Role of New Media in Good Governance: A Study of Disaster Management Authorities of Pakistan

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Abstract

The research focuses on the use of social media platforms, specifically Twitter and Facebook, by Pakistan's Disaster Management Authorities during climate disasters in 2022, Murree Snow Storm, Karachi Monsoon rainfall, and floods. Thematic content analysis was conducted to evaluate the type of information disseminated by the National Disaster Management Authority (NDMA) and Provincial disaster management authorities of Punjab, Sindh, KPK, and Baluchistan on their Twitter and Facebook. In the light of managerial model, this study indicated that the information posted on the disaster management authorities' social media handles can be categorized into five categories: weather updates, aid distribution, rescue operations, precautionary measures, and other information. Notably, most of this information was posted after the occurrence of the respective natural disasters. The Punjab Disaster Management Authority performed commendably during the floods, actively posting about rescue operations and aid efforts. Similarly, the Sindh Disaster Management Authority demonstrated increased activity during the Karachi Monsoon rainfall, sharing updates on weather, aid, and

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rescue operations. During the Murree Snowstorm, both the NDMA and Punjab Disaster Management Authority informed the public about weather updates, rescue operations, and aid initiatives for the affected citizens. Likewise, the NDMA and PDMA's posted warnings, precautions, and aid-related information during the floods. However, their overall performance indicated that the disaster management authorities are still in the preliminary stages of implementing e- governance to attain good governance. Not to mention, NDMA and PDMA's cater to the outcomes of disaster rather than working on the measures to minimize the factors for disaster.

Keywords: *New Media, Good Governance, Disaster Management Authorities.*

Introduction

A government that puts effort into improving the living conditions of citizens can be regarded as good governance. The mutual collaboration of both citizens and government can lead to attaining this model which truly reflects the concerns of the general public (Olley et al., 2022). Good governance model puts all effort into reducing corruption and being transparent in all the sectors of governance to ensure public loyalty (Mimicopoulos et al.,2007; Mansoor, 2021). Good governance ensures accountability (Beshi & Kaur, 2020).

Governments are held accountable for their actions (Shafritz et al., 2015). The government makes policies and executes them to enhance citizens' trust in the government. Citizens' confidence in the government to make decisions solely for citizens' betterment is termed as trust in government (Barnes & Gill, 2022). Good governance practices involve being responsible and satisfying the citizens ' demands. The responsiveness of the government is indicated by its willingness to address citizens' problems (Anderson,2020; Houston & Harding, 2013; Linde & Peters, 2020).

E-governance and good governance are interrelated the former

provides the path that leads the latter. Integration of Information Communication Technologies (ICTs) in the governing process serves as an indicator that society is being governed by competent people (Novita et al., 2022). Good governance joins hands with e-governance on its pure intention toprovide people with a satisfying standard of life that the public actually deserves. Instead of restricting the decision-making power to a few elites in power, a good governance model ensures public engagement in policy-making — encouraging them to share their point of view and practice the freedom to put their troubles in front of concerned authorities (Acharya, 2022). Transparency and accountability elements lift up the essence of good governance — molding it into a public-friendly way of governance (Suri, 2022). Due to its watchdog role, the media seems to be at the forefront of ensuring the maintenance of good governance.

Therefore, objective journalism can unveil the immoral acts of decision-makers and, thus,keep an eye on the government (Ahren & Peress, 2022; Ferracioli, 2022).

Governments are adopting digital platforms to become transparent which good governance practices demand (Matheus et al., 2021). Social media is considered to be a crucial tool for governments to seem transparent and responsible (Bertot et. 2010; Mergel, 2013). Since the emergence of the internet, social media has become a source of information for citizens (Arayankalam & Krisnan, 2022). The credibility of Twitter makes it appear as a more popular information source rather than a mere communication app (Pershad, 2018).

