

Social Media during Crisis: Special reference to Covid-19

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Abstract

Among various new trends changing life globally, social media is among the top rankers. It has affected our lives largely and has huge potential to generate awareness during crisis periods. The role of social media during Covid-19 has been multifunctional from disseminating Covid-19 related awareness to acting as a prime source of entertainment during a depressing environment of social isolation and lockdown. The paper discusses recent advancement in the role of social media during crisis situations with reference to Covid-19. The paper also talks about the need of regulations to keep control on fake and unauthentic contents floated on social media platforms. The study attempts to assess if social media was able to build a positive environment during crisis and also if there was any deviation observed on the kinds of messages circulated on social media platforms during crisis periods from those during normal times. The study, further throws some light on the necessity of social media to broaden its horizon and reach more people. The findings of the article can be used by multiple organizations, social media companies, government agencies and scholars to assimilate the social media users' views and to further extend the research on multiple fields such as policy development on crisis management, data surveillance, regulations and the community behavior.

Keywords: Communication, Social News, Crisis Management, Social Media, Regulation, Emotions, Covid-19, Fake News.

1. Introduction

With the invention of internet, the process of communication has got transformed. The world has witnessed significant progress from letters to telegrams to emails and now to social media. Out of these various changes in communication, one change that has been most prominent and outstanding is social media (Gonzalez-Herrero, A., & Smith, S., 2008). Social media has gained popularity and

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penetration very fast. As per 'Statista', the number of social media users has grown from 168 million in 2016 to 351 million in 2019 in India.

As per 'Our World in Data', the largest social media platform Facebook had 2.3 billion users across the world in 2019, WhatsApp also had more than 1 billion, Instagram had 1 billion and Twitter had 329.5 million users in 2019 across the world. It also mentioned that approximately one in every three persons in the world is using social media.

Not only the rise of the usage and popularity of this medium is high, it is also being used in various types of situations including the crisis situations.

using a particular crisis as an opportunity to communicate either their own views or some politically motivated views (Gabor Sarlos and Gyorgy Szondi, 2014).

1.1. Usage of Social Media

The usage of social media is not limited to social interactions, rather, it has far-reaching implications. For instance, the F20 movement in Morocco to protest against King Mohammed came out of Facebook where the first statement was published for citizens to demonstrate peacefully (Hammoudi, 2012). Moreover, in the F20 Morocco Movement, the social media platforms turned out to be efficacious and game-changers where the youth having common beliefs united and conveyed their messages through Facebook, YouTube, Twitter, and blogs (Abdelaziz Radi, 2017).

Thus, it is imperative to harness the power and huge potential of social media platforms, which has shaped movements like F20 in Morocco, in handling crisis situations like Covid-19 where youth can interact and promote awareness globally. Since social media provides everyone an opportunity to share content, including pictures and videos etc, it can very well be used to disseminate information related to the crisis situation in an effective manner (K. Denecke and S. Atique). "Social media can be an effective tool in order to convey information and explain current issues to the public" (Nor Emmy Shuhada Derania, Prashalini Naidu, 2016).

1.2. Crisis Management

The COVID crisis, like the other epidemic, pandemic and ecological disasters earlier, has created conditions of uncertainty and fear amongst the general public. These conditions of uncertainty, the



fears, and the doubts during an ecological or epidemic disaster have a lot in common with a state of war (Anat Gesser-Edelsburg and Mina Zemach, 2012).

While talking about the cosmological crisis situation, Weick, K. explains that in a crisis situation people get the feeling of *vu jàdé*-the opposite of *déjà vu*, which may be explained as – “...I've never been here before, I have no idea where I am, and I have no idea who can help me” (Weick, K., 1993). The communication during a crisis situation needs to be effective, extensive and authentic so that the correct and intended information may reach all and the required measures can be taken accordingly. With reference to an earthquake in New Zealand some appropriate measures were thought of. To transmit information regarding seismic forecast, policy makers can devise individualized course for the backward and endangered community (Shintaro Okazaki, Amadeo Benavent-Climent, Angeles Navarro and JörgHenseler, 2015).

Government of New Zealand promotes local authorities to touch base with local people to discuss the action plan and ways to be self-supporting. In this way, people tend to be more participating and self-starters in the process of handling crisis situations (Britton, 2007). Thus, social networking sites enable users to not only share their views and status but to get to know about others also. The goal of this study is to understand the usage of social media platforms in crisis situations, with a special reference to Covid-19.

1.3. Research Questions

This paper tries to look at various aspects of social media communication during crisis situations. It covers multiple dimensions including that of socio-cultural, psycho-emotional, economical and even regulatory facets.

Following the reading of literature, understanding it and looking at the gaps in the same, a list of issues has been identified, which needs to be explored and understood, based on which following research questions are framed:

Central research question

Q1. Does social media play a utilitarian role during the Covid-19 crisis and in generating awareness among people during such crisis?

Research sub-questions



Q2. Did other traditional topics such as politics and economy lose their relevance on social media platforms during Covid-19 crisis? What kind of messages were frequently circulated during this period?

