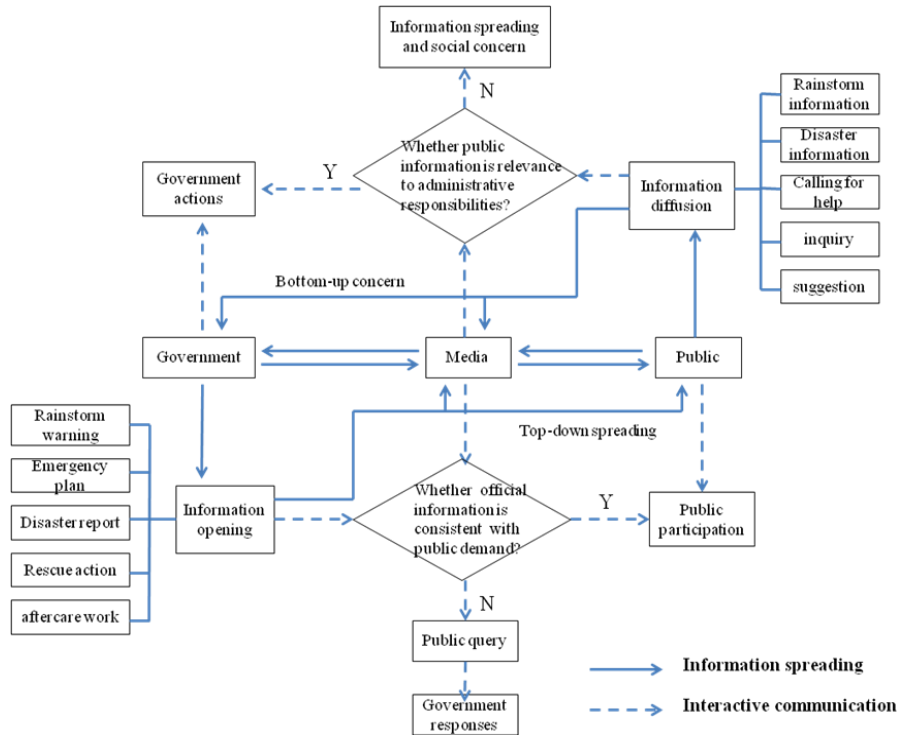


Fig 5: Information spreading and interactive communication in urban emergency management

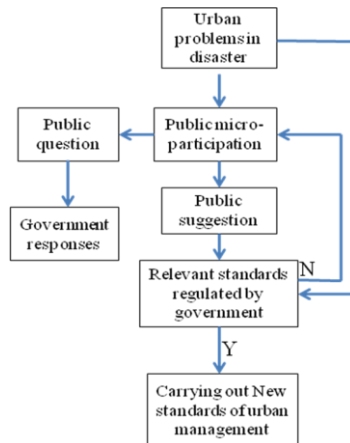


Fig 6: The mechanism of micro-participation in urban management

5.3.2 Mechanism of public participation in urban emergency management

Urban infrastructure, urban planning, urban emergency management, public services and other problems exposed in the Beijing rainstorm disaster got plenty of attention from the public and the media. During the Beijing rainstorm disaster, the public discussed around the topic of urban drainage systems and other infrastructure construction with the Sina micro-blogging platform. Netizens posted messages, such as “drainage system represents the conscience of the city”, “waterlogging reveals the problems and defects of the urban underground drainage line”, “municipal traffic often failed, what about the warning services?”, etc. Based on these problems and questions, the government responded timely and announced some key strategies, like “the maps of dangerous sections in the Beijing rainstorm”, “the urban road maps of

hydrocephalus”, “emergency shelter maps in the Beijing rainstorm” and other information. At the same time, the government improved the concept of urban planning and adjusted the standards of urban emergency management according to the advice the netizens gave on urban planning and construction. The new measures and management practices will be published and modified according to further opinion of the public.

During the period of disaster recovery construction and rehabilitation, the government announced the official service phone numbers and strengthened interactive communication with the public through micro-blogging. Meanwhile, the administration departments carried out maintenance on facilities, resettlement housing construction work and timely opened information through micro-blogging.

5.3.3 Supervision and guidance mechanisms of public opinion

Supervision mechanisms of public opinion by the network means to keep the implementation process of public decision not be distorted in the implementation process of public decision-making (Zhai Guotao,2007). With the features of more direct and real-time interactive communication, micro-blogging plays a more and more important role in the supervision of public opinion. But due to the asymmetry of information and personal emotional factors, there are some incorrect even wrong views in the public opinion that is easy to cause misunderstanding and social panic, so correct guidance of public opinion is of supreme importance.