Twitter and Facebook accounts of governments serve as credible sources as well as direct tools for communication; likewise, the government heavily relies on these accounts to disseminate any new updates regarding their

policies (Rodrigueza, 2018). Public engagementon social media handles rises during a crisis as they seek information through these platforms to keep themselves updated about their community (Kainat, 2022). Although the governmentof Pakistan is adopting the use of social media but it is at the informational stage yet (Memonet al., 2015).

On January 9th 2022, the first disaster occurred in Murree, where a record number ofcitizens flocked to witness snowfall, but heavy snowstorms blocked roads and caused ill- management, leaving many families stranded in their vehicles (Meo et al., 2022). Lack of awareness and cold temperatures led to tragic deaths, and the rescue operation was hindered (Qureshi, 2022). During the summer of 2022, Pakistan experienced massive rainfall, particularly in Karachi, leading to urban flooding and havoc for the citizens (Sattar & Nadeem, 2022).

The rainfall was 180% more than average, causing 300 deaths due to variousincidents related to the heavy downpour. Timely communication of warnings could have encouraged vulnerable citizens to evacuate. Since mid-July 2022, Pakistan has been highly affected by monsoon rainfall-induced floods. This flood broke previous records, covering one-third of the country's area and impacting 33 million people. It resulted in the destruction of two million homes and caused the deaths of 1,600 citizens, while many others were left homeless and vulnerable to water-borne diseases (Wise, 2022). Sindh and Baluchistan were the worst-hit regions, with homes, hospitals, and schools washed away by the floods (Ochaniet al., 2022). When Pakistan was hit by a massive earthquake in 2005, it did not have a single federal disaster management organization. Later on, governments worked to raise awareness about climate disasters. They introduced policies to deal with other disasters beyond floods (Cheema, 2022).

During the Karachi Monsoon Rainfall, Murree Snowstorm, and Floods in 2022, both Twitter and Facebook platforms of National and Provincial Disaster Management Authoritiesbecame primary sources of information for those citizens who wanted to get insights on the ongoing national disasters. National Disaster Management Authority (NDMA) a national-level disaster management authority and Provincial Disaster Management Authorities of Punjab, Sindh, KPK, and Baluchistan (PDMA's) provincial-level disaster management authorities shared information related to the crisis on their Facebook and Twitter handles (Raoof, 2021).

Social Media handles of NDMA and PDMA's are a direct tool to communicate updates and warnings to social media users (Azhar, 2022). Social media handles of NDMA and PDMA's are highly responsible for providing timely updates to the citizens. During a crisis, citizens look up to concerned authorities for information that can helpthem survive the crisis (Denisova, 2022).

The climate change crises are affecting Pakistan at a destructive level marking it to be at a higher risk of further climate-caused crises. The citizens of Pakistan are enduring these consequences but they are not literate enough to scrutinize the factors behind these climate crises. They are not aware of precautionary measures that can help them protect themselves from the upshots of any disaster. Since the disaster management authorities of Pakistan serve as a primary source for the public to survive the crisis, therefore, this study explored the coverage of NDMA and PDMA's social media handles in disseminating information during the time of disaster mainly caused by climate change — to better answer the question: what kind of information do these handles post? The researchers looked into the current status of the implementation of E-governance toachieve good governance in Pakistan.

Research Question

What kind of information was posted on NDMA and PDMA's Twitter and Facebook handles before, during, and after climate disasters in 2022?

Literature Review

Role of e-governance in good governance

The public administration process that favors citizens is good governance. Good governance is the active and productive collaboration between the government and citizens. The goals of good governance are aligned with e-governance qualities. Good governance goals are reduced corruption, a transparent and accountable system, and the ability to deliver services to citizens at great comfort. All these forth mentioned qualities are delivered by e-governance (Suri, 2022). The use of Information Communication Technology in the governing process is an indicator of good governance in developing nations. Implementation of Information Communication Technology in the governing process reduces corruption (Banerjee et al., 2020; Novita et al., 2022).

