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Case study
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A study on Facebook and WhatsApp during Chennai floods 2015

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Abstract

In December 2015, unexpected floods occurred in Chennai, which was officially declared a disaster city, and was puzzled as to what Nature had for it next. The then isolated city had all its sources of communication cut, except access to Facebook and WhatsApp through mobile phones that enabled timely update on flood news and weather forecast, a way to connect with family and friends to ensure safety, putting out SOS signals and listing out worst-affected areas that needed volunteering and basic items such as food, water and other relief to the citizens. Chennai has 3.5 million (35 lakhs) Facebook users browsed through a smartphone. Likewise, WhatsApp is used as the top smartphone app by 96 per cent of people in India. Various features of it went viral in spreading information which brought food, clothing, shelter, support and love from all ends of the globe. Apart from individuals, non-governmental organizations (NGOs) and other stakeholders also used both Facebook and WhatsApp actively during the crisis. This paper aims to provide a better understanding of how NGOs used Facebook and WhatsApp to engage with the victims during Chennai floods 2015. The results revealed that Facebook was used by NGOs to reach out the public for getting help in the rescue, relief and rehabilitation for the victims. Whereas, WhatsApp was used by various organizations, police officials and volunteers to communicate with them once on the field and also off the field. With respect to residents of Kotturpuram, the use of WhatsApp for the above set indicators seemed more timely during Chennai flood 2015 than Facebook. The usage of these communication media had turned the citizens as activists and made them take control over the situation and bounce back to normalcy during Chennai floods 2015.

Keywords: citizens, disaster management, Kotturpuram, social media

1. Introduction and background

Facebook, which was set up in 2004, has India to be the world's largest Facebook user with over 195 million users, overtaking the US by over 4 million subscribers. With the 155 million Monthly Active Users (MAUs) in India, 147 million MAUs access Facebook via mobile phones and 73 million users are active daily on mobiles. It is no doubt that the rise of Facebook in India is power-driven by the mobile phone. Smart phone penetration in Indian cellular market has made 3.5 million (35 lakhs) Facebook users to access it from a phone in Chennai. Likewise, WhatsApp is used as the top smartphone app by 96 percent of people in India. Top social networking site Facebook transformed human interaction and began ruling online culture due to its multi-modal nature of communication which enabled instantaneous interaction. In India, WhatsApp has become the biggest market worth 200 million users.

Social media act as prominent, near real-time communication channels used to share information during the times of calamities and natural disaster (Paladin, Ramos and Capulong-Reyes, 2015; Simon, et al., 2014). During a disaster, many non-governmental organizations (NGOs) and individual volunteers form groups via WhatsApp to give an overview of the situation, to know about the requirements and problems and thus reach out to victims.

There are four distinct phases in disaster management, namely mitigation, preparedness, response and recovery (Yodmani and Hollister, 2001). This is the time when there is a need for proper information sharing with collaboration and coordination. For this, the technologies pave the way for such discussion about mitigation efforts, identification of potential hazards, connectivity between response organizations of all types, warning messages to the public, and diffusion of important disaster information (Fischer, 1998).

1.1 Chennai floods 2015

Chennai is situated on the Coromandel Coast of the Bay of Bengal and placed near the equator; the north-eastern monsoon drenches it from October till December. This makes January the coolest month of the year. Every year, it is a routine in India that low pressure which forms above the Bay of Bengal hits Andhra Pradesh, Odisha and West Bengal and causes floods, while Tamil Nadu suffers under droughts. When Chennai was ready to be prepared for yet another year of drought and water shortage, it was hit with a record-breaking rain since 1918, which led to massive floods in 2015. Rapid urbanization, illegal construction, and inadequate infrastructure were some of the fundamental flaws for the occurrence of Chennai floods.

The floods that hit the city in November–December 2015 are the worst unexpected natural calamity that hit Chennai in recent times. It all started with the consistent rains from November 8 which were followed by a severe one on November 23. The very first warning of “heavy rain” had been issued on November 28. By the end of November, the level in the Chembarambakkam reservoir, which is one of the city’s main water sources, had reached its limit. But the rain did not stop, and started again on December 1 making the city waterlogged receiving a record-breaking 272 mm of rainfall. With a heavy outburst, Chennai was officially declared a disaster city on December 2.

