Mobilizing Digital Volunteers to Support Underserved Communities in India During COVID-19 Lockdowns

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ABSTRACT

As community-driven organizations sought to support their constituents through the COVID-19 crisis, many drew on digital volunteers to expand their capacity and reach. However, coordinating the efforts of virtual volunteers is a challenging task with few empirical studies of the associated risks and best practices. In this paper, we report on the activities of CGNet Swara, a citizen journalism platform that published 401 distress calls from vulnerable communities stranded in India due to the imposition of a nationwide lockdown. CGNet mobilized 11 digital volunteers to help these contributors over a period of nearly 2 months. We found that a lack of proper guidance to digital volunteers and outdated organizational policies resulted in demonstrable harms to vulnerable communities. We discuss risks that are inherent in collaborations between organizations extending themselves to crisis response and emergent groups of digital volunteers, and how they can be mitigated by real-time monitoring and development of standard operating procedures relating to impact metrics, verification standards and disclosure policies.

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1 INTRODUCTION

The aftermath of a crisis is increasingly giving rise to the phenomenon of digital convergence, where improvised networks of concerned citizens use Information and Communication Technologies (ICTs) to assist with relief efforts from the comfort of their homes [36, 37, 48, 54]. During a disaster, these *digital volunteers* have played a role in organizing [57], translating [34] or channeling [38] relevant information to the appropriate stakeholders, resulting in tangible and proven benefits to disaster victims. At the same time, these emergent groups lack a pre-existing structure or predefined tasks, which stands in marked contrast to the command and control style of established organizations with standard operating procedures to respond to disasters. Consequently, much attention has been devoted to the vectors of cooperation between emergent groups and established relief agencies [3, 4, 10, 39, 47, 51, 53].

To stem the spread of COVID-19, governments across the world were forced into implementing strict lockdown measures, often with little advance notice to citizens or businesses. The celerity with which these changes took effect meant that many social impact organizations had to dramatically adapt their systems while still serving their communities in a time of dire need and widespread distress. As a result, some of these organizations extended their activities to crisis and disaster management even though they may have had little or no prior experience in this field. While emergent groups of digital volunteers are a natural partner to such extending organizations, there are only a few case studies examining the collaboration between both these groups in a crisis [12, 20].

In this paper, we study the evolution of CGNet Swara a citizen journalism platform inundated with requests for food, money and other resources during the first 7 weeks of the lockdown imposed by the Indian government. Using a mixed methods approach spanning quantitative analysis of 401 lockdown related distress calls reported on CGNet's interactive voice response (IVR) based toll-free number and 1,726 WhatsApp messages posted to an emergent digital volunteer group devoted to resolving them, this work aims to develop signposts for extending organizations' collaboration with emergent volunteers. We conducted 22 hours of semi-structured interviews with contributors requiring assistance, digital volunteers providing it and the journalists operating the platform. We also administered a 35-question survey to all 11 digital volunteers assessing their motivation and level of involvement.

Our analysis uncovered a high risk of harm to vulnerable communities arising from the inexperience of extending organizations and emergent groups of volunteers in crisis and disaster management. We found several troubling issues like repercussions to contributors after their story was posted, online harassment of female volunteers and high variance in verification methods for distress calls. The organization needed to reassess their practices and procedures during the crisis, as outdated policies resulted in inadequate one-time assistance to those needing help while the lack of standard operating procedures for digital volunteers led to their claiming a grievance had been resolved when it was still pending. We found

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the need to clearly communicate disclosure policies, as some contributors expressed irritation with the number of phone calls they would get after their plea for help was made public, with some reporting their issue as resolved just to be free from the incessant calls from digital volunteers and CGNet Swara staff. On the more positive side, digital volunteers felt they were getting a chance to directly help people affected by the pandemic, as opposed to simply sharing videos online to express solidarity. Some of the volunteers made innovative uses of Twitter and other social media platforms to pressure the local government into helping contributors, while others tapped into their personal networks or started their own fundraising page to provide help to underserved people turning to the CGNet platform.

Drawing on our findings, we discuss how the technology being deployed in humanitarian settings is so new that it is difficult to even know what to look for to ensure that there is no harm taking place. This has led to critical evaluation of the "Do No Harm" standard prevalent across humanitarian work, with Raymond [42] arguing that we should "know the harm before doing no harm." Tech interventions have resulted in unanticipated risks and harms to vulnerable communities, leading to a call for case studies upon which ethical principles can be constructed for humanitarian technology [42]. This work is one such case study that contributes to the important conversation on ethical interventions in crisis situations through an exposition of harms uncovered and the methods used to identify them.

Overall, our work makes two key contributions:

(1) We provide an empirical study of digital volunteer mobilization in the aftermath of COVID-19 by an organization extending itself outside its normal purview to crisis relief, and describe how it helped and hindered vulnerable groups during the COVID-19 lockdowns.
(2) We present the potential and pitfalls in leveraging untrained digital volunteers in crisis response among low-resource populations, along with proposed mitigation strategies of real-time monitoring and development of applicable verification standards, disclosure policies and impact metrics

2 RELATED WORK

We start our literature review by identifying gaps in prior interventions focused on bridging the digital divide and their applicability during a crisis. We then situate our work in the field of crisis informatics and show how our findings can be used for redesigning human-centered digital volunteer coordination plans.

2.1 Digital Divide

We present some of the first findings on how voice-based forums have been utilized during the coronavirus pandemic [23]. These forums, such as Polly [43, 44], Baang [45], Sangeet Swara [62], Karamad [41], Learn2Earn [58] and Sawaal [46], have spread virally to a large number of users that are too poor to afford internet-enabled devices, too remote to have unfettered access to the internet or too low-literate to navigate the predominantly text-driven internet [61]. We examine data on a voice forum during a 7-week lockdown instituted by the Indian government to combat COVID-19, and study the backgrounds of users accessing such forums, the type of stories they report and the manner in which user base grew during this time. Our work thus advances the conversation around developing resilient crisis tech interventions that can operate without the assumption of unrestricted Internet access, which is not a given during a disaster [12, 65] and inaccessible to large swathes of the world without Internet coverage. Crawford and Finn [11] have referred to this as the 'signal' problem, where a dataset is unrepresentative due to little signal coming from particular communities that may not have the hardware, literacy or connectivity to participate in crisis tech interventions, resulting in over-allocation of resources to more well-off populations making use of such interventions. Murthy [35] also comments on the paradox that "the less well-off populations of the world not only lack new media technology, but also could use it most for disaster survival and reconstruction."

Mission 4636 is one of the few crisis tech interventions to enjoy widespread usage in a disaster without its users needing an internet connection or smartphone [20]. Deployed during the 2010 Haiti earthquake, more than 80,000 text messages were sent by the affected community to 4636, of which 45,000 were translated, categorized, mapped and streamed back to responders on the ground [34]. Similar to our study, the majority of messages were appeals for food and other necessities. However, their users needed to be literate and have the ability to type a text message on their phone, unlike the participants in this study who used an Interactive Voice Response (IVR) forum that requires a simple phone call to record their own lockdown-related plea for assistance or listen to other verified, user generated stories.

While ICTD researchers have studied the use of IVR forums for designing participatory media platforms that create a digital social space for marginalized communities [9, 27–30, 32, 33, 40, 52, 63], there is little investigation into how they can connect vulnerable populations with mainstream groups for mutual benefit. Using the theoretical framework of the public sphere, we identify two pathways for collaboration between mainstream (public) and marginalized (counter-public) groups. Publics have been defined by Dewey and Rogers [16] as a group of people facing similar issues who organize themselves to address it, while counter-public was introduced by Fraser [17] in her belief that amalgamating marginalized voices within a united public characterized by consensus would result in their suppression.

In a Habermasian public sphere, these two groups communicate on the same platform [19]. For example, voice forums such as Avaaj Otalo and Sangam brought together agricultural experts and doctors (a public) with farmers and HIV affected individuals (a counter-public) onto a single IVR platform for deliberation on issues of common concern [21, 40]. Twitter usage during the second wave in India is another example of such a public sphere, as it was used by both those in need of and those providing essentials such as oxygen, hospital beds, medicines, etc [60].

Fraser's approach reconceptualizes the public sphere as an arena for inter-public communication, where counterpublics raise their issues through appropriate technologies on the one side while various publics provide help, support and solutions to these issues on the other. For example, Brady et al. [5] ingeniously designed an intervention that saw volunteers (a public) providing researchers with access to their Facebook accounts. Anytime a person with visual impairment (a counter-public) employed their app to upload

a photo of an object they needed help identifying, the image would be shared on the volunteers Facebook feed and their friends would provide answers on what the object was within 1 or 2 minutes. Applying this lens to our findings, digital volunteers (a public) organized themselves to assist IVR contributors (a counter-public) within a public sphere of grievance redressal.