Good governance demands the use of social media to disseminate information aboutpublic policy, so citizens can actively participate in making policy (Saroj & Pal, 2023; Imam et al., 2023).

Active participation of citizens relies on the power citizens behold (Keeping, 2018). Public trust and good governance are reticulated, as government policies are for citizens. Government Policies shape citizens' lives (Beshi & Kaur, 2020).

Good governance is promoted through e-governance in most developing nations, but it has some drawbacks in some developing nations as well. There is not much empirical evidence available to analyzethe process

through which e-governance promotes good governance (Rahim et al., 2017).

Implementation of Information Communication Technology is not enough to achieve goodgovernance. Integration of ICTs combined with the stabilization of the traditional public sectors is required for good governance (Akpan-Obong, 2022).

Climate Change in Pakistan

A strong link exists between Pakistan's climate change and natural disasters (Idris, 2021). Climate change has become a threat to the citizens of Pakistan (Noureen, 2022).

Pakistan is a developing country its rural population is vulnerable to the impacts of excessive floods. Rural areas lack the infrastructure to handle such disasters (Ahmad, 2020). Pakistan ison the list of countries considered the supermarkets of floods (Diakakis et al., 2018; Ahmad & Afzal, 2021). Factors affecting climate change regarding increased risk for floods are at a higher level (Khan et al., 2021). Public perception of disasters due to climate change is interrelated with their efforts to adopt policies. In Flash Flood areas, warnings are issued when there is little time to evacuate. Citizens are prepared according to their perception of theseverity of the calamity (Ahmad & Afzal., 2022).

In developing countries, flood-prone areas suffer due to weak governance and incapable infrastructure. Disaster management institution fails to provide the required information to citizens (Rana et al., 2021). Pakistan caters to disaster management instead of disaster reduction measures. Pakistan's policies are managingthe outcomes of climate disasters. Citizens' lives can improve if the policies are about to minimize the risk of climate disasters. (Azhar, 2022; Braam et al., 2021; Raoof, 2021; Shah et al., 2022).

Disaster Communication through Social Media

Social media has emerged as a valuable ally in disaster communication. Finch et al. (2016) concluded that the dissemination of information during environmental and natural disasters isswifter and more effective through social media platforms. Social media handles demonstrate noteworthy efficiency during climate-related disasters. However, Bowen (2016) underscored an ethical consideration when employing social media during climate and other disasters, emphasizing the importance of disseminating accurate information without succumbing to theinfluence of authoritative figures. A thoughtfully devised social media strategy significantly

Impacts the expeditious performance of disaster management authorities, yielding optimal results (Zhang et al., 2019). To this end, it is imperative for Disaster Management Authoritiesto proactively formulate their social media usage strategy in anticipation of potential disasters. Moreover, assessing past instances of disaster management via social media can play a pivotal role in shaping an effective social media strategy (Lovari & Bowen, 2020). It is crucial for disaster management authorities to recognize the potential of social media as a means to communicate in a localized and human-centric manner, thereby mitigating the impact of disasters (Fang et al., 2019). Given the escalating frequency of climate-related disasters, authorities must harness the communicative power that social media offers (Moghadas et al., 2023). By doing so, they can adeptly convey crucial information about disasters and contribute to minimizing their adverse effects.

Theoretical Framework

Managerial Model

The main element of the managerial model is the systematic delivery of informationto the citizens (Grant & Chau, 2005; Millard, 2006; Lean et al.,

2009). The information is delivered to the citizens while utilizing information and communication technology.

Information and communication technology are used to speed up the flow of information. The core belief of the managerial model is information provided to the citizens by the government indicates government transparency. The government shares its activities and plans with citizens (Chadwick & May, 2003). The managerial model advocates the fastest delivery of information with minimum cost. The cost of providing a service is a big challenge for governments, especially governments of developing countries. The managerial model can manage quick delivery under budget. The government aims to upload information on accessible platforms. To access that information to consume it depends on the citizens. (Chadwick & May, 2003). The government considered itself the sole legitimate and authoritative source of information (Morgeson & Mithas, 2009).