When Chennai became waterlogged by December, the Indian army and air force were deployed to carry forward the rescue operations. The deluge in Chennai was very much unanticipated thereby killing 400 people and damaging 100 000 structures. This includes patients who died after the failure of power and oxygen supplies. Floodgates were opened, Avadi Bridge collapsed, and people were stuck in their homes with their routine life affected. Access to basic amenities including water, food supply, and power was restricted. Many areas in Chennai, which were surrounded by floodwaters, had food packets being dropped to the terrace by the Indian navy. There was also a case of a 9-month pregnant woman who was aeri ally rescued and admitted to the hospital, and who later delivered twin girls. Educational institutions were closed for more than a month. Several city hospitals stopped functioning, train services and flights were canceled. The lakes overflowed and the rivers clear of sewage as never before. Rivers breached their banks leading to submerging of surrounding areas with water rising up to the second floor in some places. The usually busy Chennai city then came to a standstill and puzzled as to what Nature had for it next. Thus the December 2015 crisis made communication a major problem with the mobile networks and landlines going for a toss. The city

had all its source of communication cut, except access to Facebook and WhatsApp, with the power banks for rescue to charge them to get connected.

During a natural disaster, there is a severe damage to communication infrastructure (Low, et al., 2010). Phone switches and mobile phone towers might collapse, fully or partially, thus disrupting the much-needed communication (Palen and Liu, 2007). Several natural disasters may cause the entire communications grid to black out, as infrastructure is easily damaged (Stiegler, Tilley and Parveen, 2011). As the conventional means of communication during and immediately following a disaster are limited, alternative means such as social networks become an important conduit for information gathering and sharing (Hughes, et al., 2008; Bird, Ling and Haynes, 2012; Huang, Chan and Hyder, 2010). This is when social networks and mobile apps have served as major components of crisis response when all other communication failed.

Within minutes of the December 2015 Chennai floods, the word ‘Chennai floods’ was recorded in dozens of posts on Facebook. Witnessing the heaviest rainfall seen in a century during Chennai floods, Facebook came up with ‘safety check’ feature. The feature allowed its users to mark themselves as “safe” from the floods. By clicking on it ensured the safety of the user and marked “Yes, let my friends know” where the tool automatically notified to other friends of the user (Figure 1).

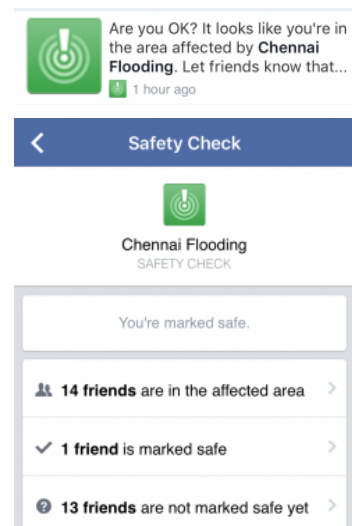


Figure 1: Facebook activated ‘safety check’ feature during Chennai floods 2015

Facebook offered the timely update on flood news to the weather forecast and a way to connect with family and friends to ensure their safety. The public communication on Facebook allowed coordinating with stranded people in water-logged areas. The emergency

contact numbers though circulated could not do much, due to weak signals. It was Facebook that directed to the 'go to' places. This helped in carrying forward the rescue effort quickly. From putting out SOS signals and listing out worst-affected areas that needed volunteering and to fulfil their basic requirements such as food, water and other relief material were possible through Facebook. The contribution on rescue and relief efforts also came from unknown people residing in different parts of the world to help the victims in the form of donations and communication. When the residents were being tormented by the heavy down-pour, Facebook was employed to bring back Chennai to normal by reassuring, warning, motivating, guiding and organizing. Despite the destruction all around, it was humanity that stood flawlessly with Facebook as the mediator making an army officer say that it was the first time he saw more volunteers than people who needed to be rescued.

Apart from individuals, NGOs and other stakeholders used Facebook actively during the crisis; NGOs like Chennai Rain Relief on Facebook came with basic tips on how to rescue people and lists of dos and don'ts. A few groups like The Pound, The Chennai Adoption Drive, and Blue Cross Chennai came to the rescue of many stranded animals through Facebook. These groups went to the level of providing medical care and temporary shelters and also helped in uniting estranged pets with their owners and also arranged homes for the homeless animals.

Another such real lifeline service like Facebook which was functional during the Chennai floods 2015 for stranded people was WhatsApp, which was especially used to send the text rather than to make or receive calls, upload photographs or videos and record audio or video. On December 2, when *The Times of India* journalist Latha Srinivasan was stranded along with many others at Global Hospital in OMR, all that was required from her was to send an SOS message on WhatsApp. By doing so, she was reached by the Public Works Department Minister who was informed by a senior official in the Tamil Nadu Government. Cases of stranded pregnant women, children and senior citizens were also routed through WhatsApp. The police officers also formed a WhatsApp group called Rescue Team to rescue stranded people. Employees at the Bank of Baroda at the Mudichur branch processed cash withdrawals of their customers although the lines were down. This was made possible by the bank official Seethalakshmi and her team. She went to the Tambaram branch and logged in where lines were up and with the help of her team who clicked pictures of the cheques on WhatsApp from the Mudichur branch, the customers could go back content with their money in their need of the hour.

