From Women for Women: The Role of Social Media in Online Nonprofit Activities during Wuhan Lockdown

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Abstract:

The article examines the role of social media in mitigating information asymmetry and coordination problems during COVID-19 epidemic crisis. We use "Sisters-Fight-Epidemic" online volunteering project during the outbreak of COVID-19 in Wuhan, China, as a case to demonstrate how social media plays a role as a mechanism in linking multiple stakeholders and shaping their actions during the epidemic response. We show that social media facilitates the self-organizing processes of volunteers and develops the emergency information networks, therefore enabling a relatively efficient relief responses to the needs of epidemic victims particularly female medical workers. This article also identifies spontaneous online volunteering project as a new form of nonprofit organization and as a new emergent response group that can leverage the strengths of social media in disaster responses to enable effective coordination, initiate advocacy, and improve transparency of relief efforts.

Introduction

Disasters — from hurricanes, earthquakes, to epidemic — often render the conventional top down relief and recovery efforts ineffective. Disasters often call for relief and recovery efforts that include the participation of non-state actors such as nonprofits and businesses across geographic levels (e.g., Hu, Knox, & Kapucu, 2014). Being rooted in local communities, nonprofit organizations are agile and flexible as they can quickly find and share information and take proper actions in response to disaster emergencies (Eikenberry, Arroyave, & Cooper, 2007). Existing disaster and emergency management literature has paid much attention to the collaboration, communication, and coordination among public and nonprofit organizations (e.g., Comfort, 2007). However, little research has investigated how nonprofits deal with information asymmetry that exists between multiple stakeholders during a public health crisis such as the recent COVID-19 epidemic particularly in matching public resources and the needs of disaster victims. Research in this domain is important because information is central to timely relief and recovery efforts. This then raises an important question that we seek to answer: *How do nonprofit actors mitigate information asymmetry problems during epidemic crisis?*

The literature has recorded how during a crisis situation, volunteers would emerge spontaneously and mitigate the damages caused by the crisis (Fernandez, Barbera, & Van Dorp, 2006). Unlike organized volunteers who are usually affiliated with official nonprofit organizations and are trained in routine procedures, spontaneous volunteers are less organized and are not trained to handle emergency situations (c.f. Kulik, 2017) and are not subjected to routine procedures. In recent years, due to the rapid development of information and communication technology (ICT), we are witnessing the rise of a new type of spontaneous volunteering activity in the cyberspace.

Although a growing number of nonprofit research has explored how nonprofits use social media in managing stakeholder relationships and conducting advocacy work (c.f. Guo & Saxton, 2014), we still know very little about how nonprofits employ social media in relief and recovery efforts during a major public health crisis such as COVID-19.

In this article, we use qualitative content analysis, sentiment analysis, and Latent Dirichlet Allocation (LDA) topic modeling analysis to track the development of a *spontaneous online volunteering* project — Sisters-Fight-Epidemic — that emerged during the outbreak of COVID-19 in Wuhan, China, and show how social media can serve as a platform for nonprofit actors to mitigate information asymmetry problems amid disasters.

"Sisters-Fight-Epidemic" Online Volunteering Project and the Role of Social Media

COVID-19 is a novel coronavirus that steals the world attention. Since its first discovery in late December 2019 in Wuhan, China, the COVID-19 virus has disrupted China's public health and emergency management systems. On January 23, 2020, Wuhan municipal government announced "lockdown" measures and implemented quarantine across the city. Since the beginning of Wuhan lockdown, medical resources and facilities were in serious shortage. From January 26 to February 24, the Wuhan municipal government solicited public donations through various government bulletins. In response, many citizens and companies donated money and other resources particularly medical equipment and supplies through the government-appointed channels. However, certain important resources particularly for frontline medical

workers such as sanitary pads, underwear, and other hygiene goods for women were in serious shortage.

On February 6, 2020, the epidemic was still showing no signs of abating. A young woman whose Weibo name is Liang Yu (an anonymized name) posted a message on Weibo, China's largest social media platform, about how female frontline medical workers were handling periods and whether they had enough sanitary pads. Initially, Liang thought about donating some sanitary pads to the frontline medical workers using her own stock of pads. However, she quickly found that most frontline female workers lacked pads and the demand was large. Realizing that it was difficult to meet the large demand for sanitary pads by herself, on February 7, Liang spontaneously launched an online nonprofit project named "Sisters-Fight-Epidemic" on Weibo. The main purpose of this project was to donate sanitary pads, disposable underwear, and other materials to the frontline female medical workers.