Government institutes of the National Disaster Management Authority and Provincial Disaster Management Authority use social media to disseminate information to citizens which is a cost-effective way. Disseminating the information about disasters on their social media accounts is their service. Citizens receive information in a unilineal way. The government shares information on accessible platforms which are its social media accounts. During the Karachi Monsoon rainfall, Murree Snowstorm, and Floods 2022 NDMA and PDMA's Twitter and Facebook was accessible and reliable source for citizens to access the information.

Methodology

The qualitative thematic analysis is employed to answer what kind of information disaster management authorities posted on their social media handles. Through Purposive sampling the tweets, and Facebook posts of

NDMA and PDMA's social media handles concerning the Murree Snowstorm, Karachi Monsoon Rainfall, and Floods from 1st January to 31st December 2022 were analyzed.

Findings and Discussion

The information posted on the National Disaster Management Authority and Provincial Disaster Management Authorities of Punjab, Sindh, KPK, and Baluchistan's Facebook Page and Twitter Handle during the Climate Disaster is categorized into five themes: Weather, Aid, Rescue Operation, Precautions, and Other. The First theme is Weather in which disaster management authorities share the weather updates during the Murree Snowstorm, Karachi Monsoon Rainfall, and Floods in 2022. The second theme is Aid which caters to the assistance of government institutes for the victims of climate disasters in the form of food, medicines, medical camps, shelters, clothes, and other necessities of life.

Rescue Operation comes at third number in the list of themes and it addresses the on-ground work of disaster management authorities to save citizens from the impacts of natural climate disasters. Precautions are the next theme highlighting the measures posted on disaster management authorities' social media handles for citizens to save themselves from natural climate disasters. All the tweets and Facebook posts that are not directly related to the objectives of this study come under the umbrella of the last theme which is "Others".

Weather

During the Murree snowstorm, the NDMA and Punjab PDMA provided weather updates, while the PDMA's of Sindh, KPK, and Baluchistan remained inactive. The text of the tweet and Facebook post of NDMA is

"NDMA is continuously monitoring the situation arising out of current rains &snowfall throughout the country".

NDMA did not specifically announce any alert about the Murree Snowstorm and theirtweet is about the general weather situation of Pakistan. On their Facebook and Twitter handles, the Punjab Provincial Disaster Management Authority announced the weather update after the Murree snowstorm. Their Facebook page and the Twitter handle did not share updates regarding Murree weather before and during the snowstorm. But they started sharing updates more often after the snowstorm happened. The text of the one of tweets and Facebook post after as mentioned below.

"There is a prediction of heavy snowfall in and around Murree by the Pakistan Met.

Department from Friday 21st, Jan to Monday, 24th of January. Please avoid unnecessarytraveling and take all due precautions. PDMA, Government of Punjab is at your service.Helpline 1129". (PDMA Punjab Twitter and Facebook Page).

For the Karachi Monsoon Rainfall, the NDMA and PDMA Baluchistan predictedrainfall in Sindh and Baluchistan, but specific updates were lacking. "The onset of #Monsoon Rains – Torrential Rains Likely in Sindh & Balochistan" (NDMA Twitter and Facebook Page).

"Monsoon Rains in Sindh and Baluchistan". (PDMA Baluchistan Twitter and Facebook Page).

During the Karachi Monsoon Rainfall National Disaster Management Authorityupdated its social media handles for monsoon activity in the country: "Monsoon Activity Likely to Continue More Rains from 6 to 13 August". (NDMATwitter and Facebook Page).

The PDMA of Sindh shared predictions for heavy rainfall in Karachi. "Rain-thunderstorm with few moderate (isolated heavy) expected in Karachi". (PDMA Sindh Twitter and Facebook Page).