Mosconi et al. [31] carry out a study of public formation "in the wild" through their ethnographic study of a Social Street group on Facebook that strives to influence neighbourhood development. Dantec and DiSalvo [13] use participatory design to assist a group of people to organize into a public. We substantially build upon this prior theoretical framework in HCI research [26] in two ways: one, by studying public formation or digital volunteer mobilization during a period of "marked social transition", which Dewey thought may be a catalyst to formation of publics (pp 123) [16]. Second, we examine counter-publics or marginalized voices that do not have access to internet based ICT tools, thus becoming one of the first empirical studies employing Fraser's conception of the public sphere. In the process, we advance the conversation around citizen journalism platforms, initially conceived as "the bridge between (underserved) communities and the media" [8]. When this optimism faded in the face of apathy by mainstream media towards rural issues, organizations like CGNet pivoted to grievance redressal by "amplifying community voices through local field champions, who directly appeal to the (government) officials involved" [28]. Our work evolves the concept of direct action by creating a public sphere where a public (volunteers) helps resolve grievances raised by a counter-public, sometimes even bypassing government officials and crowdfunding from their networks to solve an issue. Moreover, the assistance provided by digital volunteers in removing obstacles faced by vulnerable populations trains them for public service, thus adding a new layer of impact for citizen journalism platforms.

When designing a public sphere, it is important to note that Fraser's conception allows for differing rules and norms for communication between marginalized and mainstream groups, as evidenced by the WhatsApp group with digital volunteers being more democratic compared to IVR contributors, whose messages had to pass through the filter of CGNet's moderators . Even apart from the actual resolution of problems, it can be argued that an equally important impact of creating a public sphere is the hope volunteers give to vulnerable communities that they are not alone, that there are other citizens who care about them and so on. It gives marginalized people a channel for connecting with a socio-economic strata they would otherwise never have had access to and lets them see that people from all walks of life can come together and try to help one another.

2.2 Digital Volunteers

Similar to CGNet Swara, Gram Vaani used an IVR platform to provide assistance to underserved communities during the lockdown. Their network of over 200 volunteers channeled cries for food or money to appropriate civil society organizations, assisted callers with getting lawfully due entitlements from the government and even undertook online registration on their behalf where required (such as with vaccine registration or returning migrants back to their home village) [23, 66]. In India, the largest such volunteer led relief effort was undertaken by the Stranded Workers Action Network (SWAN), which emerged spontaneously during the lockdown period. Between 27th March and and 3rd July 2020, their network of over 70 volunteers facilitated the transfer of nearly USD 80,000 to more than 36,000 stranded workers, in addition to distribution of ration or food supplies [1, 2].

Our study complements the efforts undertaken by Gram Vaani and SWAN in two ways; first, our mixed methods approach examines the experiences of not just those needing help but also the organizations involved in relief efforts and the digital volunteers undertaking these activities. Second, reports from SWAN focused on the inadequacy of the government and judicial response to the crisis, whereas we look at how organizations new to crisis response can effectively collaborate with digital volunteers in organizing relief efforts. This is particularly relevant to the field of crisis informatics, where there is healthy debate around well-meaning volunteers inadvertently obstructing first responders [50]. For example, more than 40,000 volunteers arrived at Ground Zero following the attack on the World Trade Centre in New York, placing a burden on legitimate response agencies to not only help victims of the disaster but also ensure the safety of these volunteers, some of whom did not bring appropriate equipment or enough food [59]. We found that while the remote nature of digital volunteering sidesteps some of these issues, online harassment remains a threat to their well-being and their relative inexperience can still create additional hardship to those requiring assistance. This is a particularly important addition as the crisis informatics literature is mostly positive about the involvement of digital volunteers.

Tweak the Tweet was one of the first crisis tech interventions portending the important role played by communities that want to respond and help during a disaster without being physically present [57]. The researchers asked victims of a disaster to place hashtags in front of essential pieces of information, such as their request for food or a rescue worker, so as to allow for easier processing of their tweets. One of their surprising findings during the 2010 Haiti earthquake was that there were less than 100 original tweets adhering to the syntax they laid out, but 3,500 tweets had been 'translated' into the Tweak the Tweet format with the help of digital volunteers. However, the initiative was discontinued as they could not assure volunteers and affected users that the information was being channeled to the right authorities that could act upon it [55, 56]. Our study differentiates itself by featuring a self-help community where citizens help other citizens during a crisis [48], which is particularly important as authorities are usually overwhelmed in the aftermath of a disaster. Even Mission 4636 had a citizen to authority information flow for impact creation, as they passed on distress calls to the U.S. Coast Guard for their timely resolution [34].

Similar to our study, Dailey and Starbird [12] examined the activities of journalists at the Watershed Post (WP) who crowdsourced content during Hurricane Irene's destruction of upstate New York. The WP editors worked with digital volunteers to moderate and produce content in their liveblog, which in the span of 2 weeks recorded 27,768 posts from 1,337 unique contributors. Perhaps the highest level difference is that WP predominantly operated in a situational awareness framework, which seeks to create a "common operating picture" providing a shared view of a crisis. Their

content thus comprised news items such as debunking rumours of a dams collapse, a crowdsourced map showing inaccessible areas and collating information about the disaster from various sources. By contrast, the newsroom in our study functioned entirely within an actionability framework, which focuses on getting the right information to the right person at the right time [67]. Our work thus complements Dailey and Starbird [12] by assessing the impact of journalists and digital volunteers operating in an actionability framework during a crisis.

Overall, our work deepens the literature on digital volunteers by providing a first-hand account of their experiences and motivations, the actions they undertook to deliver relief to marginalized groups and the modalities through which they communicated with one another and developed a group identity. We are also able to show that outdated policies and a lack of guidelines, combined with the relative inexperience of digital volunteers, can result in harm being meted out to vulnerable groups.

3 BACKGROUND

In this section, we briefly discuss the work of CGNet Swara and the various stakeholders they engage with.

3.1 CGNet Swara

CGNet was started with the mission of empowering unconnected and non-technical citizens with platforms for self-expression and resolution of longstanding community problems. Technologically, CGNet operates an interactive voice response (IVR) system where users need only give a missed call to a phone number. They are then called back and given the option of reporting or listening to stories. The published posts also appear on CGNet's website, Facebook page, Twitter handle and email lists, thus providing a route for taking online the hitherto offline voices of low-income, low-literate communities that lack access to the Internet or a smartphone. Content usually comprises a news bulletin containing important national and state level news, grievances that need resolution from local authorities, government schemes, scholarships and other programs that people can avail, local folk songs or stories sent in by contributors for dissemination outside their community and discussions around financial literacy, health, education, etc. Since the start of the IVR platform on 19th January 2010 up until just prior to the lockdown announcement on 24th March 2020, the server recorded a total of 950,788 calls from 94,677 unique phone numbers calling to report or listen to stories.

3.2 IVR contributors

It is an article of faith for CGNet that just as the vote gave everyone the right to participate in government, mobile phones give each person an equal chance to get their voice heard. Similar to how giving money to people for voting corrupts the process, CGNet does not believe in providing remuneration to contributors, with the focus instead centered around helping them solve longstanding grievances in their village (such as unpaid government wages, roads that need repair or access to clean water and electricity). These non-monetary incentives help attract the right sort of partners who want to be change agents in their community. For similar reasons, anonymity in reporting is prohibited - CGNet prefers not to publish a story at all than to publish one without a contributors name against it.

In a ten year period, 148,664 stories have been reported by 35,031 contributors, of which 21,297 stories from 6,381 contributors cleared the fact-checking and review stage. There have been a total of 1,580 impact stories where contributors close the loop by reporting that the grievance lodged earlier had been resolved. Many of CGNet's biggest donors link their funding to these impact stories.

3.3 Moderators

As stories are reported in local dialects, it is necessary to recruit local moderators for evaluating each post. Prior to gainful employment, prospective moderators undergo a 3 month residential training program where the organization teaches the skills of fact-checking, audio editing and computer typing to interested local people. Some moderators start as regular contributors and graduate to becoming a moderator, while others come for the chance to learn valuable computer skills at no expense. Post completion of the training, they may become paid moderators empowered to approve or reject stories coming in from the various contributors. One of the organization's long term goals is creating a model of representative media democracy by having these moderators be elected by contributors in periodic elections.

Loudblog is the open-source moderation platform used by CGNet to host, review and edit stories reported by contributors. Junior moderators take a first pass at reviewing incoming stories and determining whether they should be desk-rejected, re-recorded or taken forward for editing. A written justification needs to be provided for why a particular story should not be accepted, which is later reviewed by more senior moderators. Some of the reasons for requesting contributors to re-record a story are to make the audio quality more crisp and clear, or that pertinent facts have been left out of the story. The fact-checking process, for example, requires contributors to narrate what they have already done to solve the issue by themselves and provide documentary evidence if available. The phone number of the government official in charge of solving the issue also needs to be provided, both as an external check to validate the story and also to provide a pathway for action team members and digital volunteers to help in the issues resolution. Only after all these provisions have been checked is the story taken to the editing stage.

3.4 Action Team

Many first-time contributors begin from a position of skepticism that a simple 3 minute report can solve an issue beleaguering their village for years. There is thus significant investment by CGNet in a dedicated action team that liaisons directly with the concerned government officers to bring reported grievance to a close. Some strategies used by this team include uploading issues on official grievance redressal platforms set up by the state government, persistent phone calls to authorities in charge of an issues resolution and spreading the story widely among English-speaking channels frequented by urban activists and senior government officials. There is also an automated script that shares stories on social media after it is published on CGNet's website.

3.5 Virtual Volunteers

The founder of CGNet believes that effectiveness increases with distance: despite their persistence, the action team is usually given less credence by authorities due to their rural background and proximity to the area, while a single phone call from an English speaking person in Delhi or New York can result in speedy resolution of a grievance. The organization thus invested in an application called *Mobile Satyagraha*, where volunteers can scan all active grievances and choose to 'adopt' or work on any of them. After adoption, a comment section opens up where they are expected to regularly update on the status of the grievance and the reasons for its non-resolution. In 2019, solving grievances through the app was included as part of the coursework for students at a journalism and technology college, during which a total of 136 comments were written by 27 users. The 11 volunteers sampled in this study were either from these 27 users or referred by them or CGNet staff.