Prior to the Sister-Fight-Epidemic project, Liang never had any experiences in volunteering work or managing nonprofit projects. To address the knowledge gap, she sought advice from netizens on matters such as how to set fundraising channels and how to get the official approval for public fundraising. She then formed a professional team to manage the project by posting recruitment information on Weibo, which quickly received responses from netizens. Liang selected various professionals with various background to form the team. For instance, the information group requires relevant experiences in accounting and auditing, and the coordination group requires certain social work experience, etc. The entire team worked online collaboratively, and all staff participated voluntarily. Social media bridged all the volunteers and helped them self-organize as an emergent response group. By the end of the project, the total number of the team reached 91 comprising eight ad hoc groups. The ad hoc working

groups played different roles including fundraising, resource matching, logistics, coordination, information gathering, content creation, media relations, to legal and insurance issues. Figure 1 summarizes the main tasks of these ad hoc groups. In total, the Sisters-Fight-Epidemic project raised RMB 2.5 million (around USD 354,000) in cooperation with Lingshan Charity Foundation and donated about 620,000 pieces of period panties, 330,000 disposable underwear, and 161,000 sanitary pads.[1] The whole project took 35 days and reached 205 hospitals or medical teams, with more than 85,000 female medical staff benefitted (Ji, 2020). Note that according to the nonprofit regulations in China, citizens are not allowed to set up fundraising program individually but need to find a qualified NGO as a partner. With the help of a volunteer who happened to be the founder of Lingshan Charity Foundation, Liang received assistance from the foundation to set up the fundraising initiative.

[Figure 1 about here]

In addition to facilitating self-organization of the project, social media enables the formation of emergency information networks, linking the volunteer team and three key stakeholders: the demanders (i.e., frontline female medical staff), the manufacturers of female hygiene products, and the netizen donors (see figure 2).

[1] According to the information disclosure of the project, 93.01% of the cash donation is from the personal donation from the public. The team only spent one day to collect individual cash donations. Channels of cash donation from the private companies opened for 31 days. Manufacturers of female hygiene products, some private companies, and celebrities' fans clubs also contributed goods directly via Sisters-Fight-Epidemic project.

[Figure 2 about here]

On February 7, 2020, Liang created a topic named #SisterFightEpidemic on Weibo platform and mobilized netizens to join the operation. The posts in this topic received 490,000,000 views and 522,000 participation. The Weibo posts were widely discussed and were related to issues such as seeking for help, calling people to donate, etc. Liang also initiated online advocacy for female welfare. By the end of the project (March 22), according to our statistics, 56% of Liang's Weibo posts were about female welfare. For example, she hoped that the normal physiological phenomenon of women would no longer be labeled as 'special' and that menstruation would no longer be a physical shame after the epidemic. The posts inspired netizens to donate relevant items and raised public awareness on female issues. The posts also triggered discussions by netizens who shared their experiences in dealing with the female welfare issues. The posts had reached 320,000 reposts and received over 34,000 comments.

On February 11, Liang's team used the social media platform to launch an online fundraising channel. Within one day, the donation goal was successfully attained, raising about RMB 2.4 million (Zhang, 2020). In the next few days, Liang's team disclosed the progress of the project on a daily basis. Their method of information disclosure was highly praised by netizens in terms of timeliness, efficiency, and integrity. They not only disclosed the donation income and expenditure as most nonprofit organizations did, but also disclosed the purchasing details, logistics information, implementation details, and even marking the location of hospitals that received their help on the map. They also employed professional online survey tools to conduct survey of netizens' satisfaction in order to improve their work.

Through social media, Liang's team were able to quickly get help-seeking information from hospitals and medical staff. Liang's Weibo account received many letters every day from female netizens asking for help. With regards to the communication and coordination between the manufacturers and the volunteering team, the volunteers contacted the suppliers by phone while most auditing procedures were conducted online. Liang also used the social media to acknowledge the positive contributions of the manufacturers which helped sustain their desire to help.

We further analyzed the role of social media from the Sisters-Fight-Epidemic project Weibo posts. We conducted LDA topic modeling analysis (Blei, Ng, & Jordan, 2003) of the project's 305 Weibo articles posted from February 7 to March 15. Topic modeling is an unsupervised machine learning method that is frequently used to automatically discover latent themes in a collection of documents based on the probability of the distribution of words over documents and the distribution of topics over words (Blei, 2012). The outcome of topic modeling includes topics (a keyword list sorted by the relevance ranking to the topic) and topic proportions in each document. According to our analysis, the results showed that most discussions on the online project concerned three types of topics: 1) *information disclosure on the project progress especially donation and implementation, 2) acknowledgement of the efforts and contribution of manufacturers*, and *3) advocacy on female welfare and calls for donation.* Appendix A1 lists the respective key words that emerged from the topic modeling analysis across the three types of topics. The key words are listed in order of importance, from the left (most important) to the most right (the lesser in importance). The proportion of subtopics refers to the weight of each subtopic within each Topic (e.g., 34.41%, 19.35% and 12.9% are the weight of each subtopic within the Topic of Information Disclosure). Words like *female, donation, medics, period panties,* and