Q3. Has social media aided in the creation of a positive environment during Covid-19 crisis?

Q4. Looking at the current role played by social media during Covid-19, should it be popularised among the non-users of social media platforms?

Q5. Is there a need for regulation and scrutiny of social media especially during crisis situations?

In order to find the answers to these questions, a research was done where the effectiveness of social media as a medium of communication specially in a crisis situation was studied.

2. Literature Review:

A medium that has a lot of potential but is still underutilized as a communication medium during crisis situations is social media. The reason for the same could be that it is a recently developed medium and the managers may not be sure of its usage (Spence, Lachlan, & Rainear, 2016).

Emergency management agencies should embrace social media or should try to incorporate its usability in their functioning. Also, with growing transparency in government working, authorities can't overlook the usability of social media (David M. Hondula and Rashmi Krishnamurthy, 2014). By doing this, they may develop relevant strategies to control the problem and give timely solutions.

This is clearly visible in today's world as we find politicians and government officials acting proactively and responding to masses on social media platforms like Twitter. Even a study commissioned by American Red Cross Society (2010) mentions that social media sites are the fourth most popular source to search emergency information in America, which is ranked higher than sources such as Government agencies, National Oceanic and Atmospheric Administration (NOAA) weather radio, or emergency text message systems. The reason for this could be easy availability or the widespread usage of the same (M. Maresh-Fuehrer, Richard Smith, 2015).

The communication related to difficult situations may be categorised in two parts- risk communication and crisis communication. Risk communication pertains to the communication before the difficult situation has happened whereas the crisis communication happens otherwise. Both may create a situation of uncertainty and in both situations, people may like to reduce it. A



crisis may lead to a situation where the beliefs of the people about their surroundings are challenged. In such a situation the people may react differently to the situation (Weick, K., 1995).

Risk and crisis communications are highly interrelated because the risk communication that may happen before the crisis may affect the behaviour, perception, expectations etc. once the crisis has happened. This may also be affected by the kind of mediums used to communicate the messages. Some of the recent methods have been very useful in the same. Social media may play a major role in this (Kenneth A. F, Patric R. Spence, Xialing Lin, Kristy Najarian, Maria Del Greco, 2014). People also use social media to search for information during crisis situations (Jin, Y., Liu, B. F., & Austin, L. L. 2011).

The way the information is transmitted and shared has changed in the wake of social media and that has affected communication in crisis situations also (Lin, Spence, Sellnow, Lachlan, 2016). It is advised that the managers and public health authorities should actively engage in conversation with the public online, where they may listen to the problems of people or answer the queries of the affected for assistance (Lachlan, Spence, Lin & Del Greco, 2014; Walther, 2010).

During Hurricane Sandy, 12.5 tweets per minute were sent using the hashtag promoted by NOAA & FEMA (Lachlan, Spence, Lin & Del Greco, 2014; Lachlan et al., 2014). However, when the data was collected, it was found that only 9 tweets were directly sent by the government agencies in the sample of 2000 whereas the other all tags on the #Sandy were from the civilians (Lachlan, Spence, Lin, Najarian, et al., 2014)). So, the government should make an increased attempt to interact with the public.

The impact of a social media message also depends on the speed with which it updates (Lachlan, Spence, Edwards, et al., 2014; Spence, Lachlan, Omilion-Hodges, & Goddard, 2014). A fast-updated social media message such as a breaking news or high involvement issue may be considered as more relevant by the social media users (Westerman et al., 2014). The messages during a crisis situation may be sent out once or many times one after another. So, the effort should be made to send multiple messages on social media by the crisis managers to reach out to the public. Also, the Government or organizations should create a team of people to send these messages frequently, encourage them to have their own accounts on social media and post these messages on their own accounts too (Lin, Spence, Sellnow, Lachlan, 2016).

Lachlan, Spence, Lin, Najarian, et al (2014) examined the messages meant for local or non-local audiences. It was realized that the content was remarkably different. Most of the actionable content came out of the localized tweets, which the people may use to prepare themselves for a difficult situation. In their analysis, the actionable information was mostly associated with a localised hashtag.

If the event is a long trigger one then the managers should start communicating the messages early enough. The information should clearly indicate the actions to be taken in pre-crisis, during the crisis and post crisis stages. This may help the mitigation and may help in creation of the messages to be used during the entire crisis situation (Lin, Spence, Sellnow, Lachlan, 2016).

However, credibility and validity issues related to social media were also raised by some, which may stop them from using it extensively. Also, one has to understand that this is a medium which has a lot of potential and advantages and thus, the usage of the same cannot be ignored (Lindsay, 2011).