Another WhatsApp message which went viral during Chennai floods 2015 was that of a dad and son. The son who is working in Mumbai had called his parents to come off to his place during the deluge as he did not want them to face inconvenience staying there. But the reply his father gave reflected the spirit of Chennai then. He said that escaping in such dire situation is not good and would like to lend a shoulder to the victims and that God would take care of them (Figure 2).

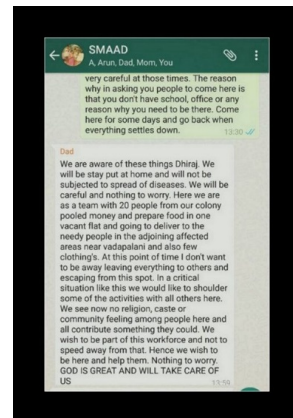


Figure 2: WhatsApp message shared between a dad and his son during Chennai floods 2015

According to Crouch (2011), the four primary ways that citizens use social media technologies during natural disasters are:

- family and friends communication – to connect with family members between affected and unaffected communities/areas (or within affected communities) for situation updates and planning responses,
- situation updates – neighbors and communities share critical information with each other such as road closures, power outages, fires, accidents and other related damage,
- situational/supplemental awareness – in a number of cases citizens rely less and less on authority communication, especially through traditional channels (television, radio, phone),
- services access assistance – citizens would use social media channels to provide each other with ways and means to contact different services they may need after a crisis.

1.2 Past natural disasters

In January 2011 during Victorian floods in Queensland, community-initiated Facebook groups instantly became active, followed by local residents along with their families and friends beyond the impacted areas. Gathering the data of local residents from the Bureau of Meteorology, State Emergency Service, Queensland and

Victorian Police Departments, local councils and news media, the administrators posted near-real-time information from the public in the group. In turn, Facebook members asked for help and advice and it was all the more useful for travelers passing through the area who could access information on road closures and flooding. Risk Frontiers surveyed the community groups CQ Flood Update-version 2 and Victorian Floods in Facebook on the usage of the group during the deluge to seek information. Social media could disseminate information and also act as a major resource to tap into and review informal communication (Bird, Ling and Haynes, 2012).

In February 2011, an earthquake occurred in Christchurch of the Canterbury region in New Zealand's South Island. This deadliest natural disaster caused damage across Christchurch killing 185 people. Twitter again acted as the fastest platform for disseminating information instantly through Twittersphere along with images and video of the destruction. The hashtags #eqnz and #chch went viral in circulating tweets among the community on the safety of individuals, families and schools (Seitzinger, 2010).

When in March 2011 Tohoku Earthquake and Tsunami ruined Japan, Facebook and Twitter were used as major means of communication. Soon after the disaster struck, the word 'Japan' was recorded in dozens of posts on Facebook and Facebook infographics. It was also used for 'Smile for Japan', a fundraising event for Tohoku Earthquake/Tsunami. Twitter had 1200 tweets per minute coming from Tokyo Tweet-o-Meter. Apart from these, YouTube had 16 000 videos uploaded in a few hours following the earthquake. Real-time updates were got from Tumblr and Google Earth which showed damaged areas (Taylor, 2011).

In October 2012, Hurricane Sandy ravaged the coastal Mid-Atlantic States and by that time, social media had become very popular among the people. Disaster response was carried out through Twitter, Facebook and Instagram. These platforms helped to keep informed, locate families and friends and notify authorities and express support. According to analytics firm Topsy, there were over 3.2 million tweets with the hashtag #sandy being sent by users in 24 hours (Loeb, 2012). In case of Facebook, the top 10 search terms during the height of the storm were "stay safe / be safe," "prayers / praying," and "my friends" and after storm terms were like "we are ok," "hope everyone is ok," and "made it". Instagram for its part had people posting 10 pictures of hurricane each second during the height of the storm. Google created Hurricane Sandy Map specific to New York City. This map was designed exclusively for location tracking, locations of shelters, recovery centers, public alerts, present and forecasted paths, evacuation

notices, storm warnings, weather information, and live webcams. In 2013, the Federal Emergency Management Agency (FEMA), in its National Preparedness report wrote on how despite no mobile phone service, 20 million Sandy-related "tweets" filled up Twitter. During Hurricane Sandy, New Jersey's largest utility company, PSE&G overused Twitter feeds to send word about the daily locations of their giant tents and generators (Maron, 2013).