The public discussed on the disaster relief efforts of the Beijing rainstorm and other hot topics to achieve adaptation and constraints on the behavior of the implementation policies by the pressure of public opinion. The discussion on the number of death in the disaster is a case in point. First the official death toll statistics were published, but the public questioned the truth of the death toll. Due to pressure of public opinion and the attention of senior leadership, the Beijing official department eventually announced the new death toll list. Meanwhile, Public suspicion and inaccurate messages that government actively guided and corrected had said the Zijingguan reservoir in Juma river upstream would spill. On this topic of public concern, the Beijing water authority and other departments denied the micro-blogging rumor that the Juma River upstream reservoir spill was not real and eliminated the concerns of the public and unnecessary panic.

Bad behaviors in urban disasters can be supervised and the urban spirit can be propagated by public opinion through micro-blogging. The public discussed and condemned the rising price of taxis, hotels and other bad behaviors which caught the attention of the government and the media, and triggered relative investigation into related issues. The collaboration between officials and the public, self-sacrifice and other good spirit of the city was passed on by micro-blogging. This was good for enhancing the credibility of the government and spreading positive energy of the city.

6 POLICY RECOMMENDATIONS ON PROMOTING URBAN MANAGEMENT IN THE AGE OF MICRO-ERA

6.1 Constructing a new paradigm for public participation in urban management

Using the micro-blogging platform of information disclosure and the subject of different interactive functions to make a new paradigm for public participation in urban management, we can change the traditional city management mode of the centralized mechanism led by the government, keep the mechanism of interactive communication on city infrastructure function and urban public space management and urban emergency management, and build a comprehensive management mode for the city. The government should perfect micro-blogging network platforms of public participation in urban management functions, set up official micro-blogging and also different management department ones, clarify full-time personnel government micro-blogging of city management as well as the micro-blogging topic response department. Due to the large amount of information of micro-blogging and their redundant nature, even valid information is likely to be covered by other invalid ones. A new mechanism is to be established to make sure micro-blogging information can be released publicly in through straight and directional ways to improve the efficiency of public affairs of information management. Establish a proper system so as to extract effective public information to respond to through the network or start interactive communication on relevant issues, and will take the public demand into account for government departments and the urban management in the implementation process.

6.2 Establish and perfect the security mechanism system in public participation

Micro-blogging of public participation have corresponding laws and regulations system as a backup in western countries. As early as 2009, the British government issued a "government Twitter use guideline" that can make clear system requirements through the contents of Twitter micro-blogging platform for information disclosure and public interactive communication and so on. Although government through micro-blogging has been widely used in China, the corresponding rules and regulations are yet to be established. We need to establish a systematic mechanism for micro-blogging of government affairs and public participation in urban management urgently. The powers and responsibilities in the network hot topic information should be clearly defined between the government, the media, social organizations and experts. The administrative activities with micro-blogging should be made a routine so as to further enhance social democracy and to establish a response mechanism of hot topics and take response actions to meet the social needs of the public. Norms of participating in social hot topics discussion need to be established for the media, social organizations and experts to define the main duties of different bodies. Institution on the micro-blogging information posting mechanisms for the public and the information processing mechanisms for the government should be established to improve the efficiency of micro-blogging participation in urban management, and the guiding mechanisms of public opinion in micro-blogging network should be established for discussing the urban management strategies and key elements.

6.3 Toward collective decision making and real-time participation in urban management

Using micro-blogging platforms, the government can lead public participation in the decision-making process of urban planning and urban emergency management to realize collective democracy of urban management. The government could expand the scope of public participation in urban management affairs through micro-blogging information dissemination and diffusion, and lead more extensive public participation in topic discussion of urban management so that the city management decisions reflect the most democratic willingness. It is necessary to build a real-time participation in formulating urban management policies, implementing urban management and other stages, and build the response mechanisms of "participation- feedback – and then participation" in order to have an inclusive attitude to listen to all kinds of public voices and encourage sincere and open dialogues and exchanges (Luo pengfei, 2012; Zou Bin, et al., 2011). The entire process of public participation in urban management can play the role of public decision-making and supervision in urban management, as well as contributing to improve government credibility in the process of urban management.

6.4 Establishing the service management systems of smart city

With the help of micro-blogging platforms, information can be shared in urban areas. Urban constructors can use location information services (LBS), social network services and other technical means to create public service platforms as an important aspect of smart city. China's economically developed urban areas should take the lead in constructing intelligent services and information management control center, which can then be associated with resident's location information and service needs through the positioning capabilities of mobile terminal devices to structure the smart city public service mode of "releasing urban resident's service needs through micro-blogging-the resident location information positioning-wisdom service center information processing-intelligence services providing and responses". The combination of micro-blogging information and public services of smart city can provide mobile services (toward personal services) functions, such as vehicle maintenance, food service, medical services that will improve the efficiency of urban public services and make urban life more livable and convenient.

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