On 24th March 2020, the Indian Prime Minister announced a nationwide lockdown with only 4 hours notice, catching state governments and the bureaucracy off guard in dealing with the destitution faced by daily wage laborers. Originally intended for only 3 weeks, the lockdown underwent regular extensions up until June. Many workers were stranded without food or money in the first half, while mismanagement of the repatriation process in the second half saw millions of migrants walk hundreds of miles in their desperation to return home. Even those who successfully made the return journey were quarantined in camps with unsatisfactory conditions.

During this period, CGNet's IVR platform received multiple distress calls from first time contributors who were unable to return home to their village due to the lockdown and did not have money for rent, food and other basic necessities. To deal with the deluge of distress calls, CGNet appealed to all the students, volunteers and employees that had engaged with them in the past. The results section focuses on the volunteers who responded to this call and the lockdown-related grievances they worked on. Unlike both contributors and CGNet staff members, these volunteers had a laptop, were proficient English speakers and had finished with or were pursuing undergraduate education.

4 METHODS

To evaluate the efficacy of CGNet's grievance redressal model during the 7 week lockdown period from 25th March to 17th May (evaluation period), we employed a mixed-methods analysis spanning quantitative and qualitative methods to delve into the following 3 themes:

(1) **Content Categorization:** What type of stories were being reported on the IVR platform during the lockdown, and how did digital volunteers communicate with one another and the organization to solve grievances?
(2) **User Profile:** What are the backgrounds of the contributors who reported stories on the IVR platform? Who are the digital volunteers, how many grievances did they adopt and what are their motivations?
(3) **Experience and impact:** What was the experience of both groups of users? Did it impact their life and if so, how? What are the risks and dangers to both contributors and volunteers in using the platform?

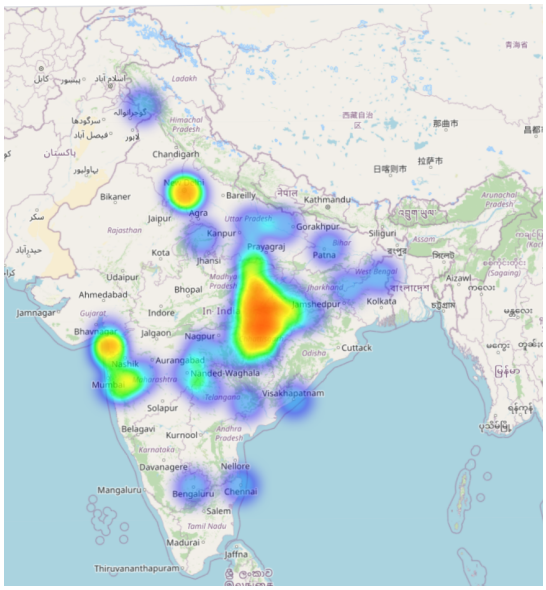

Figure 1: Heat map of the impacts recorded.

Unpacking each of these themes and the questions they raise led to a corresponding activity: a quantitative analysis of stories on the IVR platform and the chat messages in the digital volunteers WhatsApp group; a survey to digital volunteers and demographic questions to IVR contributors at the start of their semi-structured interview; and in-depth qualitative interviews with various stakeholders from May 17th to May 30th.

4.1 Quantitative Analysis

We undertook an analysis of all 694 stories published on the IVR platform during the evaluation period. We manually tagged each of these published posts into different categories based on their content type, gender of the contributor, location of the post recorded, and whether the story is related to the ongoing lockdown. Figure 1 depicts the areas of India from which impact stories were recorded.

To examine the workflow that generated a coordinated response from digital volunteers to grievances, we analyzed and categorized 1,726 messages across all WhatsApp groups to find underlying patterns in communication. Messages were tagged into five categories based on their nature: Introductory, Informative, Instructional, Commendatory and Updates. Messages that did not fall into any of these categories were marked as others.

4.2 Survey

All 11 digital volunteers filled out a 35-question survey prior to being interviewed and their details are shown in table 1. This method is consistent with prior work that has found the intention of a questionnaire is not merely to gather information, but also to prompt self-reflection [18]. The survey consisted of three types of questions: demographic questions to understand the background of

volunteers; the number of problems they have worked on or average time spent per day to quantify their level of involvement; and probing questions such as their reason for becoming a digital volunteer or how they feel about unsolved problems, upon which we could quiz them during the qualitative interview. Most of these probing questions took the form of a multiple-choice question with space provided for an explanation of their answer or to write an answer not corresponding to any of the options provided. The survey questions and semi-structured interviews were designed with a view towards gauging the motivation of volunteers, difficulties they encountered, their capacity for long term retention and identifying optimum strategies for grievance resolution.

We interviewed the founder of CGNet, his longest serving employee (X3) and two members of the action team (X1 and X2) whose job it is to solve grievances. The latter interviews allowed us to contrast and compare the work of digital volunteers with paid staff, and examine the similarity and differences in their approach to solving grievances. These interviews helped shed light on the vexing challenges faced by volunteers, such as verification of grievances.

A survey could not be administered to IVR contributors as not all of them knew how to read and write. Demographic information for this group was collected at the start of their interview and summarized in Table 2

4.3 Qualitative interviews

We conducted 36 semi-structured phone interviews with several stakeholders, including IVR contributors who reported grievances (17), digital volunteers (11), individuals affiliated with other networks that helped volunteers solve these grievances (4) and staff members of CGNet responsible for solving grievances on a day-to-day basis (4).

We used a random number generator to obtain a random day in the evaluation period, after which we would interview contributors who had a story published on the IVR platform on that day. By maintaining control over which stories in that day we would do interviews on, we managed to cover each category type and ensure that six women contributors were interviewed. A total of 15 such interviews were conducted with IVR contributors that had lodged a grievance. We also followed up with two purposefully sampled interviews with contributors where the grievances were identified through the digital volunteers WhatsApp group. The average time for interviewing IVR contributors was roughly 30 minutes, primarily oriented towards assessing their socio-economic background, technological literacy and overall satisfaction with CGNet's grievance redressal platform.

We interviewed 11 digital volunteers - 6 women and 5 men - with an average time of roughly 53 minutes per interview. We also interviewed four individuals from other organizations working with digital volunteers to solve grievances, in order to obtain a better understanding of the arena in which on-ground relief efforts were being coordinated (snowball sampled through digital volunteers). Of these four individuals, one was affiliated with a government helpline number and three were activists with a wide network of people willing to donate food or money to people in need.

The first author transcribed and translated all interviews, which were then read by another co-author. Using inductive thematic analysis [6], we subjected our data to open coding, rigorously categorized our codes, and iterated upon them until consensus was reached. A total of 3 co-authors were involved in determining the high-level themes that classified codes into a set of factors that shape extending organizations collaboration and cooperation with emergent groups of digital volunteers. In the course of writing up the results, any specific incidents alluded to or quotations relied on were first re-heard on the original recorded conversation, with the time in the recording containing the specific content referenced shared with all the other co-authors.

4.4 Limitations

Our analysis has a few limitations. First, we did not disaggregate contributors whose grievances had been adopted by a digital volunteer from those that had not. Thus, we could not compare and quantify the success rates for adopted versus un-adopted grievances. Second, we may have interviewed contributors whose problems were not taken up by any of the 11 digital volunteers. To partially compensate for this limitation, we purposefully interviewed 2 contributors whose grievance had been discussed in the digital volunteer WhatsApp group. Third, we conducted all phone interviews from 17th May to 30th May 2020, while the lockdown was still in effect (the lockdown was lifted in a phased manner beginning 1st June). While there was a need to conduct real-time evaluation to enable recall and make necessary course corrections, we may have left out important events that occurred after the interviews had been completed.

4.5 Positionality

CGNet has been operational for 10 years and routinely takes decisions in the best interests of the community it serves. In order to handle the sudden deluge of lockdown related grievances that its staff were unprepared for, the organization broadcast an appeal for help to anyone who had engaged with them in the past. 13 volunteers responded to the call, with 2 of them (who are also the first and second author) taking on the role of monitoring, evaluating and documenting best practices. None of the authors are from lower castes or tribal groups, which has resulted in a lack of layered representation and analysis of these dynamics, especially when interviewing contributors belonging to these groups.

The authors did not have any role in the evaluation period pertaining to the data collection process wherein digital volunteers and the organization collaborated with one another to solve grievances. While none of the authors receive remuneration from CGNet, the first two authors have a long history of collaboration (over 4 years) on various endeavours, including the design of the digital volunteers program from its inception in 2018. As a result, many of the volunteers and organization staff personally know the first author, who was provided full access without any conditions. The prior history of collaboration with the first author, along with the comfort at being interviewed by someone they already knew, would have influenced the interviews with digital volunteers and CGNet staff members.

