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ROLE OF DIGITAL MEDIA IN ENGAGING UNIVERSITY STUDENTS OF SINDH, PAKISTAN IN PARTICIPATORY CLIMATE CHANGE COMMUNICATION

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The role of young people is considered significant to combat climate change across the globe and digital media has played a commendable part in engaging the young generation in climate change communication as well as motivating them for climate action. This article examines the role of digital media platforms in engaging the university students in online communication about climate change. The data was gathered by conducting a cross-sectional survey in six public sector universities of Sindh province. The sample was consisted of 600 students. A close-ended questionnaire was used for data collection and the data was analyzed with SPSS software. The findings point towards a positive role of digital media in engaging the university students of Sindh in online climate change communication. The results indicate that formats of social media posts, videos, and climate change-related content supported by relevant images and research were effective in attracting the attention of university students. However, the participation of the students in climate change communication was limited to liking and sharing of the content. Finally, the lack of internet and skills to provide feedback on digital media emerged as the major hurdles in the online engagement of university students with climate change communication in Sindh, Pakistan.

Keywords: *Climate Change Communication, Participatory Communication, University Students, Digital Media*

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Introduction

Pakistan is one of the extremely susceptible countries to the impacts of climate change Moreover, Sindh province of the country is measured as climate hotspot (Mani, et al., *2018;* Lohano & Mari, 2020). The province encompasses varied types of ecosystems including desert of Tharparkar, hilly terrains of Kacho, deltaic region along the Arabian Sea (Sindh Climate Change Policy, 2022). Due to this climatic diversity the province is facing multiple climate change induced threats including floods, droughts, heat waves, sea intrusions etc. (Khan et al., 2021).

Being a lower Indus Basin territory Sindh is also prone to the climatic and weather changes in the upstream of the Indus River. Especially, projections related to rapid melting of glaciers in the upstream indicate towards probable water insecurity issues in future as the Indus River is the major source of water for different parts of Pakistan including the Sindh province (ADB, report, 2011; Heureux et al, 2022). The studies based on analysis of changes in climatic condition of the province indicate a statistically significant tendency of changes in rainfall and hotness in different regions of Sindh during past few decades and future projections indicate towards possibility of an average increase in the temperature by 2 to 5 centigrade by the end of the century, if the current trends of emissions continue (Lohano & Mari, 2020).

The monsoon rains are a major source of water especially for arid regions of Sindh. Unusual delay in monsoon cause drought like situation in Tharparkar and other arid regions. Simultaneously, changes in monsoon rain pattern also cause rain induced floods in different parts of Sindh which results in devastating loss of life and property in the province (Ahmed et al., 219; Zia, Hussain, & Hameed, 2022 ;Siyal, Kazmi, & Zahara, 2018). The flood situation in 2022 further exposed the vulnerability of Sindh to the changing monsoon precipitation patterns as annual monsoon rains during the period between June and August were unprecedented. Particularly, the rainfall data of August 2022 shows that it was the wettest August of the history of the province (Abid & Abid, 2023; Lama, & Tatu, 2022).

Taking into consideration the vulnerabilities of the Sindh province to multiple climate change threats the experts have recommended long term adaptation measures, policies and actions to protect the economy and ecosystems of Sindh in an age of climate crisis. The previous research particularly highlights the importance of an effective climate change awareness campaigns to enhance climate resilience in the society (Lohano & Mari 2020; Solomon, 2019; Shahzad & Amjad, 2022; Farooq & Fatima 2022).

In this context, digital media is playing an important role in promoting awareness and climate action across the globe. Especially, the young climate activists in different parts of the world including developing countries are using digital media platforms to organize climate actions. Thus, online media are basic tool of communication for global youth climate awareness movement (Mavrodieva et al, 2019; Wielk, & Standlee, 2021). The young activists at the forefront of climate movement were not only using digital media as a mobilizing tool, but these digital media platforms have provided an opportunity to new generation to actively participate in climate change discourse and use online spaces to express their views about the subject. In this way, the digital media platforms have made discourse about climate change more participatory (Belotti, 2022). In this backdrop, this study was conducted to evaluate the role of online media to engage young generation of Sindh in participatory discourse about climate change.

Literature Review

The literature related to climate change communication reveal that significant advances have been made in search for more effective tools and strategies to disseminate climate information and raising awareness about the climate crisis. The scope of academic research related to this subject has also rapidly expanded especially since the mid-2000s (Schäfer, 2016; Moser, 2016). In the past, climate change communication was mainly limited to the top to down approach and it was largely based on top to down approach in which climate information from claim makers like scientists, policymakers and other stakeholders was being disseminated through mass media (Harris, 2018). Nevertheless, the

advent of digital media has transformed the way climate change was being discussed in the society and these online platforms have ushered a new era of climate change education and awareness campaigns (Painter, Kristiansen & Schäfer, 2018).