After the Karachi Monsoon Rainfall Provincial Disaster Management Authority ofSindh shared weather updates more often.

"Weather Forecast: Nothing to report". (PDMA Sindh Twitter and Facebook Page). Whereas, the Punjab and KPK PDMAs did not provide updates for Karachi monsoon rainfall.

The NDMA and Punjab PDMA issued flood warnings.

"Medium to High Flood Alert in River Chenab" (NDMA Twitter and Facebook

Page).

"According to PMD, Medium to High level flooding is expected in River Chenab at

Marala, Khanki, and Qadirabad and Nullals of River Chenab and Ravi in next 48hours".(PDMA Punjab Twitter and Facebook Page).

The provincial Disaster Management Authority of KPK posted about their precautionary measures to cope with the upcoming floods with the following tweet and post

"Flood warning system installed on seven rivers" (PDMA KPK Twitter and Facebook Page).

They posted about the alerts as well

"PDMA KP issues alert for GLOF, flash floods" (Twitter and Facebook Page ofPDMA KPK)

Aid

During the Murree Snowstorm, the Punjab PDMA utilized social media to shareupdates about aid provided to those affected.

"On the Instruction of Chief Minister Punjab blankets, medicine and food are beingprovided to the tourists stuck in snowfall". (PDMA Punjab Twitter and Facebook).

However, there was a lack of communication regarding aid from the NDMA and PDMAs of Sindh, KPK, and Baluchistan for tourists and locals stranded in the snowstorm.

The PDMA of Sindh shared details about aid for citizens affected by monsoon rainfall, but no updates were posted before or after the Karachi monsoon rainfall.

"50 Life Jackets, 710 Kitchen Sets, 160 Tarpaulin sheets, 4880 Jerrycans, 110 WaterCoolers, 820 Folding Beds, 820 Pillows, 720 Beds Sheets, 45 Daigs of Cooked Food, and 300 Ration Bags, etc. is part of relief supplied during this monsoon". (PDMA Sindh Twitterand Facebook Post).

There were no tweets or Facebook posts observed from the NDMA, Punjab PDMA, KPK PDMA, and Baluchistan PDMA regarding aid for Karachi monsoon rainfall.

The NDMA shared information about government aid for flood victims.

"Relief Goods for 500 Flood-affected Families of Tank & Cheques for Ex-Gratia Assistance to NOKs of Flood Victims in KP distributed" (NDMA Twitter and Facebook Page).

While the Punjab PDMA posted about aid on their social media platforms.

"PDMA Punjab and DDMA DG Khan providing shelter, food, health facilities, and other basic amenities to the flood affectees of DG khan Hill torrents" (PDMA Punjab Twitterand Facebook Page).

The PDMA of Sindh provided updates on aid activities and details of items

providedto flood victims on their Twitter and Facebook pages.

"To help the flood affected people of Uthal, Balochistan, an extra 100 tents from PDMA Sindh have been handed over to Pakistan Navy , in addition to 500 tents, already provided, on the directives of Chief Minister Sindh" (PDMA Sindh Twitter and FacebookPage).

The KPK PDMA shared news of assistance from the United Nations for floodvictims.

"UN official promises continued efforts to help flood victims" (PDMA KPK Twitter and Facebook Page) and the Baluchistan PDMA announced the distribution of funds amongflood victims.

"The government of Baluchistan distributed compensation cheques worth Rs1 millioneach, among families who suffered human losses in the recent floods. On the behalf of

Federal Government" (PDMA Baluchistan Twitter and Facebook Page)

Rescue Operation

The official social media accounts of the Punjab Provincial Disaster ManagementAuthority actively reported on the ongoing rescue operations in Murree during the snowstorm, showcasing their dedication to providing aid and support.

"In the supervision of IMBR Punjab and DGPDMA, rescue and relief operation isgoing on to protect precious human lives". (PDMA Punjab Twitter and Facebook Page).