Consent for recording interviews and analyzing chat logs in the WhatsApp group was taken from both IVR contributors, digital

Table 1: Demographic Information of Digital Volunteers and Action Team Members

Participant	Gender	Age	Education/Occupation	Location	Grievances Adopted/Daily Hours
DV1	M	30	Undergraduate/Entrepreneur	Raipur	0-5/1
DV2	F	49	Undergraduate/Freelancer	Noida	6-10/1-2
DV3	F	27	Undergraduate/Employee	Nagpur	0-5/1-2
DV4	F	19	Undergraduate Student	Noida	16-20/2-3
DV5	M	25	Masters/Freelancer	Raigarh	25+/3-4
DV6	M	26	Masters Student	Bangalore	21-25/1-2
DV7	M	22	Masters Student	Dalli Rajhara	25+/3-4
DV8	F	20	Undergraduate Student	Ambala	16-20/Variable
DV9	F	22	Masters Student	Bolpur	6-10/Variable
DV10	M	23	Masters Student	Raipur	6-10/1-2
DV11	F	21	Undergraduate Student	Howrah	0-5/Variable
X1	F	21	Paid Employee of CGNet	Narayanpur	50/Full Time
X2	M	32	Paid Employee of CGNet	Kanpur	300/Full Time
X3	F	47	Paid Employee of CGNet	Rajnandgaon	100/Full Time

Table 2: Demographic Information of IVR Contributors

Participant	Gender	Age	Education	$ Monthly Expenses	Smartphone	Location	Grievance/Solved
C1	M	24	9th Grade	26.6	Y	Kondagaon	Food/N
C2	M	26	Undergraduate	93.3	Y	Mumbai	Food/Y
C3	F	20	2nd Grade	66.66	Y	Chhapra, Bihar	Food/Y
C4	M	20	8th grade	66.66	N	Dabhaura, MP	Return Home/N
C5	M	30	No Schooling	20	N	Matli MP	Food/N
C6	M	20	8th Grade	53.33	N	Rewa, MP	Food/Y
C7	F	25	9th Grade	20	N	Rewa, MP	Food/N
C8	M	40	9th Grade	200	Y	Ahmednagar	Food/Y
C9	M	49	11th Grade	200	Y	Siwan, Bihar	unpaid wages/Y
C10	M	22	8th Grade	120	Y	Gudhna MP	Food/Y
C11	F	26	4th Grade	Did not Say	Y	Benares, UP	Food/Y
C12	M	22	Undergraduate	40	Y	Bihar	Food/Y
C13	F	24	Undergraduate	133.33	N	Latur, MH	Food/Y
C14	M	31	10th Grade	200	Y	Jharkhand	Food/Y
C15	F	26	12th Grade	80	N	Dabhaura, MP	Rent Relief/Y
C16	M	40	1st Grade	93.33	Y	Bhanderi, MP	Medical/Y
C17	F	17	9th Grade	Did Not Say	N	Sonari, MP	Breach of Lockdown/Y

volunteers and CGNet's staff members. Following the evaluation period, some researchers unaffiliated with the organization suggested that the experience could be of interest to the broader research community. IRB approval was then taken to further analyze and publish the findings.

5 FINDINGS

Our mixed methods analysis highlighted several factors impacting the success of an extending organizations' pivot to crisis and disaster management and their collaboration with emergent groups of digital volunteers.

5.1 Platform Use

In this section, we focus on contributors' engagement with the IVR forum and the platform choices that make for optimum engagement with digital volunteers.

5.1.1 Resolution Strategies. In total, 401 distress calls and 123 impact posts were identified as pertaining to the lockdown. We thematically categorized these stories into 9 different categories, depicted in figure 2. The thematic category 'Food' constituted 70 percent of all requests for aid from migrant laborers and others affected by the lockdown asking for supplies or cooked food. The average time for resolution was 11 days (median = 8.5 days, S.D. = 9 days), with the minimum time being one day and the maximum 37 days.

We observed a multiplicity of methods used in providing aid to contributors. After C10 reported on his need for food, he soon got a call from a government official informing him of a nearby school where there was daily distribution of food to those in need. He remembered how the report on CGNet led to a follow-up by an official seeking publicity for the good deed.

> *"He (the official) said you won't want to tell us thank you for giving food? I said of course we will. He then said do one favor, record a story saying you are now getting proper food, so we did that."*

Other unconventional strategies for assistance during the lockdown involved pressuring landlords for rent forgiveness or employers for releasing unpaid wages. C15 describes:

> *"I discussed the problem (with a field champion of CGNet) and he gave me CGNet's number. I called and said there is a problem with paying room rent, they spoke to the landlord and he forgave rent for the month."*

Some of the stories in the law and order category included reports on people flouting social distancing norms or excessive force by police. It was even used in medical emergencies, as was the case

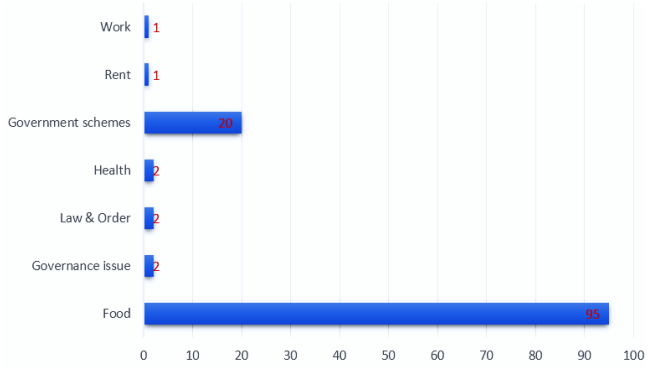

Figure 2: Distribution of Impact stories

of C16 who received a visit from a government doctor after he reported his story.

> *"My health had been bad for many days and there was no one at home to take me for treatment. This was in lockdown so everything was shut. I then reported a story, can someone come and help take me to hospital?*

5.1.2 Volunteer Experiences. : The WhatsApp group was the only space where digital volunteers could communicate with each other. The Mobile Satyagraha application that some of them had used for completing their assignments could not serve this purpose, as only those that had adopted an issue could communicate with each other. DV4 narrated how the WhatsApp group allowed her to learn from other volunteers and the motivation boost to see others as active as them.

> *I guess its (WhatsApp group) better because there are lots of other volunteers and so you can see on the group how they are making progress. so that (app) felt more isolated I feel.*

DV4's insight on WhatsApp having more of a community feeling is borne out by the fact that 27% of all messages were updates or congratulatory messages from other group members after a volunteer shared a photo or information indicating a grievance had been resolved. UV6 said:

> *"I think people who have joined the group, they have joined because they want to help people... Sometimes because we are not on the field, that thought goes away from our mind because we are in a more comfortable and safe space. We can somehow, by sharing information or photos, keep encouraging them or maybe try to show how they have impacted people.".*

On the flip side, DV3 had a particularly strong reaction to inactive volunteers, consistent with prior research finding that even a few inactive members in a group can dampen enthusiasm of all members [25]. She says:

> *Inactive members, they are not required in the group. Who all are pretty motivated for this work, (only) they should be there. And there should be a conversation or there should be a follow up session for all of them, so a person like me who has been inactive from last 7 days, we need some follow ups, someone to call us and say what are you working on?.*

At the start of each day, CGNet staff members picked out distress calls and assigned digital volunteers to work on them. DV4 felt that assigning problems (rather than self-selection) fostered more accountability, saying:

> *"When they are given to me I think I feel more responsible for doing them fast... if you still get assigned problems even if you feel that you are not making a lot of progress, it feels like they are still counting on you."*

CGNet employees were also active in writing informative or instructional messages on the group (52% of all messages), which pertained to requesting or transmitting advice assisting with redressal (example in figure 3)

5.2 Outdated Organizational Policies

Prior to the crisis, CGNet had several policies in place to maximize efficiency in creating impact. These did not work as effectively in the new context of disaster management, suggesting a need for extending organizations to thoroughly review their work practices. In particular, we identified the need for organizations to review their verification standards, disclosure policies and impact metrics before venturing into the crisis and disaster management domain.

5.2.1 Standards for Verification. Verifying distress calls from contributors, particularly those asking for food, was one of the most vexing challenges faced by the organization and digital volunteers. Staff members reported cases where a family of 4 would try to hoard food and ration supplies, with each member lodging a report on the platform asking for food for 4 people. Some of the digital volunteers recalled cases where the same person that had just been helped would pose as someone else and ask for additional supplies. We found the case of C4 who recounted the temptation for fraudulently asking for ration supplies on the platform:

> *I told many others in Mumbai (about reporting on CGNet)... many were ready to do it with me, saying you do it, report that we are not getting food. I said no, the sarpanch (government official) is feeding us here, why do you want to report pointlessly?"*

It was necessary to be vigilant against hoarding, as extra food supplies going to one household meant another household receiving less. On the most extreme end, one individual affiliated with a third party network directly providing food to those in need said they ask for ID cards or photos of every individual before giving any supplies. A second external individual worked with an organization that only gave food to single women and their children. Both these individuals were approached by digital volunteers for help in resolving issues that had been assigned to them. Where it was possible, volunteers would send money directly to the shopkeeper to prevent leakage or try to find a local resource person through CGNet or their connections that could personally check in and verify the report.