Moreover, considering the opinion of the people on this concern related to social media, a further analysis of available literature is done. Data surveillance is an unavoidable form of surveillance that has enabled social media corporates' business model to flourish (Fuchs, 2017). The continued acceptance of surveillance (specifically data surveillance by social media corporations) not only affects users' information privacy, but eventually their freedom and behaviour offline. Although data surveillance is not a new concept, it has evolved from a mechanism which benefited society to an instrument of control; not only to control the accumulation of capital but also user behaviour. The data surveillance via social media is taking place, which holds inherent risk in the consumption of social media-based information. For instance, it would be interesting to get a qualitative understanding of these privacy risks by interviewing users of social media platforms. Together with the qualitative approach mentioned above, researchers would be able to understand to what extent these privacy risks influence continued use of social media platforms (Schyffa, Flowerday, Furnell, 2020).

In the online cognitive process, it is seen that the cues and heuristics play a major role affecting the behaviour and decisions of the people as compared to the face to face situation (Walther & Jang,



2012). For example, names of the experts may increase the credibility factor in twitter accounts. Thus, the government agencies should try to create their social media accounts with official identities to interact with the public and partners to add to the credibility (CDC, January 8, 2015).

Too many or too few followers on twitter pages also may affect the credibility factor of social media sites such as twitter (Westerman et al., 2012). By following these measures, the public health departments or Government may have better communication with the public.

Based on the literature study the researchers felt a need to study the patterns and behaviour of social media in the crisis.

3. Methodology

Considering the nature of the study, the qualitative research was carried out. The grounded theory approach was adopted to carry out this study, where the development of theories is done through the methodical gathering and analysis of data.

The research team interviewed the respondents and sought their responses on the selected topics. Post that, certain concepts were identified using selective coding to interpret the data and reach valuable insights. Effort has been put to keep the concepts fairly abstract to generalize the theory and conserve its applicability to other crisis situations. The sampling method used was purposive sampling.

For those who are conducting research on communicative responses to crises and disasters, a purposive sampling of a particularised population is more worthy than a sample that includes people unrelated to the event (Patric R. Spence, Kenneth A. Lachlan, Adam M. Rainear, 2015).

3.1. Sample Selection

The sample consisted of 45 respondents who were chosen carefully to keep it distributed as far as possible. The sample consisted of 24 male respondents and 21 females. An effort was made to keep it gender equal to avoid “Gender Differences in Emotional Response”. “Men had stronger emotional experiences, whereas women had stronger emotional expressivity” (Yaling Deng, Lei Chang, Meng Yang, Meng Huo, Renlai Zhou, 2016). Thus, a balance in the gender distribution is maintained in the sample selection.

67% of the respondents were chosen from among the most affected Covid-19 cities in India – Mumbai and Delhi NCR. 5% respondents are taken from the one of the most affected city in USA,

New York city to add an international flavour to our sample thus making the aggregate 72% from most affected area. The respondents from these cities are assumingly better acquainted with the ground reality of Covid-19 situation and thus are better positioned to connect the situation with contents on social media platforms.

The age group covered is from 16 years to 59 years. 42% of the respondents were chosen in the age group of 35-44 years, 24% in 25-34 years, 20% in 45-59 years and the rest 13% were chosen in the age group of 16-24 years.

The concentration is kept more towards the age group of 35-44 years as they possessed three desirable qualities to answer interview questions - 1) To be reasonably familiar with social media platforms 2) To be mature enough to analyse and respond to the interview questions 3) To be in a decision-making role for themselves and others associated with them

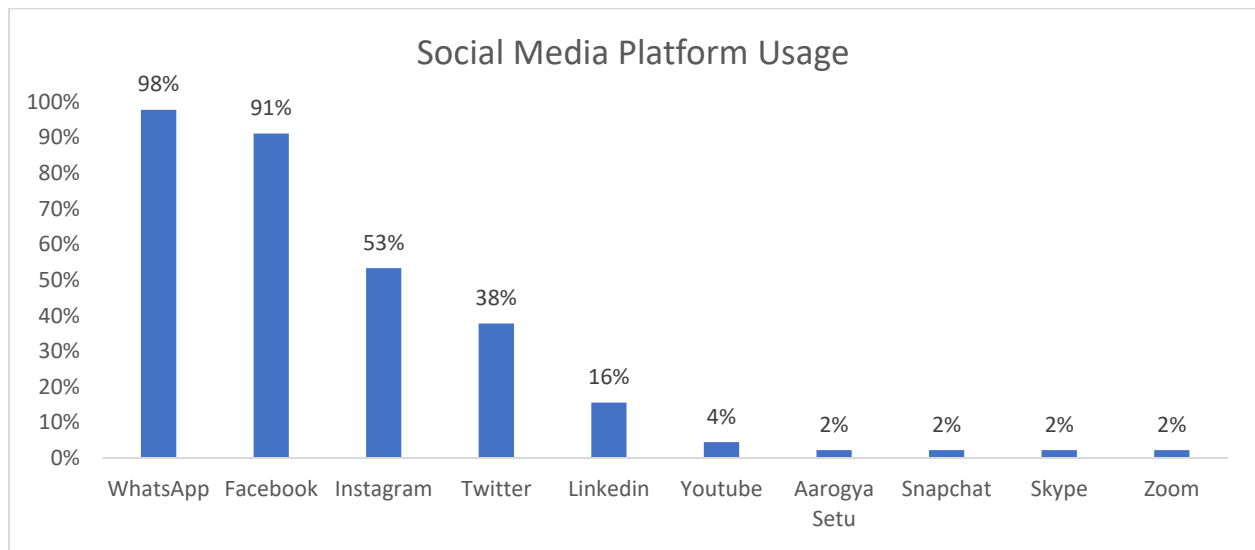
4. Findings

On the basis of the results of the interviews conducted and a detailed analysis of the same, certain trends emerged from the available data. These insights on the social networks could be useful for various user groups in decision making, strategy building and further research or teaching also.