sanitary pads dominated the key words of all three topics. For the information disclosure topic, keywords used include *drivers*, *logistics management*, and *coordination*, which indicate the problems and difficulties that the team encountered during the implementation phase. The acknowledgment of the manufacturer's topic used keywords such as Space7 and Fujian Hengan Group, which were the largest manufacturers that contributed to the project. Over half of the Weibo posts were about advocacy and calling for donation (56.07%). Analyses of the project's Weibo posts showed that they frequently used positive words to resonate with netizens such as sisters, thankful, wish, etc.

We also analyzed their online campaign strategies using sentiment analysis, a type of supervised learning method that was run in Python, on the advocacy posts. As a form of opinion mining, sentiment analysis is a tool that allows researchers to identify the positive, negative or neutral emotions etc. contained in social media data (Pang & Lee, 2008; Liu, 2012). Although sentiment analysis is relatively new in public administration research, it is important for understanding netizen emotions in response to the online nonprofit activities during the pandemic. Our analysis results showed that the project used positive emotion tones (63.74% of the words were positive) to promote their argument and praise the kindness and benevolence of female medical staff and volunteers during the launch of the project.

Conclusion

The nonprofit and civil society sector is a wellspring of actors, ideas and resources that can offer timely relief and recovery responses to disaster emergencies in collaboration with the government and business sectors. Previous research on disaster

and emergency management has devoted a substantial focus on the communication, coordination, and preparedness of the public and the nonprofit sectors during emergencies. Yet, limited attention has been paid to the information asymmetry problems that arise when a public health crisis occurs and disturbs the routine operation of public and nonprofit organizations. Based on the experience of "Sisters-Fight-Epidemic" online nonprofit project that emerged during the COVID-19 epidemic in Wuhan, China, we find that social media can serve as an effective platform for the nonprofit actors to mitigate the information asymmetry problems in delivering relief and recovery efforts. We show how social media helps the spontaneously emerged volunteers to self-organize in the online world and form emergency information networks which promote coordination work, advocacy on issues of interest, and improve transparency.

This article contributes to research on disaster management and nonprofit management in several aspects. First, we highlight that social media can provide timely information sharing platform to help the nonprofit sector to identify the needs and demands of disaster victims and develop information emergency networks to mobilize resources and information in the relief and recovery responses. Thus, this article goes beyond prior studies on the use of ICT in the nonprofit sector that have so far focused on the emergency preparedness and implementation of online tools in routine project rather than how to tackle information asymmetry and overload problems in non-routine circumstances such as in an epidemic.

Second, this article unravels a novel case of *spontaneous online volunteering project* (i.e., "Sisters-Fight-Epidemic") as a new type of nonprofit organization and emergent response group. Unlike the organized volunteers affiliated to "official" nonprofit organizations that work with routine procedures, this article highlights how

social media can trigger the formation of spontaneous, loosely structured self-organized online project and connect the key stakeholders in a more efficient way. The spontaneous online volunteering project reflects a new type of organization that can work in tandem with the public and business sectors as key social resources in times of crisis. It also shows how online nonprofit activities can generate quicker response, provide higher transparency — enabled by ICT — and therefore lower misconduct than traditional nonprofits. Last but not least, China is often characterized as an authoritarian regime by Western pundits, one in which the civil society has little role to play in the society. This article challenges this view. We show that social media, which is ubiquitous in contemporary China, plays a key role in cultivating social capital and the power of civil society. The case of Sisters-Fight-Epidemic is an evidence that the grassroots force exists in China and has significant effects on disaster responses.

This article focuses on an idiosyncratic online nonprofit project during COVID-19 epidemic in China's Wuhan and, as such, the findings may provide limited insights for relief and recovery efforts in different country and crisis contexts. Future studies can examine the experience of the nonprofit sector in China and other countries in their use of social media or Internet tools in the disaster relief and recovery responses. Secondly, although this article identified "spontaneous online volunteering" as a new type of nonprofit organization and a new type of emergent response group, we still know very little about this phenomenon. We lack the details of nature of spontaneously formed online volunteer projects such as their motivations, strategies to create social and public value, collaboration patterns, how they innovate, and how they view the intrinsic and extrinsic aspects of volunteering etc. This opens avenues for future research to use multiple case studies, online surveys, or field experiments to explore and test various factors that drive the rise of, success and demise of spontaneous online volunteering

projects. Finally, the article reflects the role of social capital embedded in contemporary Chinese society. There is a large body of literature discussing the significance of social capital (Saxton & Benson, 2005) and the bonding effects of social capital on organizations. However, few studies explore the emergence and the effects of "online" social capital in the crisis contexts. Future research can further dig into this area particularly in the context of a public health crisis.