Staff members also reported carefully listening to contributors to gauge the desperation in their voice, with one employee saying that a contributor repeatedly calling her to ask after food indicated

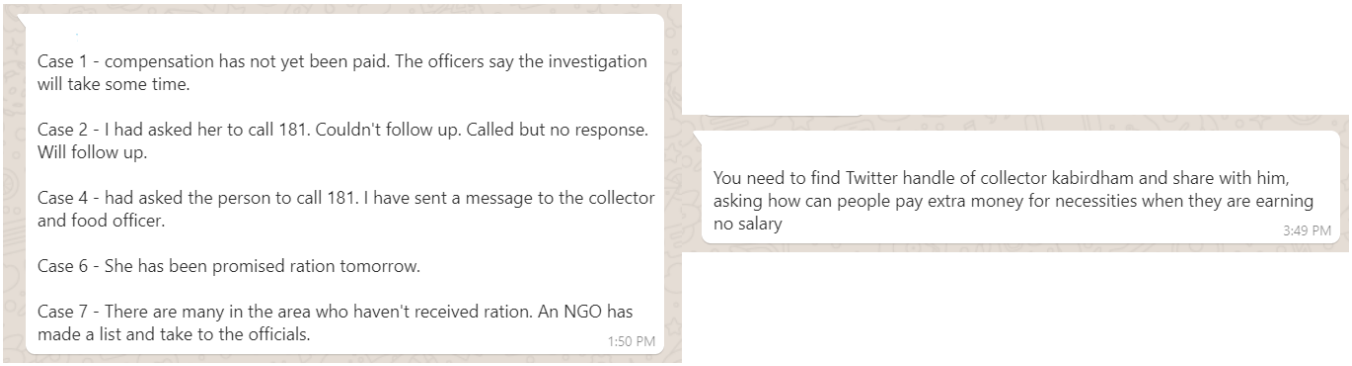

Figure 3: Example of an update posted by one of the volunteers (left) and an instructional text (right)

that their situation was more serious and hence deserved priority. Overall, many of the digital volunteers and staff members felt it was better to err on the side of caution as people were only asking for food. Nonetheless, we found that the lack of any clear verification policy resulted in a high variance in verification methods between those engaged in this task and may have resulted in some contributors using the platform to hoard additional supplies.

While the IVR platform was being designed, the founding team decided to invalidate any recording of less than 20 seconds with the understanding that longstanding community issues or songs reported on the platform will be of greater length. During the lockdown, however, the founder said he had spoken to some contributors whose initial plea for help was simply not recorded as they made a request for food that was less than 20 seconds in duration. Thus, a policy ascertaining genuine reports that made sense for the initial intention did not translate well to a crisis context.

5.2.2 Level of Disclosure. The vast majority of distress calls during the lockdown related to appeals for food or ration. Once this had been put up on the IVR platform, contributors reported being inundated with phone calls from people enquiring after them. While most said that this gave them solace as they felt other people cared about them, some contributors reported their problem as solved, even if it was not, just to ensure they could get a break from the daily phone calls. C1, an IVR contributor, elaborated:

> *When we needed help, we did not get it, now we are back in the village... when a problem is not getting solved but they keep calling us and asking if it is solved, won't anyone get angry? ... We were told, even if the problem is not solved, at least record that you have reached your village. I thought okay, what difference if I say this much? They told me to record this, so I said that we have reached home. But the problem hasn't got solved, but it is ok, if ours didn't happen maybe others did.*

As C1 reported reaching his village, his story was recorded as an impact, which helped staff members meet their daily targets. In a crisis context, persistent follow-up resulted in either a genuine impact report or the contributor deciding that their need for assistance is less of an issue than being disturbed with phone calls everyday. Providing an option for contributors to withdraw stories would have better insured the integrity of the impact data, which may have been overestimated if there are other contributors like C1.

Another cause for overestimation of impact data is simply the difficulty of attribution in a crisis, where there are many organizations and entities working towards relief efforts. Even if the contributor resolved an issue by themselves independent of the help provided by the platform, they may have nonetheless recorded an impact story under the pressure of daily phone calls from CGNet's action team. C2, a supervisor in Mumbai trying to get food for laborers under his charge, exemplifies this confusion:

> *Ever since I reported on (CGNet), I didn't get benefit for 20 days, just phone is coming talk to this person, that person, I got irritated. Then one of the organizations I came into contact with, they helped me... Could be that (CGNet) gave number of the organization that helped.*

We also found out that not all contributors were aware that their story would be made public on the internet and played back on the IVR platform for others to listen to. This was a problem that we had to tackle as many contributors had become fed up with people calling them. Patiently explaining that our purpose was to understand their experience and collect feedback helped assuage their angst at being contacted repeatedly after reporting a story on the platform. However, CGNet's failure to clearly define and communicate policies regarding disclosure of personally identifiable information resulted in real harm to C6, who received a visit from the local police after his appeal for food was publicly posted as a story on their website. C6 elaborated:

> *If someone stands in front of you with a lathi (police stick), you will obviously get scared. After that (incident) we didn't do anything. Someone called and asked, "what you reported on CGNet, have you got help on that? We said we don't want any help, it is okay if we die hungry."*

Public perception was being closely managed during the crisis. As a result, publicly posting the name, number and location of those seeking assistance (in continuance with past practice at CGNet) turned out to be an open invitation to trouble. Even Adhikari et al. [1], associated with the stranded workers action network (SWAN),

found that "workers who were enterprising enough to seek help through various means were threatened or beaten."

Upon further enquiries, we found the founder had been personally involved with this case, although he was not aware of the threats made to C6. Staff members had even helped file an online application for him to be sent back home, and while C6 was put on a train (free of charge) back to his home village, he attributed it more to his own efforts and still harbored enmity against CGNet for putting him in jeopardy.

5.2.3 Changing Norms for Impact Assessment. We found that earlier organizational metrics were not entirely appropriate in the new crisis context. We also report the emergence of a new form of impact in the form of civic consciousness imparted to digital volunteers.

Inapplicable Impact Metrics. Impact reports are the primary metric used by CGNet to gauge their effectiveness as an organization. However, there was no introspection over whether this constituted an appropriate metric in a crisis. The limitations of this approach could be seen in C3's response, who remained unhappy despite recording an impact report.

> *For how many days can we eat 5 kgs of rice? We don't get much but keep hearing rubbish of how much help has been given. If you want to help, help properly.*

As the interviews were conducted while the lockdown was still in effect, several contributors asked us for a second round of food. We chose to deal with such requests by providing them with the number of their earlier distress call number upon which they had already received food. They were then told to record another story on the platform, while acknowledging their earlier report had been successfully resolved. Unresolved requests for aid were also shared on the digital volunteers WhatsApp group in the hope that one of them would take it up.

Recognizing that people might require help over a a period of weeks to get through the lockdown, DV2, a digital volunteer, continued helping a contributor long after they had recorded an impact story:

> *There was one case in Pune where he had received ration but it was only for 3 days. Now he keeps calling me up and tells me ration has finished ma'am, I want more... Yesterday also I posted on my husbands (WhatsApp) group and they donated 1000 (USD 15) to him so he can buy more ration.*

Despite the continuing assistance given by DV2 to the contributor, it was only recorded as a single impact report and stood at par with other cases where help was provided only a single time. CGNet would allow a second appeal for food only if acknowledgement was given that this is the second time the contributor is asking for help, which would then result in a second impact report. A revamped metric measuring the amount of food distributed may have been more appropriate to accurately reflect the organizations contribution and also reduce friction for action team members and digital volunteers to work with those needing assistance on an ongoing basis instead of a one-off manner that ends upon publication of the impact report. Indeed, in both instances where we purposefully interviewed contributors whose issue had been adopted by digital volunteers, we were asked whether more ration could be made available for them. The closure of a distress call upon publishing its corresponding impact report, regardless of whether the contributor still needed help, may help explain why a little less than half the digital volunteers felt a connection with contributors, and none of the contributors remembered the names of those who had helped them. Two-thirds of all volunteers said they were contacted by a contributor even after the grievance had been resolved to ask for additional help, for gratitude, or even *"for no reason"*, indicating a lost opportunity for maximizing impact.

Civic Consciousness. Many digital volunteers tapped into their own personal networks to help contributors. For instance, one of the urban volunteers started her own fundraiser and managed to raise USD 180 so she could directly transfer money to individuals that requested food on the platform. Another volunteer was a part of various WhatsApp groups that provided assistance either in the form of money or connections with relief organizations. Recognizing this unique capability, action team members took help of digital volunteers when their own methods were not working.

Digital volunteers came up with a wide variety of answers on what they had gained from this experience. When asked how they felt listening to these grievances, DV7 wrote *"Powerless because there's so much problem, powerful because this (CGNet) empowered me to help at least a little bit."*. He elaborated on this point during the interview:

> *As a socially aware student of social science, I can't sit. If (CGNet) is not there, I might work in my village. But (CGNet) is there, and taking many problems at once, so we can work at a larger scale. It's really good volunteering."*

Another survey response was on how *"the ground reality is contrary to the claims made by the government on providing for the migrant workers"*. DV4 reported on how the experience had influenced her conversations with friends and peers:

> *Earlier I heard relatives or my friends say what is the point of walking and going back to your home place,how would that make things easier at all? I think I can answer that question now.*

Survey participants also reported feeling *"a sense of responsibility because we contact them and listen to details about them and their problems"*. DV8 elaborates:

> *I was going through Instagram, and then you see a lot of those videos of people being affected and everything, and how you are sitting in your homes, you are not bothered by it at all. So there is this one thing of, your privilege makes you feel guilty... I felt if I have been constantly criticizing, that people are not getting food, they are not getting help, I should not be sitting here but actually be doing something about it.*

Several volunteers felt that they were now better equipped to approach the government to solve any issues in their locality, such as DV6:

> *"I did not know the government was so approachable. i did not know if you had a problem in the area, you could text the collector, tweet or approach them like that.*

> *.. so now it becomes easy, if there is a problem in my locality i know how to approach officers for that."*

By developing the civic consciousness of digital volunteers, our evaluation uncovered a new form of impact for CGNet.