2. Methods

This study adopted both qualitative and quantitative approaches. Besides textual analysis, semi-structured interviews with creators of NGOs Facebook pages and WhatsApp groups were carried out to know their usage. A survey questionnaire was also distributed among the residents of Kotturpuram, a worst affected area in Chennai, where information, real-time operational information, situational updates, emotional appeal, and trustworthiness were set as the indicators to know the reach of the both media. According to Yates and Paquette (2011), social media has been identified as one of the potential tools for sharing information during a disaster.

According Fosso Wamba and Edwards (2014) and Houston et al. (2015), real-time operational information and situational updates are ensured by social media which provide up to date information. Choi and Lin (2009) said emotional support was sought through social media followers during a disaster. Lastly, the public's pre- and post-disaster trust of social media, level of engagement with social media during disasters, and behavior and attitude change intentions as a consequence of social media exposure (Jin and Liu, 2010; Murdough, 2009). Thus, these indicators help to make better decisions to handle the disaster response effectively.

The Facebook page of an NGO which made a difference during Chennai floods 2015 is chosen depending on the highest number of likes it had got. Further, one post is chosen for each day with the highest number of 'likes', from the time period of 1 to 20 December 2015, for which the texts are analyzed.

In the same way as mentioned above, 'Chennai Volunteers' Facebook page <https://www.facebook.com/chennaivolunteers/> was chosen with the highest number of 'likes' being 10 807. 'Chennai Volunteers' is a social initiative launched by Bhoomika Trust and Mecheri Foundation in August, 2011. They aim to nurture civic engagement and ensure that non-profits can engage with volunteers in a sustainable and meaningful way, thereby enriching the experience of both the partners.

3. Results and discussion

The results reveal that the use of WhatsApp for indicators like information, real-time operational information, situational updates, emotional appeal, and trustworthiness were timely during Chennai flood 2015 among the residents of Kotturpuram. Viewed from the perspective of the flood victims of Kotturpuram, it is found that they were comfortable and accessible more with WhatsApp than Facebook. It is also clear that Facebook was used by NGOs to reach out the public for getting help in rescue, relief and rehabilitation for the victims. Apart from that, again WhatsApp was used by various organization, police officials and volunteers to communicate with them once on the field and also off the field.

3.1 Posts on the Facebook page

There were a total of 39 posts in the Facebook page of 'Chennai Volunteers' from 1 to 20 December 2015. In this time period, one post is chosen for each day with the highest number of 'likes', for which the texts are analyzed.

1 December 2015

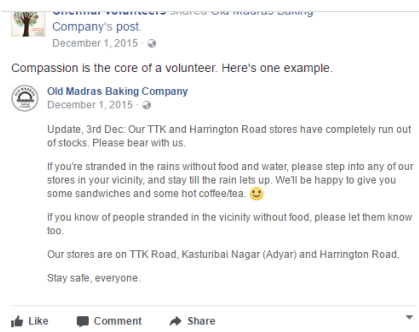


Figure 3: Update of information by 'Chennai Volunteers'; 60 likes, 1 share

The post was an incident update of how Old Madras Baking Company's branch Harrington Road and TTK road were inviting people who were stranded in rain with sandwiches and hot coffee/tea. This post sets an example of humanity and lifts the spirit of Chennai.

2 December 2015

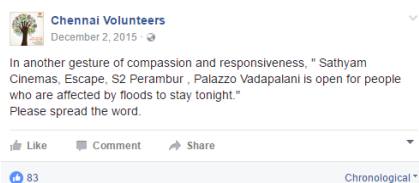


Figure 4: Image update of information by 'Chennai Volunteers'; 83 likes

The post was spreading the message that Sathyam Cinemas, Escape, S2 Perambur and Palazzo Vadapalani were open for people who were affected by floods to stay in a gesture of compassion and responsiveness.

3 December 2015



Figure 5: Photograph of victims collecting medicines and provisions; 18 likes

The post was a series of seven photographs. It shown volunteers visiting the victims and distributing them medicines, provisions and spreading smiles. The victims were shown desperate.