4.1. Social Media Platforms Used

An analysis of the responses received showed that WhatsApp and Facebook are the most popular social media platforms.

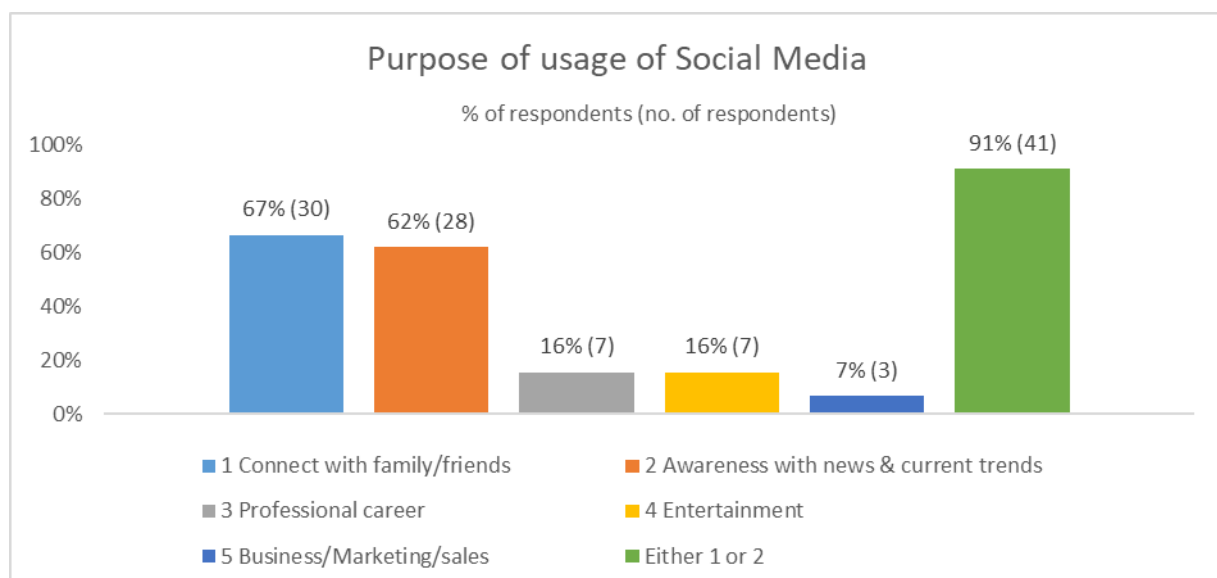
The WhatsApp Social Media Platform is used by 98% (44) of the respondents. Facebook is used by 91% (41) of the respondents. More than half of the respondents 53% (24) use Instagram. Twitter is used by 38% (17) of the respondents (Graph 1).



Graph 1: Social Media platform usage

4.2. Purpose of Using Social Media

When 45 respondents were asked about the reason to use social media platforms, two major themes emerged from their responses – 1) To connect with family/friends as cited by 30 people and 2) To be aware of latest news/trends as quoted by 28 people. Other reasons as mentioned by few people to use social media were related to entertainment, career and business/marketing/sales. One interesting insight which emerged after combining two major reasons to use social media is that 91% of the respondents use social media either to connect with family/friends or to be aware of the latest news/trends (Graph 2).



Graph 2: Purpose of usage of social media

4.3. Utility of Social Media during a Crisis Situation

The respondents overall felt that during a crisis like COVID-19, social media has various advantages and disadvantages.

4.3.1. Advantages of Social Media during COVID

Respondents mentioned that during times of COVID, one of the major advantages of social media platforms is that it helps people know about what measures need to be taken by individuals and families for preventing COVID-19. Social media also helps individuals share with others the status of the of COVID-19 problem and the impact of COVID-19 in the country.

Social Media has the advantage of being a very important means of connecting with family, friends and other people during a time of social isolation.

Social media is also a means available to the Government authorities to communicate with the general population during the pandemic, and during various disasters (natural disasters and man-made disasters). During times of social isolation and lock-down, it is a means of getting entertainment and jokes.

People can get depressed. In such times, social media platforms have helped the respondents come to know how their friends and acquaintances are coping with the current situation and what others are going through.

Social media helps users know about how other users are coping with the current situation, and what others are going through. Social media might help us know the authenticity of news. Social media can also complement TV news.