5.3 Real-Time Monitoring

We documented incidents showing the importance of developing standard operating procedures to not only maximize impact, but also minimize the harm accruing to vulnerable communities.

5.3.1 Minimizing Harm to Beneficiaries. We found a case where the absence of standard operating procedures for digital volunteers resulted in real harm C7, a tribal woman in Central India who travelled to the local government office with her two kids, aged two years and eight months, on a false assurance that she would get food. She described:

> *We had recorded saying no food... got a call saying you will get help, you have got a token, go to the secretary (of the village level authority), so we went in the hot sun, but they did not give either food or token.*

C7 had not received any help at the time of our interview with her, although a digital volunteer posted on the group that her grievance had been successfully resolved. The reason arose from the fact that CGNet had a policy that any contributor requesting help from the state of Madhya Pradesh needed to record their problem on the government helpline number, CM Helpline [28]. The digital volunteer thus registered C7 on this government portal, and updated the group after he was notified by the government that the issue had been resolved. There was thus a general failure on the side of the digital volunteer in not following up with C7, and on the government helpline side for incorrectly telling her she would get food at the local government office. Enforcing procedures such as volunteers following up on whatever they work on might have helped prevent such a case from falling through the cracks.

CGNet limited its role to connecting people in need with individuals or organizations willing to help them, with the idea that contributors become self-sufficient by establishing their own relations with aid providers. However, we found that this approach did not always work well in practice, as seen by C2's reaction:

> *"After I reported on (CGNet), I got so many calls, take this number, talk to that person, I sometimes felt like I was begging. No one wants to help and they were all saying do this do that, I got a little dirty feeling with all this."*

There were several other inadequacies with this method of assistance, as seen with C5 who lives in a rural part of Central India and did not have money in his mobile:

> *"I don't have balance (mobile money) so I can't call anyone else... every 2 days I would get a call, 10-15 people called me. They said call this number, that number, but I don't have any balance... I can't even go to the market to put in balance (due to the lockdown)."*

A requirement to gauge the willingness and ability of contributors to advocate on their own behalf may have helped mitigate such unfortunate cases.

5.3.2 Maximizing Benefit for Digital Volunteers. Our real-time monitoring uncovered insights useful in developing a handbook for volunteers and action team members to respond to pleas for aid. One of the volunteers who had helped resolve 25 distress calls laid out a beginners guide for other volunteers. He said the first step is to call the person who reported the problem, and to record the call so the facts stay with you. Second, to get all the contacts of the local administration from their official website, and not just the first result appearing on Google. He found government to be helpful but slow, in contrast to NGOs in the area that might be able to deliver help quickly but in a limited capacity. Third, to WhatsApp the government officials and/or NGO with details of the help required, and to call if there is no response. Fourth, to put the issue on Twitter and tag the District Magistrate so he is in the loop, while working with lower officials on a parallel track on a more personal basis. He also suggested sharing on Facebook as it reaches more people, and tagging people in your circle who might be from that area. Fifth, to contact the government administration, NGOs and the person who reported the problem every 1-2 days. And finally, to publicly thank the district administration or the organization providing relief on Twitter, so that goodwill is built up for future requests.

Most other volunteers said they did not find Twitter to be very useful. However, the volunteer who laid out the guide said even with a low follower count, Twitter can be used strategically - in one case, he tagged the local elected representative, after which the collector replied to his tweet saying he had personally visited the migrants and ensured their distress had been alleviated.

Regular communication with volunteers can publicize innovative practices that may even go beyond the initial intention of the organization. Although digital volunteers were primarily engaged for creating impact reports, DV1 recounted how he convinced stranded migrant laborers near his residence to report on the platform. Thinking back on his experience, he said;

> *"(CGNet) was a little off-putting initially, but when it was able to actually help, it opened my eyes, that this is actually a better way to do things. How much ever money I organize, I can't feed people on a daily basis, but with our approach, I can help 100 or 1000 people without spending money from my own pocket.*

We found that two of the female digital volunteers reported unsavoury, stalking behavior in the course of resolving a grievance. The more serious case involved DV9, who asked for help from someone that turned out to be a *"creep."* She elaborated:

> *"I took the matter in a professional way, I tried to convince him that our relation is professional, lets keep it professional, but he keeps texting me on whatsapp, on messages, on personal message, he was calling me and calling me and calling me. oh! somehow he managed to get my email id and then he emailed me. I don't know from where he got my email id, but he got my email ID."*

In the second case, a government official that DV11 messaged replied asking for her photo. When CGNet tried reporting this to the higher government authorities, they found that it was a wrong number belonging to a teenage boy. Although both volunteers said these incidents did not end up leaving a bad taste in their mouth,

stalking remains a persistent risk that acts as a deterrent to female digital volunteers taking on more outgoing tasks [64]. Real-time monitoring can help nip these cases in the bud and also let digital volunteers know that the organization has their back in fighting back against stalking and other forms of online harassment.

To conclude, real-time monitoring can not only help extending organizations develop appropriate policies and standard operating procedures for responding to a crisis, but also emotionally support and guide other digital volunteers.

6 DISCUSSION

There is a growing recognition that "disaster experimentation", while well-intentioned, can cause demonstrable harms to the community being served [49]. Given the colonial history of such experimentation, this is particularly immoral when technologies unapproved in a home country are first tested in humanitarian settings. According to Jacobsen, such experimentation in the contemporary world is powered by a nexus of humanitarian agencies who say the technology makes them more efficient and technology companies who use the field data as evidence that their product is good for the world, enabling the widespread adoption of technology that would not be allowed were it not first proven in humanitarian settings [22]. Development aims intertwined with market expansion is the parallel in the ICT4D field, fuelled by companies that hold proprietary control over technologies on which interventions depend [15, 24].

To complicate matters further, harm can occur even when the technology rollout is successful and takes place exactly as intended. This led Campbell [7] to question the assumptions underlying the premise of Do No Harm, asking whether "it is possible to find at least one option that does not reinforce patterns of conflict, and thus, do no harm." Dearden [14] argues that involving vulnerable people in research is illegitimate unless they have a realistic chance of receiving benefits from research outcomes, especially since our activities are not usually initiated at the request of participants (unlike the relation between a client and professional). At the same time, acting with beneficence and non-maleficence is a difficult proposition, since researchers need to ascertain which actions may result in inadvertent harm even when they are outsiders in complex social situations. Dearden [14] tries resolving this quandary by redefining the domain of ICTD researchers as "creating technologies that enhance the capability of established and funded NGOs, private sector businesses, and government agencies, (which) may involve less risk to vulnerable people." Our role as researchers working with such organizations involves not just sharing failures in the spirit of openness, but also critically examining the 'successful' technology uses in an intervention.

Jacobsen [22] highlights this point in her study examining the introduction of biometric technology like iris scans or fingerprints at refugee camps to prevent 'double dipping' or the same person registering for 2 rounds of food. When deployed in the Mbera camp at Mauritania, 6500 refugees became ineligible for assistance, with some researchers finding that applicants' refugee status was questioned before considering technology failure. The more serious issue, however, arose from the technologies success, which led to the creation of a digital refugee persona that could be tracked across time and even linked with other anti-terror endeavours or databases. In fact, there were reported cases of refugees burning or altering their fingertips when confronted with biometric systems. Jacobsen argues that a 'lessons learned' approach is sufficient for technology failures as it accepts responsibility for the harm caused while minimizing difficulties in future deployments, but altogether inadequate for successful technology uses that give rise to attendant risks such as the creation of a digital refugee. In the following sections, we look at how our real-time monitoring uncovered several harms arising from the policies adopted by CGNet Swara.

6.1 Impact Metrics

The first point of concern in our study relates to the earmarking strategies employed by funders, which can hinder relief efforts in a crisis. During the crisis, CGNet reported 123 impact reports in 2 months, a smashing success in terms of their reporting requirements to funders (who linked disbursal of funds with these reports, which averaged 40-45 per quarter before the emergence of the virus). CGNet's logical obsession with generating impact reports led to some contributors recording an impact just to satisfy staff members, who would keep following up with multiple calls until an impact was recorded. "What gets measured gets done" is a management dictum that has stood the test of time, and the focus on impact reports led to other metrics such as amount of food given not even being considered, although they may have fostered deeper relations between digital volunteers and those in need of assistance. Jacobsen [22] also highlights these dangers in her discussion of how member states earmark funds for biometric systems, which force the UNHCR to develop these systems even if they do not believe them to be effective.

6.2 Disclosure Policies

A second point of concern is the balance between the transparency required in CGNet's grievance redressal model and the privacy expectations of its users. The name and phone number of the contributor requesting aid is publicly posted on CGNet's website so that volunteers are able to easily connect with them. However, they were flooded with phone calls and in one case a police constable threatened the contributor for reporting on the platform. This also resulted in unreliable estimates of impact as contributors sometimes reported their grievance as being resolved simply to avoid getting any more phone calls. Female volunteers encountered 'creeps' who initially provided them leads for resolving the grievance they had taken on, but then messaged them inappropriately and called their number repeatedly. These incidents highlight the need to clearly communicate disclosure policies during a crisis, where there may be many first time users without prior experience of the system.