4 December 2015

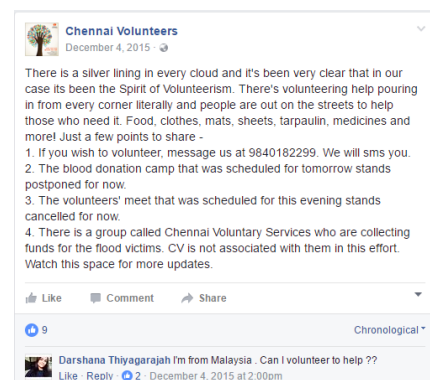


Figure 6: Calling for volunteers; 9 likes

The post was calling for volunteers to help the victims during Chennai floods 2015. It also informed on the postponement of the blood donation camp which was scheduled the next day.

5 December 2015

The post shared the various activities of the 'Chennai Volunteers' were into, like information on setting up of a community kitchen at Narada Gana Sabha, followed by a work session at the central hub of relief activity in Chennai, #chennaiainrelief2015 control room and a community kitchen for 20 000 people, then about Loyola College which was converted into a relief camp and finally a late evening center for packing dry provi-

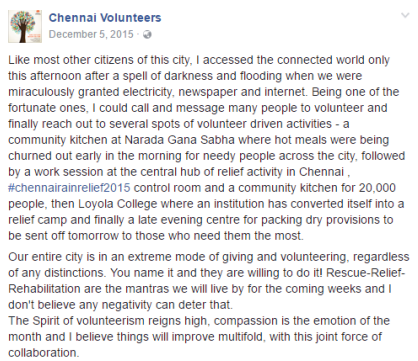


Figure 7: Update of information by 'Chennai Volunteers'; 94 likes, 40 shares, 5 comments

sions to be sent off the next day to those who needed them the most. The post was spreading the spirit of volunteerism and compassion towards each other where rescue-relief-rehabilitation were the mantras for the upcoming weeks then.

6 December 2015



Figure 8: The dos and don'ts during Chennai floods 2015; 29 likes

The post was the link to the dos and don'ts for Chennaites to stay healthy during Chennai floods 2015. This included 13 important dos and don'ts with easy language represented using visuals. It read "avoid contaminated water, use boil water, wash hands, cover open wounds, use mosquito repellents, don't touch open wire, avoid well water, don't use food standing for two hours, get rid of garbage, throw cooked food, bathe regularly, ensure vaccination and don't allow your pets to be outside".

7 December 2015

The post was a thanking the volunteers of Chennai Rain Relief 2015. It also welcomed more such volunteers who were in need for the community kitchens to

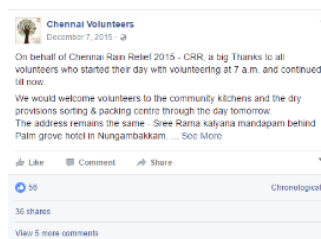


Figure 9: Thanking the volunteers; 56 likes, 35 shares, 5 comments

sort the dry provisions and pack it for the next day. The comments were by the members who were willing to volunteer and were asking for more information like time and date.

9 December 2015



Figure 10: Photograph of Bharath who lost his life during Chennai floods 2015; 650 likes, 465 shares, 21 comments

The post was an article link which read "Chennai Fallen Hero". The article was about a brave young volunteer Bharath from Saidapet who lost his life during Chennai floods 2015. He was pulled away by the current of water and fell into a manhole during the rescue operation. The article link had his photograph where he smiled and showed the symbol of victory. It said India lost a brave young man. The article immersed a feeling of guilt for people who were not helping the victims and a great sense responsibility. The comments and article endings read 'RIP'.

11 December 2015



Figure 11: Photograph of volunteers in action; 61 likes, 33 shares, 3 comments

This was a series of 15 photos of the compassionate volunteers of ‘Bhoomika Trust’ in sorting, packing and sending relief materials.

13 December 2015



Figure 12: Poster requesting to contribute for ration kits/ cooking vessels for the victims; 14 likes

This post was a poster requesting to support the victims by contributing to ration kits/cooking vessels for family/combined ration and vessel kit. On a white and green background with a watermark of the victims behind it read the list and cost of ration kits/cooking vessels.

14 December 2015



Figure 13: Photograph of volunteers in action; 23 likes

This particular post is the attachment of a photograph of volunteers involved in segregating and packing of relief materials. It said “Every volunteer minute counts in making a difference”. By doing so, ‘Bhoomika Trust’ gives importance to each of its volunteers in contributing their time and thus making a difference.

16 December 2015

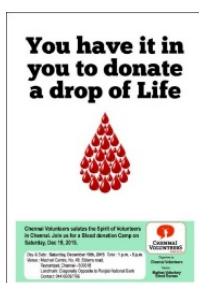


Figure 14: Poster on calling blood donors; 25 likes, 37 shares

This post is an attachment of a poster calling for blood donors to donate blood for children suffering from Thalassemia. ‘Bhoomika Trust’ mentioned that it wanted to make a big difference in the lives of many young ones. It also kindled the positivity by referring ‘Chennai Volunteers’ saluting the spirit of volunteers in Chennai.

