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Assessing the effectiveness of community radio during the 2015 floods in Tamil Nadu

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Abstract

Flooding due to the unusual excessive rainfall during the month of December in 2015 was one of the recent calamities that turned the state of Tamil Nadu upside down. The arterial districts of the state were reeling under water due to the intense flooding and the coastal district of Cuddalore was one among the severely impacted. People residing in Cuddalore district were extremely traumatised and were clueless about the ongoing situation due to a major power outage and subsequent communication blackout. The advent of an emergency community radio in the post disaster phase of the 2015 floods in Tamil Nadu in the coastal district of Cuddalore carved a place for itself in history by becoming the country's first ever emergency radio station and emerged as a timely disaster communication medium for the affected community. The present study aims to analyse the consumption of an emergency community radio *Peridar Kaala Vaanoli* (Tamil words meaning radio in times of extreme calamity) established for disaster communication in the context of a coastal district in a rapidly developing nation like India. The study is attempting to identify the predictors that envision the effective consumption of an exclusive community radio dedicated for emergency communication in the post disaster phase of the Tamil Nadu Floods, 2015, apart from a comprehensively analysing the socio-economic conditions and the extent of media technology diffusion with respect to the Cuddalore community through survey method. The empirical evidences from the current study state that the extent of media technology diffusion among the respondents is in line with their economic background and the emergency community radio *Peridar Kaala Vaanoli* has been effective through community empowerment, community resilience, needs gratification and inclusive communication design.

Keywords: disaster, emergency, communication, Peridar Kaala Vaanoli

1. Introduction

1.1 Community radio – then and now

The formal models of radio broadcasting in India include commercial radio and public radio. The country witnessed the emergence of community radio stations as the third formal tier of radio broadcasting when the government promulgated a policy to institute the community radio stations by well-established educational institutions in the year 2002. Later the government extended the scope of establishment of these community radio stations to non-profit and voluntary civil society organizations that sowed the seed for the growth of community radio stations in India. Community radio stations operate on a low output frequency that extends its coverage over a small geographical area. Community radio stations intended to

echo and subsequently met out the needs of communities that are usually neglected by the mainstream media agenda (Jayaprakash, 2000). Community radio stations facilitate two-way communication by bridging the information providers and information receivers. The active civic participation in the community radio programming establishes a sense of connection with the audience which is one of the fine aspects of community radio (Gaynor and O'Brien, 2017, p. 39). The South Indian state of Tamil Nadu holds the pride of possessing the highest number of operational community radio stations in the country (Prabhakar, 2012) apart from being a forerunner in respect of exclusive community radio establishments in the wake of disasters and other community development ventures. Nirmala (2015, p. 44) states that the first campus community radio in country, Anna FM (Frequency Modulation) was established in the state of Tamil Nadu with a view

to achieve community development through education and subsequently carved a place for itself in the history of radio broadcasting in India. The community radio station operates on the frequency of 90.4 MHz and is stationed at Anna University, Chennai. Prabakar (2009, p. 7) stated that the programming schedule of the community radio station was designed in a way that focused on community-centered programming. And the same was achieved by the radio station by considering the community as an intrinsic part at every stage of the communication process. The researcher also points out that Anna FM community radio station reached out to the affected communities of the Indian Ocean tsunami in 2004 by providing an opportunity to voice out their fears and anxieties apart from disseminating critical communication pertaining to voluntary support, recovery and rehabilitation and proved that community radio can be effectively used as an inclusive community disaster communication medium especially for the vulnerable population. The establishment of Anna FM community radio was a successful community development venture therefore the Government of India was inquisitive to explore the feasibility to establish a network of community radio-based disaster warning systems in the Andaman and Nicobar Islands with monitoring and support from Anna FM community radio station (Prabakar, 2009, p. 11).

Radio is considered as a powerful tool that has the potential to bridge infrastructural impediments like digital divide that is widely prevalent in India (Rao, 2005, pp. 361–366) and thereby drives the relevance and necessity of its usage. According to a recent study, it is found that radio is the second most accessed media platform (Ahluwalia, 2018). The radio usage statistics concedes the fact that radio has the capability of bridging the communication technology disparities in the near future paving way for the emergence of a technologically empowered nation.

Community radio specifically aids in improving the access to communication networks in developing regions of India (Rao, 2005, p. 371). Currently, there are about 217 operational community radio stations in the country according to the reports by the Ministry of Information and Broadcasting, Government of India (Ministry of Information and Broadcasting, 2018).

Some of the operational community radio stations in the state of Tamil Nadu include Anna FM community radio, Loyola community radio, *Kongu* community radio, *Ilanthalir* community radio, *Muthucharam* community radio *Periyar* community radio, *Sivanthi* community radio and many more (Community Radio Facilitation Centre, n.d.a). These community radio stations are run by established educational institutions in the state.

1.2 Need for community disaster communication in Tamil Nadu

The World Health Organization defines disaster as an occurrence that can disrupt the normal conditions for existence that causes suffering that extends beyond the capacity of the affected community (World Health Organization, 2002, p. 3). The effects of disasters become dire when they strike a region occupied by human settlements.

Among the 35 states and union territories (combined) in India, 27 are prone to various disasters and more specifically the state of Tamil Nadu is increasingly prone to multiple natural hazards in comparison to other states in the country in terms of various nature and intensities of the calamities (Government of Tamil Nadu, 2012, p. 1). The state of Tamil Nadu accounts for 15 % of the country's coastline where 40 % of the fishing community lives within 1 kilometer from the coast and about another 50 % live within 2 kilometers from the coast. The state witnesses flooding like flash floods, monsoon floods, cyclonic floods, cloud bursts, and dam failures almost every year and about 8 % of the state is affected by cyclones of which some are very intense in nature (ENVIS Centre: Tamil Nadu, 2018).