During the 2010 Haiti earthquake, Mission 4636 (which received requests for help via text message) and UShahidi (which geolocated these requests on a map) broke off their collaboration after disagreement on disclosure protocols [34]. Mission 4636 declined to publish the messages on any public platform, while UShahidi not only included the messages but also personal identifiers within it such as names and typed phone numbers. Munro lamented that as a result of this collaboration, "some people who did not receive any aid, nonetheless had their identities logged by a foreign security

agency... as a result of sending a message to 4636." UShahidi believed it to be acceptable if people knew they were sending messages to a public map, which is a similar stance taken by CGNet. However, this position is complicated by the fact that the majority of contributors during the lockdown were using the platform for the first time and did not understand the implications of their messages being put online. Moreover, many powerful actors actively manage public perception during a crisis, resulting in heightened risk to those challenging the public narrative.

6.3 Verification Standards

The principle of impartiality, that similar groups should be treated similarly, is well-accepted humanitarian practice. However, the high variance observed in verification methods is in breach of this principle. One volunteer said they transfer money directly to shopkeepers to reduce chance of leakage, another said they would ask a friend in the area to check on whether the grievance is genuine. One CGNet staff member even mentioned that they try to gauge the desperation in someone's voice and whether they repeatedly call to ascertain whose need is genuine. The absence of standard operating procedures for verifying grievances resulted in a lottery for those needing help, where the lucky few enjoy lax verification while others are arbitrarily subject to stringent requirements.

In our study, an extending organization worked with emergent groups of digital volunteers to help vulnerable communities stranded by the sudden imposition of a lockdown. As neither extending organizations nor emergent groups have experience or protocols for dealing with crisis situations, we expect a greater likelihood of inadvertent harm from such collaborations. At the same time, inaction is also an ethically dubious proposition, as extending organizations need to help communities they have been working with over many years in a time of dire need. By looking at the activities of a citizen journalism platform during the COVID-19 induced lockdown in India, we have tried developing signposts to mitigate the harm that might occur when other organizations pivot to crisis and domain management. Specifically, we have found a need for real-time monitoring and to reassess impact metrics, verification standards and disclosure policies.

7 CONCLUSION

This paper documents a system where grievances reported on an IVR platform are shared with teams of digital volunteers, who then work with the contributors reporting the grievance to help resolve it. The idea revolves around the fact that digital volunteers have certain skills, tools and networks at their disposal that they could use to assist the individual reporting the grievance, who might lack those attributes due to socio-economic factors. In addition to the benefit of resolving more grievances, this initiative also provided good exposure to digital volunteers on the struggles faced by those less fortunate than them.

This concept was deployed into a practical system for grievance redressal during the COVID-19 pandemic. After the Indian government announced a three week lockdown (later extended to nine weeks), an IVR grievance redressal platform began getting inundated with requests from migrants for food supplies and help in returning to their village. To deal with the deluge of grievances, the IVR platform activated WhatsApp groups with volunteers, mostly students, who helped resolve these grievances.

The results presented warrant further consideration towards actively developing a corp of digital volunteers that can enhance the work and impact of grievance redressal platforms. The IVR platform recorded 123 impact stories during a 7 week lockdown period, many with the help of digital volunteers and follow up team staff members whose job it is to work on resolving grievances. The overall weight of evidence suggests that grievance redressal platforms can benefit from engaging digital volunteers as it would not only help them resolve more grievances, but also add a civic dimension to their impact by developing the social consciousness of urban citizens.

At the same time, care needs to be taken for ensuring there are standard operating procedures for verifying and following up on grievances, in addition to defining the right impact metrics. The system also saw several intractable issues such as stalking of female volunteers and threats or harassment of contributors whose grievance had been publicly posted.

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REFERENCES

[1] Anindita Adhikari, Navmee Goregaonkar, Rajendran Narayanan, Nishant Panicker, and Nithya Ramamoorthy. 2020. Manufactured Maladies: lives and livelihoods of migrant workers during COVID-19 lockdown in India. *The Indian Journal of Labour Economics* 63, 4 (2020), 969–997.

[2] Anindita Adhikari, Rajendran Narayanan, Sakina Dhorajiwala, and Seema Mundoli. 2020. 21 days and counting: COVID-19 lockdown, migrant workers, and the inadequacy of welfare measures in India. (2020).

[3] Daniel Auferbauer and Hilda Tellioğlu. 2019. Socio-technical Dynamics: Cooperation of Emergent and Established Organisations in Crises and Disasters. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–13.

[4] Lauren E Barsky, Joseph E Trainor, Manuel R Torres, and Benigno E Aguirre. 2007. Managing volunteers: FEMA's Urban Search and Rescue programme and interactions with unaffiliated responders in disaster response. *Disasters* 31, 4 (2007), 495–507.

[5] Erin Brady, Meredith Ringel Morris, and Jeffrey P Bigham. 2015. Gauging receptiveness to social microvolunteering. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. 1055–1064.

[6] Virginia Braun and Victoria Clarke. 2006. Using Thematic Analysis in Psychology. *Qualitative research in psychology* 3 (Jan. 2006), 77–101. https://doi.org/10.1191/1478088706qp063oa

[7] David Campbell. 1998. Why fight: Humanitarianism, principles, and post-structuralism. *Millennium* 27, 3 (1998), 497–521.

[8] Kalyani Chadha and Linda Steiner. 2015. The potential and limitations of citizen journalism initiatives: Chhattisgarh's CGNet Swara. *Journalism Studies* 16, 5 (2015), 706–718.

[9] Dipanjan Chakraborty and Aaditeshwar Seth. 2013. A participatory video and audio platform for community interaction using DVDs and IVR systems. In *Proceedings of the 3rd ACM Symposium on Computing for Development*. 1–2.

[10] Camille Cobb, Ted McCarthy, Annuska Perkins, Ankitha Bharadwaj, Jared Comis, Brian Do, and Kate Starbird. 2014. Designing for the deluge: understanding & supporting the distributed, collaborative work of crisis volunteers. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. 888–899.

[11] Kate Crawford and Megan Finn. 2015. The limits of crisis data: analytical and ethical challenges of using social and mobile data to understand disasters. *GeoJournal* 80, 4 (2015), 491–502.

[12] Dharma Dailey and Kate Starbird. 2014. Journalists as crowdsourcerers: Responding to crisis by reporting with a crowd. *Computer Supported Cooperative Work*

(CSCW) 23, 4-6 (2014), 445–481.

[13] Christopher A Le Dantec and Carl DiSalvo. 2013. Infrastructuring and the formation of publics in participatory design. *Social Studies of Science* 43, 2 (2013), 241–264.

[14] Andy Dearden. 2012. See no evil? Ethics in an interventionist ICTD. In *Proceedings of the fifth international conference on information and communication technologies and development*. 46–55.

[15] Andy Dearden and Dorothea Kleine. 2021. Interdisciplinarity, self-governance and dialogue: the participatory process underpinning the minimum ethical standards for ICTD/ICT4D research. *Information Technology for Development* 27, 2 (2021), 361–380.

[16] John Dewey and Melvin L Rogers. 2012. *The public and its problems: An essay in political inquiry*. Penn State Press.

[17] Nancy Fraser. 1990. Rethinking the public sphere: A contribution to the critique of actually existing democracy. *Social text* 25/26 (1990), 56–80.

[18] Bev Gatenby and Maria Humphries. 2000. Feminist participatory action research: Methodological and ethical issues. In *Women's Studies International Forum*, Vol. 23. Elsevier, 89–105.

[19] Jürgen Habermas, Sara Lennox, and Frank Lennox. 1974. The public sphere: An encyclopedia article (1964). *New German Critique* 3 (1974), 49–55.

[20] Vaughn Hester, Aaron Shaw, and Lukas Biewald. 2010. Scalable crisis relief: Crowdsourced SMS translation and categorization with Mission 4636. In *Proceedings of the first ACM symposium on computing for development*. 1–7.

[21] Aishwarya Iyengar and Anirudha Joshi. [n. d.]. Evaluating Anonymous Social Networking for HIV Patients with Social Prototypes. ([n. d.]).

[22] Katja Lindskov Jacobsen. 2015. *The politics of humanitarian technology: good intentions, unintended consequences and insecurity*. Routledge.

[23] Mira Johri, Sumeet Agarwal, Aman Khullar, Dinesh Chandra, Vijay Sai Pratap, Aaditeshwar Seth, et al. [n. d.]. The first 100 days: how has COVID-19 affected poor and vulnerable groups in India? *Health promotion international* ([n. d.]).

[24] Dorothea Kleine and Tim Unwin. 2009. Technological revolution, evolution and new dependencies: What's new about ICT4D? *Third World Quarterly* 30, 5 (2009), 1045–1067.

[25] Daniel Lambton-Howard, Robert Anderson, Kyle Montague, Andrew Garbett, Shaun Hazeldine, Carlos Alvarez, John A Sweeney, Patrick Olivier, Ahmed Kharrufa, and Tom Nappey. 2019. WhatFutures: Designing Large-Scale Engagements on WhatsApp. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–14.

[26] Thomas Ludwig, Christian Reuter, and Volkmar Pipek. 2016. From publics to communities: Researching the path of shared issues through ICT. *Computer Supported Cooperative Work (CSCW)* 25, 2-3 (2016), 193–225.