18 December 2015

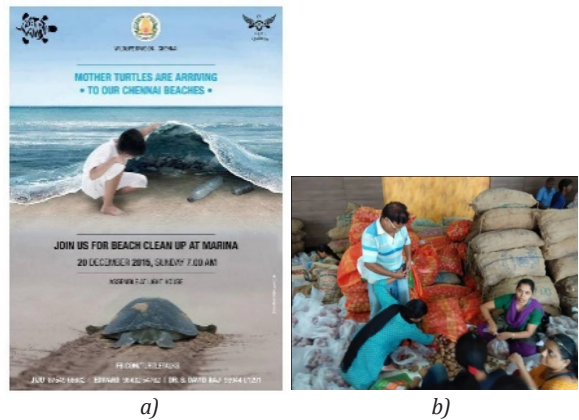


Figure 15: Poster on calling volunteers to clean ‘Marina’ (a), and photograph of volunteers in action (b); 39 likes, 103 shares

The post comprised snapshots of three posters and two photographs filled with positivity and action. It called for volunteers to work with Bhoomika Trust, giving the time, dates, venue and contact number. The poster was calling for volunteers to clean the ‘Marina’ beach and donors to donate blood. Another poster was a collage of volunteers involved in cleaning process in the areas affected by Chennai floods 2015. The photographs included packing of dry provisions and passing it over.

20 December 2015



Figure 16: Photograph of social work students being briefed by ‘Bhoomika Trust’; 14 likes, 1 share, 1 comment

The post is a series of eight photographs of social work students who were being briefed by Bhoomika Trust before they left for a re-assessment of relief needs across 25+ areas in Chennai. These photographs

indicate that the volunteers were ready to roll up their sleeves for action with a van boarded with relief items despite the sunny day then. The effort taken by Bhoomika Trust was the post-flood relief offered to the victims. The post mentioned it as a rare snap having the volunteers (field heroes) and silent force of Bhoomika Trust (authorities in the photo) in the same lens. It also called for more volunteers to show that Chennai cares. The post mentioned that it looks forward to friends and families to assemble at the central hub at 'Sree Rama Kalyana Mandapam', Nungambakkam. The single comment was an enquiry by a member willing to join the volunteering team.

3.2 The survey

Apart from the textual analysis of the NGOs Facebook posts, a survey was conducted among 102 residents of Kotturpuram where information, real-time operational information, situational updates, emotional appeal, and trustworthiness were set as the indicators to know the reach of Facebook and WhatsApp during Chennai floods 2015.

The survey resulted that 94.7 % survey participants were not a member of any Facebook page, and 66.7 % were a member of some WhatsApp group during Chennai floods 2015.

With respect to information, it was WhatsApp that was used to send, receive and forward information about oneself to family and friends. It was also useful to record audio/video.

Real-time operational information results that the WhatsApp was used to know about weather forecasts, evacuation or road closures, public transports, power supply, water supply and to provide disaster response, recovery, and rehabilitation.

Situational updates had WhatsApp being useful to know about warnings and state of emergency declaration, locating flooded areas using crisis maps, requesting for rescue and relief efforts, contributing for rescue and relief efforts, knowing about personal safety, health and hygiene, knowing about working of schools, colleges and offices and useful to read on dos and don'ts during a disaster.

The survey found that it was again WhatsApp which fulfilled the emotional appeal. It was used to provide and receive disaster mental/behavioral health support, to express emotions, concerns, well-wishes, to thank volunteers, neighborhood's citizens, Government and also to express anger towards Government illegal constructions, and bureaucrats. In case of trustworthiness, survey resulted that both Facebook and WhatsApp mis-

led users. But at the same time, WhatsApp had proved to be a trustworthy medium which contributed to one's safety.

The reach of WhatsApp has been so successful among the residents of Kotturpuram with 41.2 % expressing the ease of use, other factors found are presented in Figure 17.

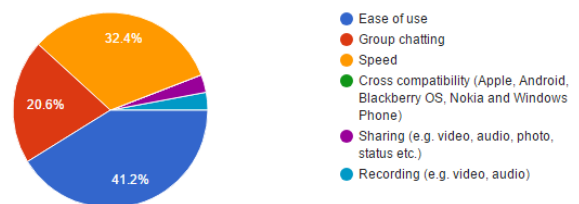


Figure 17: Representation of factors by which WhatsApp was successful among the residents of Kotturpuram during Chennai floods 2015

Thus WhatsApp has proved to be the best medium to have reached the residents of Kotturpuram during the Chennai floods 2015 with 70.6 % opting for WhatsApp.