However, it is worth noting that there was a conspicuous absence of tweets and Facebook posts from the NDMA and the Provincial Disaster Management Authorities Sindh, KPK, and Baluchistan regarding rescue operations during the Murree snowstorm.

The PDMA of Sindh shared comprehensive details about their rescue

operations, specifically focusing on clearing rainwater and extending aid to affected individuals duringKarachi Monsoon Rainfall.

"61 Ground Standing Dewatering Pumps of PDMA are engaged in the clearing of stagnant rainwater in various urban areas of Sindh, 8580 tents, 21475 mosquito nets, 20 OBM Boats" (PDMA Sindh Twitter and Facebook Page).

Regrettably, no updates were observed from the NDMA, PDMA's of Punjab, KPK,and Baluchistan during the Karachi monsoon rainfall.

On a positive note, the NDMA diligently posted about a pre-flood management meeting, exemplifying their proactive approach.

"Chairman NDMA LtG Inam Haider Malik was briefed by Cn FFC, Ahmed Kamal on key challenges & future plans for floods & water reservoirs management in Pak" (NDMA Twitter and Facebook Page). #MedicalCamps for Flood/Rain Affectees" (NDMA Twitter andFacebook Page).

Furthermore, they provided regular updates on their on-ground rescue efforts aimed at assisting flood victims. Similarly, the Punjab PDMA effectively utilized its social media platforms to inform the public about government officials monitoring relief operations in flood-affected areas.

"Relief Commissioner Punjab, Mr. Zahid Akhtar Zaman, visits D G Khan and Rajanpur flood-affected areas and issues directions to further augment the efforts to providemaximum relief to the flood-affected population" (PDMA Punjab Twitter and Facebook Page).

Additionally, the KPK PDMA proactively shared the gravity of the flood situationand sought assistance from esteemed organizations such as the United Nations.

"Director PDMA Mr. Sajid Imran presented the overall flood situation, response andsupport needed from UN and humanitarian partners in Rehab and

reconstruction of the flood affected District's" (PDMA KPK Twitter and Facebook Page).

Lastly, the Baluchistan PDMA commendably shared intricate details about theirongoing rescue operations.

"PDMA rescue teams Rescued 50 people (man, women n children) who were stuck inflood water in the KARWAN area of BELA. Now moving toward OKRRI SUKKAN area for Further rescue operations" (PDMA Baluchistan Twitter and Facebook Page

Precautions

It is regrettable that the NDMA, Sindh PDMA, KPK PDMA, and Baluchistan PDMA did not actively utilize their social media handles to disseminate vital precautionary measures to the public during the Murree Snowstorm. The National Disaster Management Authority (NDMA) took their Facebook and Twitter accounts to share essential precautions during the Karachi Monsoon Rainfall.

"Keep essential medicine, dry food items, and identity documents with you in case offlood emergency" (NDMA Twitter and Facebook Page).

Provincial Disaster Management Authority posted a video message on their socialmedia handles in which they shared precautionary measures.

"Stay away from sign boards electric wires and trees. Stay conscious while usingelectric appliances. Stock food items". (Video Message PDMA Sindh).

However, there were no tweets or Facebook posts from the PDMA's of Punjab, KPK, and Baluchistan regarding precautionary measures during the challenging period of the Karachi Monsoon Rainfall. Furthermore, there were no updates from the NDMA and PDMAs of Punjab, Sindh, KPK, and Baluchistan regarding precautionary measures during floods.

National Disaster Management Authority and PDMA's of Punjab,

Sindh, KPK, andBaluchistan did not post any other tweet during the Murree Snowstorm. National Disaster Management Authority posted on their Facebook and Twitter handles about the conferenceregarding Monsoon.

National Monsoon Preparedness Conference 2022 presided by Lt. Gen. Akhtar Nawaz, Chairman NDMA was organized by NDMA in Islamabad today". (NDMA Twitterand Facebook Page).