[27] Meghana Marathe, Jacki O'Neill, Paromita Pain, and William Thies. 2015. Revisiting CGNet Swara and its Impact in Rural India. In *ICTD*.

[28] Meghana Marathe, Jacki O'Neill, Paromita Pain, and William Thies. 2016. ICT-enabled grievance redressal in Central India: A comparative analysis. In *Proceedings of the Eighth International Conference on Information and Communication Technologies and Development*. 1–11.

[29] Aparna Moitra, Vishnupriya Das, Archna Kumar, and Aaditeshwar Seth. [n. d.]. Moitra, Aparna and Das, Vishnupriya and Vaani, Gram and Kumar, Archna and Seth, Aaditeshwar.

[30] Aparna Moitra, Archna Kumar, and Aaditeshwar Seth. 2021. An Analysis of Impact Pathways Arising from a Mobile-based Community Media Platform in Rural India. *arXiv preprint arXiv:2104.07901* (2021).

[31] Gaia Mosconi, Matthias Korn, Christian Reuter, Peter Tolmie, Maurizio Teli, and Volkmar Pipek. 2017. From facebook to the neighbourhood: Infrastructuring of hybrid community engagement. *Computer Supported Cooperative Work (CSCW)* 26, 4-6 (2017), 959–1003.

[32] Preeti Mudliar and Jonathan Donner. 2015. Experiencing interactive voice response (IVR) as a participatory medium: The case of CGNet Swara in India. *Mobile Media & Communication* 3, 3 (2015), 366–382.

[33] Preeti Mudliar, Jonathan Donner, and William Thies. 2012. Emergent practices around CGNet Swara, voice forum for citizen journalism in rural India. In *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development*. 159–168.

[34] Robert Munro. 2013. Crowdsourcing and the crisis-affected community. *Information retrieval* 16, 2 (2013), 210–266.

[35] Dhiraj Murthy. 2013. New media and natural disasters: Blogs and the 2004 Indian Ocean tsunami. *Information, Communication & Society* 16, 7 (2013), 1176–1192.

[36] Leysia Palen, Kenneth M Anderson, Gloria Mark, James Martin, Douglas Sicker, Martha Palmer, and Dirk Grunwald. 2010. A vision for technology-mediated support for public participation & assistance in mass emergencies & disasters. *ACM-BCS Visions of Computer Science 2010* (2010), 1–12.

[37] Leysia Palen and Sophia B Liu. 2007. Citizen communications in crisis: anticipating a future of ICT-supported public participation. In *Proceedings of the SIGCHI conference on Human factors in computing systems*. 727–736.

[38] Leysia Palen and Sarah Vieweg. 2008. The emergence of online widescale interaction in unexpected events: assistance, alliance & retreat. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work*. 117–126.

[39] Chul Hyun Park and Erik W Johnston. 2019. Intentionally building relationships between participatory online groups and formal organisations for effective emergency response. *Disasters* 43, 3 (2019), 634–657.

[40] Neil Patel, Deepti Chittamuru, Anupam Jain, Paresh Dave, and Tapan S. Parikh. 2010. Avaaj Otalo - A Field Study of an Interactive Voice Forum for Small Farmers in Rural India. In *CHI*.

[41] Shan M Randhawa, Tallal Ahmad, Jay Chen, and Agha Ali Raza. 2021. Karamad: A Voice-based Crowdsourcing Platform for Underserved Populations. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–15.

[42] Nathaniel A Raymond. 2017. Beyond "do no harm" and individual consent: reckoning with the emerging ethical challenges of civil society's use of data. In *Group Privacy*. Springer, 67–82.

[43] Agha Ali Raza, Farhan Ul Haq, Zain Tariq, Mansoor Pervaiz, Samia Razaq, Umar Saif, and Roni Rosenfeld. 2013. Job Opportunities through Entertainment: Virally Spread Speech-Based Services for Low-Literate Users. In *CHI*.

[44] Agha Ali Raza, Rajat Kulshreshtha, Spandana Gella, Sean Blagsvedt, Maya Chandrasekaran, Bhiksha Raj, and Roni Rosenfeld. 2016. Viral spread via entertainment and voice-messaging among telephone users in india. In *Proceedings of the Eighth International Conference on Information and Communication Technologies and Development*. 1–10.

[45] Agha Ali Raza, Bilal Saleem, Shan Randhawa, Zain Tariq, Awais Athar, Umar Saif, and Roni Rosenfeld. 2018. Baang: A Viral Speech-based Social Platform for Under-Connected Populations. In *CHI*.

[46] Agha Ali Raza, Zain Tariq, Shan Randhawa, Bilal Saleem, Awais Athar, Umar Saif, and Roni Rosenfeld. 2019. Voice-Based Quizzes for Measuring Knowledge Retention in Under-Connected Populations. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–14.

[47] Christian Reuter, Oliver Heger, and Volkmar Pipek. 2013. Combining real and virtual volunteers through social media.. In *Iscram*.

[48] Christian Reuter and Marc-André Kaufhold. 2018. Fifteen years of social media in emergencies: a retrospective review and future directions for crisis informatics. *Journal of contingencies and crisis management* 26, 1 (2018), 41–57.

[49] Kristin Bergtora Sandvik, Katja Lindskov Jacobsen, and Sean Martin McDonald. 2017. Do no harm: A taxonomy of the challenges of humanitarian experimentation. *International Review of the Red Cross* 99, 904 (2017), 319–344.

[50] Lauren M Sauer, Christina Catlett, Robert Tosatto, and Thomas D Kirsch. 2014. The utility of and risks associated with the use of spontaneous volunteers in disaster response: a survey. *Disaster medicine and public health preparedness* 8, 1 (2014), 65–69.

[51] Arjen Schmidt, Jeroen Wolbers, Julie Ferguson, and Kees Boersma. 2018. Are you Ready2Help? Conceptualizing the management of online and onsite volunteer convergence. *Journal of Contingencies and Crisis Management* 26, 3 (2018), 338–349.

[52] Aaditeshwar Seth, Akshay Gupta, Aparna Moitra, Deepak Kumar, Dipanjan Chakraborty, Lamuel Enoch, Orlanda Ruthven, Paramita Panjal, Rafi Ahmad Siddiqi, Rohit Singh, et al. 2020. Reflections from Practical Experiences of Managing Participatory Media Platforms for Development. In *Proceedings of the 2020 International Conference on Information and Communication Technologies and Development*. 1–15.

[53] Marit Skar, Maria Sydnes, and Are Kristoffer Sydnes. 2016. Integrating unorganized volunteers in emergency response management. *International Journal of Emergency Services* (2016).

[54] Robert Soden and Leysia Palen. 2018. Informating crisis: Expanding critical perspectives in crisis informatics. *Proceedings of the ACM on human-computer interaction* 2, CSCW (2018), 1–22.

[55] Kate Starbird. 2012. *Crowdwork, crisis and convergence: How the connected crowd organizes information during mass disruption events*. Ph. D. Dissertation. University of Colorado at Boulder.

[56] Kate Starbird and Leysia Palen. 2011. " Voluntweeters" self-organizing by digital volunteers in times of crisis. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 1071–1080.

[57] Kate Starbird and Jeannie A Stamberger. 2010. Tweak the tweet: Leveraging microblogging proliferation with a prescriptive syntax to support citizen reporting.. In *ISCRAM*.

[58] Saiganesh Swaminathan, Indrani Medhi Thies, Devansh Mehta, Edward Cutrell, Amit Sharma, and William Thies. 2019. Learn2Earn: Using Mobile Airtime Incentives to Bolster Public Awareness Campaigns. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–20.

[59] John Twigg and Irina Mosel. 2017. Emergent groups and spontaneous volunteers in urban disaster response. *Environment and Urbanization* 29, 2 (2017), 443–458.

[60] Twitter. 2021. https://blog.twitter.com/en_in/topics/company/2021/update-india-covid-crisis.

[61] Aditya Vashistha. 2019. *Social Computing for Social Good in Low-Resource Environments*. Ph. D. Dissertation.

[62] Aditya Vashistha, Ed Cutrell, Gaetano Borriello, and William Thies. 2015. Sangeet Swara: A Community-Moderated Voice Forum in Rural India. In *CHI*.

[63] Aditya Vashistha, Ed Cutrell, Nicola Dell, and Richard Anderson. 2015. Social Media Platforms for Low-Income Blind People in India. In *ASSETS*.

[64] Aditya Vashistha, Abhinav Garg, Richard Anderson, and Agha Ali Raza. 2019. Threats, abuses, flirting, and blackmail: Gender inequity in social media voice forums. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–13.

[65] Nuwan Waidyanatha, Kasun Perera, Manoj Silva, Brenda Burrell, and Tichafara Sigauke. 2013. Useful and easy-to-use interactive voice for emergency data exchange. *info* (2013).

[66] Hua Wang, Aaditeshwar Seth, Mira Johri, Esha Kalra, and Arvind Singhal. 2021. Communication Infrastructure and Community Mobilization. *The Journal of Development Communication* 32, 2 (2021), 73–86.

[67] Himanshu Zade, Kushal Shah, Vaibhavi Rangarajan, Priyanka Kshirsagar, Muhammad Imran, and Kate Starbird. 2018. From situational awareness to actionability: Towards improving the utility of social media data for crisis response. *Proceedings of the ACM on human-computer interaction* 2, CSCW (2018), 1–18.