4.3.2. Disadvantages of Social Media during COVID

One respondent emphatically mentioned what he thought seems to be a great disadvantage of social media platforms. He strongly felt that there is no way of finding the genuineness of a new message. As a result, especially in times of the Covid-19 pandemic, social media messages can cause unnecessary fear and rumour mongering in the community. Another respondent was very strong in his views regarding the disadvantages of social media platforms. This respondent strongly mentioned that “99% of content on social media is hyped and only 1% is true”.



4.3.3. Absence of Social Media platforms

The respondents felt that life without social media was completely different, and that social media has made communication much faster.

Respondents went so far as to say that the close connection with family, relatives and friends that they have now, would not have been possible without social media.

4.4. Information and Messages on Social Media during Crisis

The respondents were asked about the kind of messages they have been receiving on various social media platforms in the last 2-3 months. Their responses were analysed and approximately 76% said that they have been getting messages regarding Covid -19, primarily (Table 1).

Most of them said that they have been receiving various kinds of messages related to Covid-19. Describing it they further elaborated that they have been getting messages about the nature of the disease and how it is affecting people. There were many messages that talked about the facts and figures related to the spread of Covid-19 globally and these figures were updated frequently. There were certain very useful messages that talked about the precautions to be taken to stay safe during this pandemic, which included measures such as home sanitization etc. Through social media messages people also got to know about the measures that the Government is taking to control the situation such as Arogya Setu app etc. Some also mentioned the Stay home stay safe campaign.

People have been using social media to gain and share information such as geographical data, videos, pictures, text messages etc or a combination of these (Fox, 2011, Lachlan, Spence, Lin, Del Greco, 2014).

4.5. Kinds of Social Media Message During Covid-19 Crisis

People have been using the social media to gain and share information such as geographical data, videos, pictures, text messages etc or a combination of these (Fox, 2011, Lachlan, Spence, Lin, Del Greco, 2014).

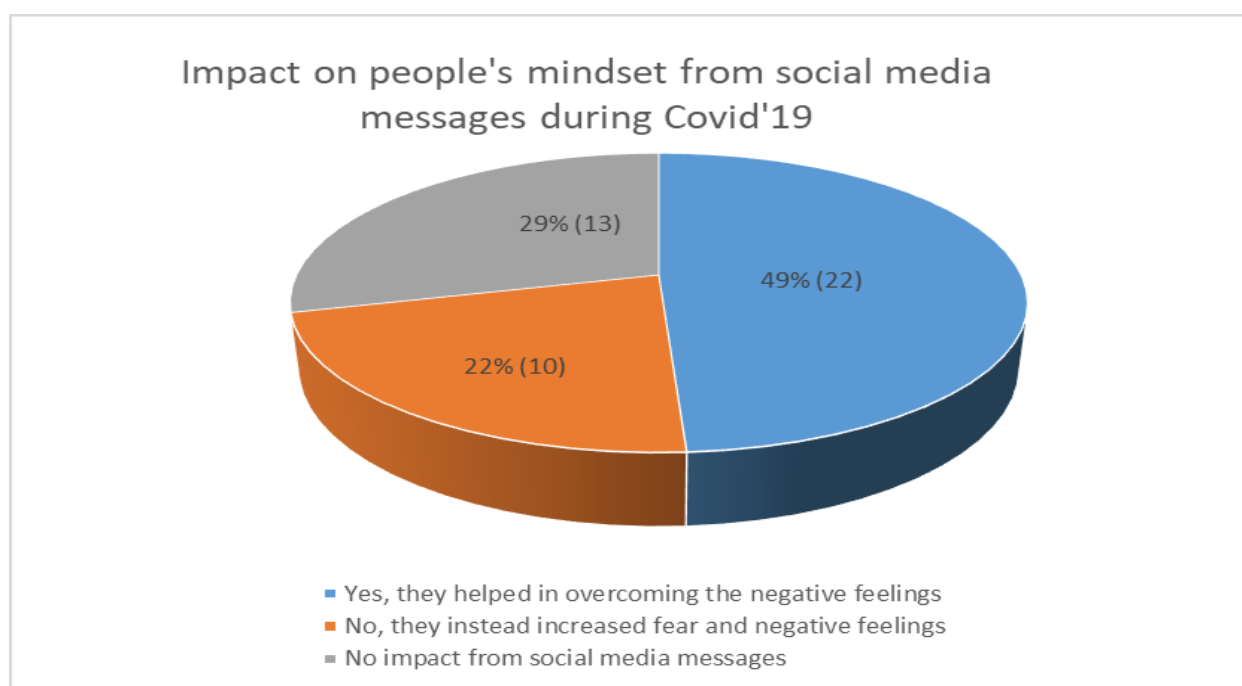
Many respondents said that they have been receiving messages on Health, Economy, Politics, and Entertainment etc.

It is seen that some onlookers or the observers may themselves share the first-hand information which may not be available otherwise. Some of the traditional mediums may also source this

information from social media sites. This could be a faster medium of communication as compared to traditional media (Lachlan, Spence, Lin, Najarian, Greco, 2016).