In this regard, the theory of participatory culture refers to a communication scenario in which hefty number of people belonging to different section of society are able to produce and share the media content with each other and provide their feedback to the content shared online (Jenkins, 2019). Against this theoretical background, the digital media platforms have provided an unprecedented opportunity to the audience of climate change communication to participate and contribute in the discourses about climate change. It has created a new type of engagement between the media content producer and consumer (Beach & Smith, 2022; Appelgren, & Jönsson, 2021)

Therefore, the digital media platforms are referred as participatory media in which publics of media users actively participate in creation and dissemination of content (Chandler & Munday, 2016). In this way, online platforms promote mass participation, public dialogue and stakeholder engagement (Oliver, Cadena-Roa, & Strawn, 2003).

Nowadays, online media outlets are widely used by both climate change advocates and the audiences to discuss the impacts of global warming and strategies to deal with the climate crisis. Similarly, these platforms are being widely used to co-ordinate the rescue and relief activities in aftermath of climate-induced disasters (Tandoc & Eng, 2017). In this way, these online spaces are spearheading a culture of participatory climate change communication as digital media platforms have minimized the role of traditional gatekeepers. (Mario & Daria 2016).

The studies conducted in past decade highlight that the digital media platforms are playing an important role in enhancing public and political engagement with climate change (Boulianne, 2020; Rajanen, 2021, Arlt, et al., 2018; Lörcher, & Taddicken, 2017; Yang, 2022). This wide scale engagement of both climate change claim makers and public in an interactive discussion on online platforms have given rise to a new class of climate change communicators called green influencers (greenfluencers) who regularly post and

share content related to environmental issues, climate change and sustainability (Knupfer, Neureiter, & Matthes, 2023).

However, the most of the studies related to the effectiveness of online media outlets in enhancing public participation in discussion about climate change are mostly conducted in developed world. Therefore, the subject matter has been chiefly investigated from western viewpoint and the role of participatory online communication in social construction of climate change in other cultures has yet to be explored (Yang et al., 2022). Thus, the importance of a holistic approach to study and understand the role of social media across the variety of platforms, cultures and media systems is being increasingly emphasized by the researchers (Tandoc & Eng, 2017).

Study Objectives

- To study the digital media usage patterns of university students for climate change communication.
- To assess the role of digital media platforms in engaging the University students in participatory climate change communication.
- To assess the hurdles students face while engaging themselves in climate change communication on digital media.

Hypothesis

- The digital media platforms play a positive role in engaging university students with climate change and promoting their participation in online climate change communication.

Methodology

The quantitative methodology was used to collect data for this study. A cross sectional survey based on a close-ended questionnaire was conducted in six public sector universities of Sindh, Pakistan. The respondents belonged to generation Z, as this generation mainly depends on digital media sources to obtain knowledge about social concerns (Wada, 2019). The Z generation refers to someone born from the year 1997 and onward. The sample was comprised of the students enrolled in social science faculties of the chosen public sector general universities in Sindh province. The students of social sciences were selected, because, they are supposed to be interested in social issues such as

climate crisis (Dimock, 2019). A self-administered questionnaire was filled by 600 sampled students within the premises of the chosen universities. The pilot study was conducted to test the reliability and validity of the questionnaire. The sub sample for the pilot study consisted upon 50 students belonging University of Sindh, Jamshoro. SPSS software was used to analyze the data, as it is commonly used in social science to evaluate the activities and opinions of people in an analytical method (Gogoi, 2020)

RESULTS AND DISCUSSION

Demographic information

Table 1: Demographic characteristics of the participants

	Number	**Percentage (%)**
Gender		
Male	290	(48.3)
Female	310	(51.7)
Agecategories		
Up to 22 years	342	(57)
Above 22 years	258	(43.0)
University		
University of Sindh, Jamshoro	200	(33.3)
University of Karachi	200	(33.3)
Shah Abdul Latif University, Khairpur	50	(8.3)
Shaheed Mohtarma Benazir Bhutto University	50	(8.3)
Sindh Maders-tul-Islam University	50	(8.3)
Federal Urdu University, Karachi	50	(8.3)