3.3 Semi-structured interviews

To understand the organizations' point of view, six experts were interviewed to know about the usage of Facebook and WhatsApp during Chennai floods 2015. They were owners of organizations, editor of a reputed Tamil newspaper, a police officer and a senior volunteer.

Rinku Mecheri

Rinku Mecheri is a dynamic, optimistic, bold and hardworking woman who is the founder of 'Chennai Volunteers'. 'Chennai Volunteers' is a social initiative that aims to foster civic engagement and ensure that non-profits can engage with volunteers in a sustainable and meaningful way. The initiative, along with Mecheri Foundation, has partnered with over 70 NGOs providing service needs.

During Chennai floods 2015, 'Chennai Volunteers' was part of the volunteering activity run by 'Chennai Rain Relief' of Bhoomika Trust. Rinku Mecheri shared about the various contributions their team was involved in rescue and relief efforts. She said rescue, relief and rehabilitation are the three aspects considering Chennai floods 2015. In case of the rescue, 'Chennai Volunteers' helped only in coordination, as mentioned she did not have trained people. So, they set up call centers and informed corporation, boat service and other people on the need. For the relief, 'Chennai Volunteers' facilitated the materials that were passed on to them by the people for the victims. It included

some of the corporates, who as part of their Corporate Social Responsibility (CSR) gave away relief materials including Coke, water, Minute Maid juice, dry milk, oats, salt and sugar. Apart from that, she said 'Chennai Volunteers' along with 'Chennai Rain Relief' set up a large-scale kitchen with a huge space provided at Rama Kalyana Mandapam. It was the rehabilitation that was done partnering with many NGOs. She added that relief camp was set in 'Chennai Volunteers' office space too.

She emphasized that without their Facebook pages and WhatsApp groups any contribution would not have been possible. According to her, Facebook was an excellent medium to reach people for giving and receiving updates. 'Chennai Volunteers' gathered relief volunteers, donors, etc., during the deluge only through these platforms. It included short term and long term volunteers, celebrity volunteers like Suhasini Maniratnam (actress), T.M. Krishna (singer), Anil Srinivasan (pianist) and many more. #Chennai Rain Relief, #Bhoomika Trust and #Chennai Volunteers were the hashtags that were used to reiterate the messages. For her, WhatsApp was action oriented, personalized and an active response mechanism.

When asked about the how mainstream media had to take a back seat during the deluge, she said it was due to the time lap in broadcasting which made the social media stand out.

Lastly, she ended up saying that Chennai floods 2015 were because of climate change for which we were not been prepared mentally or physically then.

Aruna Subramaniam

Aruna Subramaniam is a founder of 'Bhoomika Trust'. 'Chennai Rain Relief' is an initiative of a group of dedicated individuals and organizations which includes 'Bhoomika Trust', 'Sri Arunodayam', 'Aid India', 'Udhavum Ullangal', 'Bhumi', 'Chennai Volunteers', 'CIOSA', and more. This group got together to reach out to those adversely affected by the heavy rainfall and flooding in Chennai, starting off by guiding people who needed help in terms of rescues, as well as providing cooked food and dry rations.

Aruna Subramaniam said that both Facebook and WhatsApp played a vital role during Chennai floods 2015. She recollected how 'Bhoomika Trust' along with many other NGOs set up a control station on which they were communicating with the Government for rescue and relief efforts. She said that it was only through Facebook and WhatsApp that the information of the stranded people were verified and send across. She exclaimed that the shares, comments and forwards of flood rescue and relief messages which were done

through 'Bhoomika Trust' Facebook page, her personal Facebook page and WhatsApp groups made a huge difference. It made many unknown people wanting to help the victims and almost a 10 000 volunteers to work for them which was phenomenal.

She wanted to mention about her important donor 'Christie's' who is an international auction house to hold annual sales, reinforcing longstanding commitment to the artistic and cultural heritage of a region. World's largest arts auction house, Christie's held its third consecutive contemporary India art sale in Mumbai on 15 December 2015, which for the first time had a dedicated section on classical art. During Chennai floods 2015, Christie's came to know about the disaster through their Facebook page and came forward to help them in auctioning around 1 000 000 (10 lakhs) for the cause. Aruna Subramaniam said that this was possible only because of social media.