4.6. Positivity and Emotional Support through Social Media Messages

It is pertinent to note that 22 people, which forms 49% of the sample size, responded that social media messages helped them overcome negative feelings during Covid-19 crisis (Graph 3). Most of them mentioned that the positive impact comes from reading the motivational messages and contents, knowing the status of vaccination development for Covid-19, learning yoga & exercises and showcasing your talent to the broader audience on social media platforms. 10 out of 45 respondents mentioned that social media messages in fact spread fear and amplify their negative feelings. Most of these respondents cited the circulation of fake news and rumours on social media platforms as the reason for negative feelings. 13 people in the sample don't get impacted either way from messages on social media platforms.



Graph 3: Impact on people's mindset



4.7. Increased Usage of Social Media

In the present times, social media is an effective medium of communication and is being extensively used by many. Since it is a successful channel of communication, many people are trying to make the most of it. As a part of our research, we asked 45 respondents the basic objective of using social media and if more people should use it. We found, through their answers, that social media is used not purely for connecting with people but also with an objective to know them.

Social media is also extremely useful and helpful in generating awareness about certain things during Covid-19 crisis. We noted that social media is probably one of the quickest ways to get in touch with family and friends. In response to our questions 'if more people should use social media' and 'how it is useful', here are some reasons that came out clear in their replies. As mentioned by the respondents, it, primarily, helps in making the users feel involved. The users feel associated with the happenings around the world. It is very effective as it addresses many social causes in an effective manner. It provides democratic views. It helps the users in raising their voice against an unjust act or issue.

They can also come together and support a cause which can help them feel strongly about it. It can help people in interacting with each other and developing relationships with other people living across the border. Secondly, it helps in sharing valuable information and also influences the audience by doing that. It helps in motivation and educational training, gaining knowledge and making people think. Lastly, social media is a necessity as it connects people to the global world. It helps in getting news and assistance during crises. It's very useful in spreading awareness and it is an easy way to deliver messages.

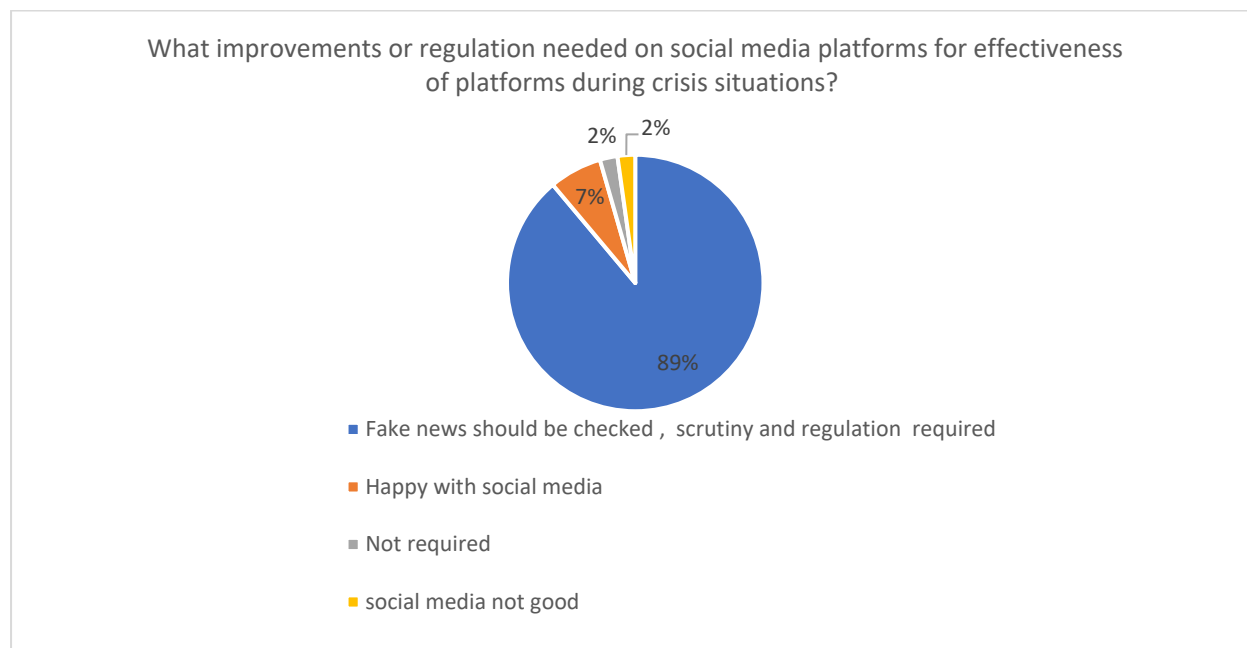
However, although the people favoured use of social media, they raised certain concerns related to privacy, its misuse and kind of content being circulated.

4.8. Improvements and Regulations needed for Social Media during Crisis

Social media can play a key role during crises. In order to get the information accepted and interpreted, the credibility of the source is a very important factor (Hovland, Janis, & Kelley, 1953; Reynolds & Seeger, 2005; Spence, Lachlan, Spates, & Lin, 2013).