Table 1 demonstrates the demographic profile of the respondents which indicates a slight difference between the ratio of male and female respondents as the proportion of the female respondents was little over than fifty percent (51.7%), while the proportion of male

respondents was 48.3%. Although, in terms of the age group all the respondents belonged to an age group referred as Generation Z. However, the respondents were further divided two categories that are those students who were aged up to 22 years and older than 22 years. The findings pertaining to age categories show that 57% of the respondents belonged to the age group categorised as up to 22 years old. While, the remaining proportion (43.0%) belonged to age category of above 22 years. Additionally, data related to universities reveal that two largest segments of the respondents (33%) each, belonged to the University of Sindh, Jamshoro and the University of Karachi; while the share of the remaining four other universities i.e. the Shah Abdul Latif University, Khairpur Mirs, the Shaheed Mohtarrma Benazeer Bhutto University, the Sindh Madars-tul- Islam University, Karachi and the Federal Urdu University Karachi was 8.3% each.

6.2: Digital Media Usage Preferences

Table: 2: Digital media usage preferences

Digital media platforms	Responses		Percent of Cases
	N	Percent	
News websites	243	8.0%	40.6%
Blogs	159	5.3%	26.5%
Twitter	299	9.9%	49.9%
Instagram	418	13.8%	69.8%
Snap chat	348	11.5%	58.1%
Facebook	528	17.5%	88.1%
YouTube	463	15.3%	77.3%
WhatsApp	516	17.1%	86.1%
Any other	50	1.7%	8.3%
Total	**2024**	**100.0%**	**504.8%**

The data shown in table 2 indicates that Facebook is the most well-liked digital media platform and it was being used by (88.1) percent of the respondents. Added, WhatsApp is the second trendiest platform among the respondents. Whereas, YouTube

surfaced as the third trendiest platform as a proportion of (77.3%) of the respondents were using this platform. Moreover, in context of other preferred online platforms Instagram scored (69.8%), Snapchat scored (58.1%), Twitter scored (49.9%), news websites scored (40.6%), and blogs scored (26.5%). Lastly, 8.3 % of the respondents also stated that they used some other online platforms not mentioned in the list.

Effective Digital Media Formats

Table: 3 Effective digital media formats

Most favorite format to receive climate change information?	Responses		Percent of Cases
	N	Percent	
Social media posts	440	34.3%	74.5%
Online blogs	147	11.4%	24.9%
Web articles	164	12.8%	27.7%
Videos	360	28.0%	60.9%
Podcasts	153	11.9%	25.9%
Any other	20	1.6%	3.4%
Total	**1284**	**100.0%**	**217.3%**

The data in table 3 shows the results related the most favorite format of the respondents to obtain information regarding climate change on online platforms. The results point out that social media posts are the top favorite format (74.5%) of the respondents to receive climate change-related information on digital media. While videos surfaced as the second most preferred format favored by (60.9%) of the respondents. Whereas, online articles come into view as the third most preferred format, as (27.7%) of the respondents chose this format for obtaining climate change information. Furthermore, (25.9%) of the surveyed students also liked podcasts; and blogs were favored by (24.9) of the students as one of their preferred format to acquire climate information. Finally, a small segment of the respondents (3.4%) also mentioned to other formats referred in the table as "Any other".

Climate change content attraction

Table: 4: Climate change content attraction

Why climate change content on digital media attracts you?	Responses		Percent of Cases
	N	Percent	
Eye-catching images	366	35.7%	62.4%
Writing style	111	10.8%	18.9%
Well researched	279	27.2%	47.5%
Related to my community	178	17.3%	30.3%
Featured a celebrity	79	7.7%	13.5%
Any other	13	1.3%	2.2%
Total	**1026**	**100.0%**	**174.8%**

The table 4 shows the Multiple Dichotomy Analysis aimed at discerning the quality which enhance the attraction of climate change related content for the audience. The results indicate that eye-catching images are the most prominent factor which makes the content related to climate change attractive for the audience, as (62.4%) of the surveyed students acknowledged that eye-catching images attract their interest towards climate change related information.

It is followed by the category of "well researched content" that attracted the attention (47.5%) of the respondents. Community related content was source of attraction for 30.3% of the respondents, writing style and featuring celebrity in online content about climate change was reason for acquiring the attention of (18.9%) & (13.5%) of the respondents respectively. Only (2.2 %) of the respondents referred to some other element not provided in the option list.