When asked about the rehabilitation work they were up to, she said it included repainting of buildings, renovating schools, classrooms, school toilets, libraries and flooring. Apart from this they have released a booklet on how one should be prepared if there is a flood which is collaborative initiative of 'Bhoomika Trust' and 'Dinamalar' Tamil newspaper.

Lastly, she added "Chennai is the most disaster-prone in terms of climatic condition in the country because we are in the sea level. Every disaster provides an opportunity. So it is important to learn how not to encroach and how to unclog waterways. Anyway, it is going to take a decade to restore things which only government and NGOs like us can implement it".

Dr. Srimathy Kesan

Dr. Srimathy Kesan is the Director of Space Kidz India. She is a senior volunteer having her own group of volunteers to do volunteering services. They also have partnered with many NGOs.

During Chennai floods 2015, her community gathered relief volunteers and donors only through Facebook and WhatsApp. She said her donors included 'Big Basket', Illayaraja (film composer), Maria Zeena (Director, Sathyabama University), T.R. Rajagopalan (Senior Advocate), Aquafina, Nutrin, Parry and many more. She said her group also helped in evacuating water in MCN Higher Secondary School. She added unknown people willingly donated notebooks, milk powder, Horlicks sachets, etc., which happened only because of their WhatsApp group 'Chennai Version 2.0'. Their community was also involved in conducting a medical camp for the students of MCN Higher Secondary School, cleaning of classrooms in Kodambakkam Government

aided School and rescuing the boys of Juvenile Home at Kellys. Constant updating on her Facebook page also made many volunteers and also donors to help numerously. She was happy to share that one of their rehabilitation efforts included buying books and coaching a girl from Kotturpuram for her Civil Service examination which was cleared by her.

She ended up saying that the Chennai floods 2015 left them with a terrible scar as they lost their group member Bharath who fell into a manhole, pulled away by current of water during rescue operation.

Bharathi Tamizhan

Bharathi Tamizhan is the Online Editor of *The Hindu* (Tamil). He talked about the 'Chennai Rising', 'The Hindu volunteers', 'Go Green volunteers' initiatives by *The Hindu* (Tamil) and a group of volunteers to help the victims with rescue and relief efforts. He told a rescue and relief camp near Chepauk cricket stadium, at a place called Blue Gate was set up. There, three godowns were taken and covered with shamiana where nearly 400–500 relief volunteers worked like for a marriage function. Following this, owners of Ispahani Center Mall, Anna Salai also gave their new building to use it for a warehouse purpose during the Chennai floods 2015 for them.

He said, the Facebook page of *The Hindu* (Tamil) has created a lot of impact among users. During Chennai floods 2015, they listed the needs of the flood victims to their readers and users through the paper, online, website, Facebook page and requested them to contribute whatever they could. The amount of response they received was unimaginable. He said they managed to distribute Rs. 120 million (Rs. 12 crore) worth relief materials to the flood victims of over 200 000 (2 lakhs) families with the help of their volunteers.

Peter Van Getit

Hailing from Belgium, Peter Van Getit has made Chennai his home for the last 17 years. Founder of the 'Chennai Trekking Club', a 26 000 member non-profit

volunteer-based group which organizes outdoors, adventures, sports and environmental conservation activities throughout the year for people.

The 'Chennai Trekking Club', very spontaneously set up a relief effort camp during Chennai floods 2015 in a School in East Tambaram. They collected and distributed relief materials like dhoti, saree, rice, pulses, blankets, medicines which could suffice a family. He said they took pictures of the worst affected areas during Chennai floods 2015 and posted it via Facebook and WhatsApp. This went viral and made many volunteers to join for the cause. Hashtags #Chennai Rains and #Green Chennai were used constantly to update about rescue, relief and restoration in the city.

Lastly, he said that since the volunteers of 'Chennai Trekking Club' were good at adventurous sports activity like swimming in open water, they were able to swim and be part of rescue and relief efforts and reach to more difficult areas which were not accessible. So being an outdoor and sports group which had a lot of endurance and stamina pushed them to places probably the other average citizen might not have been.

4. Conclusion

An instant messaging app WhatsApp has redefined communication, especially during a natural disaster, making it possible to communicate a large number of people at a jiffy. It is only possible because of Internet which had become an essential network during the crisis. WhatsApp has made people chose it for communicating families and friends during a disaster.

Further, WhatsApp cannot be superseded by any medium for disaster management communication but can be enhanced to increase its capacity to prepare for, respond to, and recover from events that threaten people and infrastructure. Thus, the use of Facebook and WhatsApp made the citizens turn into activists and take control over the situation and bounce back to normalcy. The effect of the calamity can be still reduced with proper planning and usage of WhatsApp.

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