Third National #Monsoon Preparedness Review Conference 2022 Held in #NDMA

No other tweets and Facebook Posts from PDMA's Punjab, KPK, Sindh, and Baluchistan during Karachi Monsoon Rainfall. National Disaster Management Authority posted on their social media about the Participation of Chairman NDMA in the recognitionevent.

"Chairman #NDMApk Lt General Inam Haider Malik attended the Recognition Eventto acknowledge the Govt & People of Japan for their generous support during Floods 2022 with the support of UNICEF" (NDMA Twitter and Facebook Page).

They also posted about fake news circulating on social media

"There is no authenticity in the news circulating on SM about selling of flourbagsrecived from UK. As Govt of Pakistan & NDMApak has not received any aid from UnitedKingdom containing/consisting of flour bags" (NDMA Twitter and Facebook Page).

The provincial Disaster Management Authority of KPK posted the news of damagesdue to the flood.

"Floods damaged 91,458 houses in KP". (PDMA KPK Twitter and Facebook Page)

In conclusion, the analysis underscores the need for consistent and comprehensive social media engagement by disaster management authorities

during natural disasters. This includes timely updates, proactive warnings, and detailed information about relief efforts, rescueoperations, and precautionary measures. Such practices would improve public awareness, preparedness, and overall disaster management outcomes.

Conclusion

This research examined the Facebook and Twitter activities of the National Disaster Management Authority (NDMA) and Provincial Disaster Management Authorities (PDMA's) from 1st January to 31st December 2022, encompassing the Murree Snowstorm, Karachi Monsoon Rainfall, and Floods.

The primary objective was to gain insights into the nature of information disseminated through their social media handles during these natural disasters. The utilization of social media by disaster management authorities to communicate vital information to citizens is undoubtedly a laudable initiative, exemplifying the pursuit of sound governance principles, ensuring transparency, responsibility, and accountability in the government's interactions with its citizens. As responsible entities tasked with safeguarding public welfare, the disaster management authorities undertook the significant responsibility of keeping the citizens updated during the aforementioned natural calamities.

This research discerned that the disaster management authorities' social media communications during the crisis can be categorized into five categories. First and foremost, weather updates were crucial in providing timely notifications about the Murree snowstorm, Karachi monsoon rainfall, and flood warnings, issued by NDMA and various PDMAs, thus aiding citizens in making informed decisions. The second theme of aid highlights the humanitarian efforts exhibited by NDMA and PDMA's. The authorities promptly delivered essential aid such as blankets, food, medicine, and other

amenities to those affected by the disasters, extending a helping hand to stranded tourists, flood victims, and other vulnerable populations. Moreover, the research uncovered the significance of rescue operation updates disseminated through social media channels. The real-time information about ongoing rescue missions, extraction efforts, and citizen evacuation efforts exemplifies the disaster management authorities' commitment to safeguarding lives and minimizing the impact of these calamities.

The fourth theme, precautionary measures, demonstrated the proactive approach taken by the authoritiesin mitigating the disasters' effects. By sharing preventative guidelines, such as flood alert evacuations and safety measures during monsoon rainfall, the disaster management authorities aimed to empower citizens to take precautionary actions. Finally, the other tweetsand posts provided additional information that did not fit the predefined themes. These included updates about the extent of damage, distribution of assistance, and other pertinent details related to the crises.

In light of these findings, it is evident that employing social media as a disaster management tool represents a commendable step forward, allowing for more efficient, cost- effective, and widespread information dissemination. However, it is crucial to acknowledge that this approach is still in its early stages, and there is ample room for further development and optimization. As we conclude this research article, it is imperative to recognize the potential impact of leveraging social media in disaster management. By refining their strategies, disaster management authorities can harness the power of social media to enhancepublic engagement, foster collaboration between authorities and citizens, and ultimately promote a more resilient and prepared society.

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