Participation of students in discourse about climate change

Table: 5 Type of reaction for digital media content on digital media

Reaction type to digital media content	Responses		Percent of Cases
	N	Percent	
Shared content on social media	338	37.4%	57.9%
Ignored content	90	10.0%	15.4%
Liked content	283	31.3%	48.5%
Commented on content	131	14.5%	22.4%
Not interested in discussion	51	5.6%	8.7%
Any other	11	1.2%	1.9%
Total	**904**	**100.0%**	**154.8%**

The findings of Multiple Dichotomy Analysis in table 5 show that majority of the respondents (57.9%) react by sharing the online content about climate change communication. Whereas, liking the content on social media was second most popular mode of providing feedback to online discussion about climate change as (48.5%) of the respondents used to like the information about climate change. The trend of participation in online discussion through comments was found to be very low as only (22.4%) of the respondent had experience of commenting on web based content highlighting the problem of climate change.

Conversely, (15.4%) of the respondents chose the option of ignoring such content. Whereas, (8.7%) of the respondents acknowledged that they were not interested in participating in any online discussion about climate change. Thus, the results point out that the engagement of the majority of the students in online discussions about climate change is limited to liking and sharing the information. Whereas, active participation of the surveyed audience in form of providing their input in form of comments was found to be comparatively low. Moreover, just about a quarter of the surveyed students either ignored the content or was not interested in participating in the discussion.

Barriers in Online Climate Change Communication

Table: Barriers in online climate change communication

Barriers in online climate change communication	Responses		Percent of Cases
	N	Percent	
Lack of digital gadgets	176	21.0%	31.0%
Lack of internet	247	29.4%	43.5%
Lack of digital skills	252	30.0%	44.4%
Jargonized content	150	17.9%	26.4%
Any other	14	1.7%	2.5%
Total	**839**	**100.0%**	**147.7%**

The data provided in table shows that the lack of digital skills to participate in online discourse about climate change is the highest rated barrier in providing feedback to the climate change related content. In this context, (44. 4 %) of the surveyed students cited lack of digital skills as the topmost barrier in climate change communication. With a slight difference the lack of internet surfaced to be the second most prominent barrier as (44.4%) of the surveyed students cited it as a barrier in climate change communication. Moreover, the lack of gadgets was mentioned by (31%) of the respondents while (26.4) percent conceived jargonized content as one of the major barrier in online climate change communication.

Conclusion

This study was conducted to assess the role of digital media in engaging university students of Sindh, Pakistan in participatory climate change communication. The results of this study indicate that Facebook is the most popular digital media platform among the university students of Sindh province, followed by Whatsapp and Youtube as second and third most popular platforms respectively. Similar studies conducted in other parts of the world also reported that Facebook continues to be the most widely used platform. However, other platforms are also becoming popular among the new generation (Dumford et al., 2023).

Like a Nigerian study concluded that the social media platforms mostly used are WhatsApp, Facebook, Instagram, and YouTube (Tayo, Adebola, &Yahya, 2019). Thus, this study also revealed that Face book, Whatsapp and YouTube are top most popular platforms among university students in Sindh; however, it was observed that new platforms are emerging on the scene. One such example is rapid popularity of TickTok during the recent times (Dumford et al., 2023).

Further, the results of this study indicated that "social media posts" surfaced as the most preferred format to obtain climate change-related information on digital media, whereas, videos and web articles surfaced as second and third most preferred source to obtain climate change information through online media platforms. Other studies also support the findings of this study that social media posts play an important role in engaging the public with climate science (Peters et al., 2023).

This study further highlighted the importance of audio visual elements in making climate change related information more attractive as the findings of the study divulge that eye-catching images are the most prominent element which enhances the attractiveness of the climate change related content. Moreover, the information supported by well researched data and content related to community surfaced as the second and third most important quality in respective order to attract the attention of the surveyed digital media audience. The related literature review also affirms that providing precise numeric information especially about climate events, in social media posts can generate higher public engagement and trust. Thus the scientists and climate change communicators have the opportunity to use the information supported by facts and figures to raise public awareness about climate change (Peters et al., 2024).

In terms of engaging the university students in online discourse about climate change, the results of this study revealed that the majority of the students demonstrate their engagement with online climate change communication either by re-sharing the content or

liking the content. In this way, the results supported the hypotheses of this study that the digital media platforms are playing a positive role in engaging university students with climate change and promoting their participation in online climate change communication However, the survey results indicate that the ratio of students providing their input in the discourse in the form of comments and counter-comments was low and only (22.4%) of the respondents had ever commented on a content related to climate change.

In terms of participatory culture theory which emphasizes on both sharing and creation of content (Jenkins, 2019) the results of this study indicate that majority of the university students are playing their part in further dissemination of climate information by sharing content. They are also putting weightage to the content by liking it. However, their role in creation of content as well as modifying or adding in the content through comments and counter comments is relatively low.

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