Social media changes the information processing tendencies of the people and it becomes very difficult to figure out the credible sources of information, especially during crisis situation when the uncertainties and threats are high.

On checking with the respondents regarding the problems regarding social media, majority of them mentioned fake news as a major concern. When we checked with them if any kind of improvements or regulations are required in social media, they mentioned that proper scrutiny and regulation by government agencies is essential. There are some who are not in favour of social media and they prefer national news channels etc. as the authentic source of Information during the crises (Graph 4)



Graph 4: Feedback on improvements on social media platforms

To improve the content on social media platforms and improvements in the overall ecosystem the respondents have provided following suggestions (Table 1).

Problem Statement: How to improve effectiveness of social media
Respondents suggestions
Authentic source should be provided

Should be used to create positive environment
Consultation with wider stakeholders to make it more effective
Filters required so that certain content can be blocked.
People post negative videos that creates panic situation
Regulatory law required
Restrictions on pornographic
Rumours check to avoid panic situation during the crisis.
Some extent absence content, anti-national content needs to be controlled on social media platforms.
Strict actions on the one who is spreading the fake news

Table 1: Peoples Suggestions ways to improve effectiveness of social media

5. Discussion

Social media is a powerful tool in the present times to create awareness about many ongoing issues. It has the potential to be used in a crisis situation, where the people, organizations and the other entities get to know more about the problem and its spread etc.

People tend to use social media primarily to connect with family and friends or to be aware of latest news and trends. The way the information is transmitted and shared has changed in the wake of social media and that has affected the communication in crisis situation also (Lin, Spence, Sellnow, Lachlan, 2016).

During March-June 2020, broadly social media users witnessed the messages related to Covid-19 such as recommended precautionary measures, region wise cases & fatalities and steps taken by government to combat this pandemic.

Social media turned out to be very effective in disseminating Covid-19 related awareness. It also acted as a salient source of entertainment during depressing environment of social isolation and lockdown. Social media motivational messages and contents also helped in overcoming the negative feelings during this pandemic in around half of our sample respondents.

Though maximum circulation of messages on social media platforms during crisis period was related to Covid-19, other messages related to topics such as health, entertainment, knowledge, politics and economy were also exchanged and were able to find their place on social media platforms. Social



media users believe that more people should join social media platforms to connect globally and to help raising democratic views and voices.

However, there have been numerous fake news floated in social media platforms that spread fear and amplify negative feelings in social media users during Covid-19. There should be some regulations to keep checks and balances on the circulation of messages on social media platforms to minimize dissemination of the fake and the unauthentic messages.

The use of social media in handling crises is almost indispensable. The people found that social media platforms are very helpful in many ways. These include but is not limited to getting educational training, spreading awareness as well as connecting the unconnected to the global world.

Though there are many concerns related to the content on the social media platforms the need of the hour is that more people should start using social media platforms. Government regulations and scrutiny of the content are of utmost importance for the effective use of the social media platforms. Further studies can be conducted regarding government regulations needed for making the usage of social media more effective and efficient, especially during crisis situations.

6. Limitation and Future Directions

This study aims to get the opinions of the respondents mainly on social media with reference to its role during crisis situations. There is a scope to further enrich the theory through research in other aspects of social media usage such as data surveillance, communication, regulations and the community behaviour.

Moreover, a separate study can be carried out regarding detailed research on the psychological support through social media. The study doesn't delve extensively into the economic aspects of crisis and its reflection in social media interaction. This study may also work as a base for further research on policy development on crisis management and communication.

Another aspect of this research is that the respondents are chosen from the educated class because of restricted movement during lockdown. With the proliferation of social media, many business



establishments are using social media platforms. One possible area of future research is the effect of social media platforms on the business establishments.

7. Conclusion

The study aims to add knowledge to the existing literature of social media role during crisis by researching the utility of social media and the ways in which social media supports in generating awareness among its users. The study has also attempted to address the value addition by social media platforms in building positive environment. The paper further discusses the need of social media platforms to extend its outreach to masses. The paper analyzed the change in trends of messages observed on social media platforms during Covid-19 and the need for increased scrutiny of these messages during crisis situation.

References:

- Abdelaziz Radi (2017): Protest Movements and Social Media: Morocco's February 20 Movement
- Anat Gesser-Edelsburg and Mina Zemach (2012): From a fiasco to the Supertanker grand finale:Israeli Prime Minister Netanyahu's crisis communication during the Carmel disaster:Journal of Risk Research
- Britton, Neil R. (2007): "National Planning and Response: National Systems," in Handbook of Disaster Research, Havidàn Rodríguez, Enrico L. Quarantelli, and Russell R. Dynes, eds. New York: Springer
- Xialing Lin , Patric R. Spence , Timothy L. Sellnow, Kenneth A. Lachlan (2016): Crisis communication, learning and responding: Best practices in social media
- David M. Hondula and Rashmi Krishnamurthy (2014): Emergency Management in the Era of Social Media: Public Administration Review
- Karl van der Schyffa, Stephen Flowerday, Steven Furnell (2020): Duplicitous social media and data surveillance: An evaluation of privacy risk
- Edmunds (2011): Risk communication strategies for public health preparedness: Johns Hopkins School of Public Health (JHSPH). The Johns Hopkins Preparedness and Emergency Response Learning Center
- Fox, S. (2011): The social life of health information, 2011. Washington, D.C: Pew Research Center's Internet & American Life Project: Computers in Human Behavior
- Gabor Sarlos and Gyorgy Szondi (2014): Crisis communication during the red sludge spill disaster in Hungary— a media content analysis-based investigation: Journal of Public Affairs