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Figures

Sisters-Fight-Epidemic Volunteering Project							
Material Related Functions				Information Related Functions			
Fundraising	Resources matching	Logistics	Coordination	Information gathering	Content creation	Media relations	Legal, insurance, and others
7 volunteers	6 volunteers	9 volunteers	10 volunteers	11 volunteers	16 volunteers	8 volunteers	3 volunteers
Contact foundations, launch and implement donation programs, and contact other donor groups if any.	Coordinate with manufacture s for materials and meet hospitals' demands and requirements	Contact and coordinate logistics resources to ensure material delivery	Demands collection, verification, and materials distribution	Collect and verify information from social media	Recruitment promotion, progress updates, project announceme nt, team story interviews etc.	Media cooperation and interviews	Personnel, legal affairs and insurance

Figure 1: The Main Tasks of Ad Hoc Working Groups

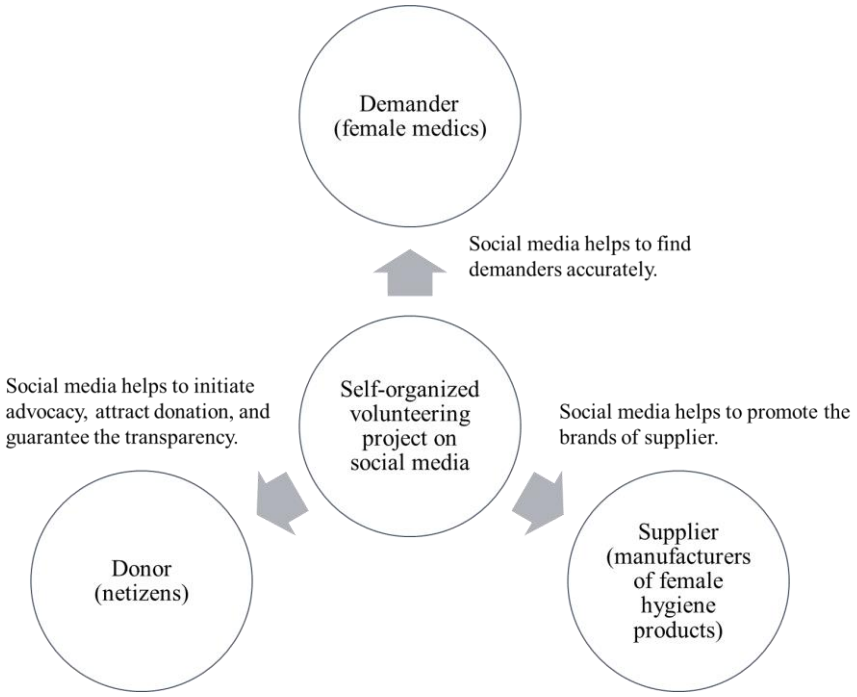

Figure 2: Emergency Information Network in the Project and the Role of Social Media

Appendix

Table A1: Key words of the Dominant Topics on the Project in Weibo

Topics (and proportion)	Subtopics (and proportion)	Key words
Information Disclosure (30.82%)	34.41%	donate, period panties, delivery, sanitary pads, disposable underwear, expenditure, public fundraising, project, coordination
	19.35%	coordination, resources and materials, logistics management, task, donation, media, verify, contact, logistics fleet, drivers
	12.90%	sisters, fight against the COVID-19, period panties, material, public announcement, nonprofit project, take action, platform, supervision
Acknowledgement (13.11%)	12.82%	donation, brand, Space7, help, government, resources and material, Fujian Hengan Group, female, contact
	12.82%	report, female, donation, strength, sisters, relieve, demand, resources and material, frontline, positive energy
	12.82%	sisters, frontline, fight against the coronavirus, female medical staff, donation, medical care, demand, gratitude, period panties
Advocacy (56.07%)	14.5%	driver, volunteer, sanitary pads, logistics, period panties, female, inventory, indignation, medical staff, demand
	14.0%	female, period panties, medics, frontline, sanitary pads, material, epidemic area, workers, thankful, shame
	11.0%	younger sister, medics, laborer, female, medical care, Hainan province, wish, support, frontline, necessities

Note: The key words are listed in order of importance, from the left (most important) to the most right (the lesser in importance). The numbers in brackets show the proportion of Topics in the whole text; as a whole they sum up as 100% (or a value of 1). The proportion of subtopics refers to the weight of each subtopic within each Topic (e.g., 34.41%, 19.35% and 12.9% are the weight of each subtopic within the Topic of Information Disclosure).