- Gonzalez-Herrero, A., & Smith, S. (2008): Crisis communications management on the Web: how internet-based technologies are changing the way public relations professionals handle business crises: *Journal of Contingencies and Crisis Management*
- Hammoudi, I., (2012): 'Le mouvement du 20 Février: identité, évolution et perspectives': *Revue Marocaine des Sciences Politiques et Sociales*
- Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953): *Communication and persuasion: Psychological studies of opinion change*: Yale University Press
- Hughes, Amanda L., and Leysia Palen. (2012): The Evolving Role of the Public Information Officer: An Examination of Social Media in Emergency Management: *Journal of Homeland Security and Emergency Management*
- Jin, Y., Liu, B. F., & Austin, L. L. (2011): Examining the role of social media in effective crisis management: The effects of crisis origin, information form, and source on publics' crisis responses: *Communication Research*
- Kenneth A. Lachlan, Patric R. Spence, Xialing Lin, Kristy Najarian, Maria Del Greco (2015): Media and crisis management: CERC, search strategies, and Twitter content: *Computers in Human Behaviour*
- Lachlan, K. A., Spence, P. R., Edwards, A., Reno, K. M., & Edwards, C. (2014): If you are quick enough, I will think about it: information speed and trust in public health organizations: *Computers in Human Behavior*
- Lachlan, K. A., Spence, P. R., Lin, X., & Del Greco, M. (2014): Screaming into the wind: examining the volume and content of tweets associated with Hurricane Sandy: : *Communication Studies*
- Lachlan, K. A., Spence, P. R., Lin, X., Najarian, K. M., & Greco, M. (2014): Twitter use During a Weather Event: Comparing Content Associated with Localized and Nonlocalized Hashtags: *Communication Studies*
- Lindsay, B. R. (2011): Social media and disasters: current uses, future options and policy considerations: *Journal of Current Issues in Media & Telecommunications*
- Michelle M. Maresh-Fuehrer a, Richard Smith (2015): Social media mapping innovations for crisis prevention, response, and Evaluation: *Computers in Human Behaviour*
- Reynolds, B., & Seeger, W. (2005): Crisis and emergency risk communication as an integrative model: *Journal of Health Communication*
- Shintaro Okazaki, Amadeo Benavent-Climent, Angeles Navarro and JörgHenseler (2015): Responses When the Earth Trembles: The Impact of Community Awareness Campaigns on Protective Behavior: *Journal of Public Policy & Marketing*
- Social Media Usage 28-06-220, www.statista.com
- Spence, P. R., Lachlan, K. A., & Raine, A. M. (2016): Social media and crisis research: data collection and directions: *Computers in Human Behavior*
- Spence, P. R., Lachlan, K. A., Omilion-Hodges, L. M., & Goddard, A. K. (2014): Being first means being credible? Examining the impact of message source on organizational reputation: *Communication Research Reports*



Spence, P. R., Lachlan, K. A., Spates, S. A., & Lin, X. (2013): Intercultural differences in responses to health messages on social media from spokespeople with varying levels of ethnic identity: Computers in Human Behavior

The Rise of Social Media, 18-09-2019, www.ourworldindata.org, Esteban Ortiz-Ospina

Trivedi, D., & Bhatt, A. (2019). Quest for quality. Performance Measurement and Metrics, 21(1), 1–17. <https://doi.org/10.1108/pmm-02-2019-0004>

Walther, J. B., & Jang, J. (2012): Communication processes in participatory websites: Journal of Computer-Mediated Communication

Weick, K. (1993): The collapse of sensemaking in organizations: The Mann Gulch disaster: Administrative Science Quarterly

Weick, K. (1995): Sensemaking in organizations: Sage

Westerman, D., Spence, P. R., & Van Der Heide, B. (2012): A social network as information: the effect of system generated reports of connectedness on credibility on Twitter: Computers in Human Behavior

Westerman, D., Spence, P. R., & Van Der Heide, B. (2014): Social media as information source: recency of updates and credibility of information: Journal of Computer-Mediated Communication

Book Participatory Health Through Social Media: Chapter 4: Social Media and Health Crisis Communication During Epidemics: K. Denecke and S. Atique: 1. Bern University of Applied Sciences, Bern, Switzerland 2. Taipei Medical University, Taipei, Taiwan