Year on year several thousands of people in the state of Tamil Nadu are affected by these disasters and subsequently the damage inflicted on their settlements, environment, and vegetation is very evident which eventually deteriorates the quality of life of the disaster affected communities.

The disaster vulnerability profile of the state of Tamil Nadu speaks in volumes for a fact that the disaster risk is high for the people and that the risk is inflated with the existence of poverty and poor socio-economic conditions that diminish the coping capacities of the vulnerable communities (ENVIS Centre: Tamil Nadu, 2018). Added to this is a growing concern pertaining to climate change and variability that accentuate as well as underscore the need for disaster risk reduction practices that paves way for a sustainable and a resilient nation (ENVIS Centre: Tamil Nadu, 2018).

According to Thattai, et al. (2017, p. 4) these growing hazards are considered alarming since they pose serious threats to India's vast coastline that experiences frequent disasters accounting for 10 % of the tropical cyclones that surge across the world. The role of community radio stations particularly in the wake of disasters is manifold. According to van Kessel, MacDougall and Gibbs (2014, p. 459) and Fombad and Jiyane (2016, p. 1), community radio stations not only inform but also empower the vulnerable population to face the wrath of disasters by overcoming the socio-economic issues.

1.3 Community radio and coastal disasters, Tamil Nadu

The gigantic tsunami of 26th December 2004 shook the coast line of the Indian Ocean and the adjoining land masses to a grave extent that massacred *lakhs* (hundred thousands) of people living in 14 different countries across the Indian Ocean region (International tsunami Information Center, UNESCO, n.d.). The Indian Ocean tsunami of 2004 left deep scars in the coastal community of the state of Tamil Nadu in India by washing off the dense settlements along the coastline and leaving them massively inundated. The Indian Ocean tsunami of 2004 was considered one of the deadliest disasters in the history of mankind (Taylor, 2014). The communities that fell as a prey to such a deadly disaster were not prepared enough to manage them and hence the impact was very dire. The Indian states of Tamil Nadu, Andhra Pradesh, Kerala and the union territories of Puducherry and Andaman and Nicobar Islands were deeply impacted by the deadly wave, tsunami (National Disaster Management Authority, Government of India, n.d.). The affected areas of tsunami in the state of Tamil Nadu include Nagapattinam, Chennai, Cuddalore, Kancheepuram, Thanjavur, Thiruvarur, Thoothukudi, Kanyakumari, Tiruvallur, Villupuram, Pudhukottai, Ramanathapuram and Tirunelveli where several thousands of people were washed away by the giant tidal waves and eventually lost their lives (Tamilnadu State Disaster Management Agency, n.d.). The intensity of disaster vulnerability of the coastal community of India became obvious only when the Indian Ocean tsunami surged (Government of Tamil Nadu, 2012, p. 1).

Ilamparithi (2011, p. 11) reported that years after the tsunami devastation, a non-profit organization named DHAN Foundation extended a helping hand to severely affected fishing and farming communities in the coastal district of Nagapattinam in the state of Tamil Nadu through a community-centered approach. The community radio station was christened *Kalanjiam Saamuga Vaanoli* (Tamil words meaning *Kalanjiam* Community Radio) and the station operated on the frequency of 90.8 MHz. The community radio was backed by the joint efforts of the United Nations' tsunami recovery support programme. Quinn (2008) points out that the broadcasts of the community radio stations aim at capacity building towards effective disaster management for the affected community. According to Kuppuswamy and Rajarathnam (2009, p. 210), Ewart and Dekker (2013, p. 378), and van Kessel, MacDougall and Gibbs (2014, p. 459) community radio stations have the potential to develop disaster resilient communities for the future. Disasters of the past often reiterate the importance of building resilient communities for the future and the same is emphasized in the Sendai Framework for Disaster Risk Reduction 2015–2030 through a community centered approach (UNISDR, 2015).

Community radio specifically aids the affected communities by addressing the local concerns through grassroots communication (UNESCO, 2007). In the context of a rapidly developing nation like India community disaster communications tools like community radio stations possess an elevated need and relevance during pressing situations like disasters. According to Al-hassan, Andani and Abdul-Malik (2011), and Fombad and Jiyane (2016), community radio stations recognise the importance of social inclusion in developing nations through participatory communication that paves way for not only reaching out to the remotest, most vulnerable and the socially underprivileged but also empowers them with the necessary knowledge and skills. Coile (1997) states that the community radio stations act as mediators coordinating various rescue and relief activities, collecting and reporting information about the status of the disaster affected communities and aid in swift recovery from the trauma caused by the disaster. These activities aid the disaster vulnerable communities by training and preparing them to face the fury of grave disasters by strengthening their coping capacities and life-saving skills with a long-term focus. A deep-rooted legacy of community radio in the state speaks volumes particularly in the context of being an inclusive medium that allows the most vulnerable communities to be an intrinsic part of development through participatory communication. A handful of community radio stations have been established in the state of Tamil Nadu in the wake of coastal disasters for emergency communication. One such community radio established recently was *Peridar Kaala Vaanoli* (Tamil words meaning radio in times of extreme calamity) in the coastal district of Cuddalore in Tamil Nadu, India.

1.4 *Peridar Kaala Vaanoli* 107.8 MHz

With frequent instances of disasters, the state of Tamil Nadu has become a disaster-stricken region particularly in the months of November and December in the recent times. It was floods in 2015 and cyclones in the subsequent years. But the 2015 floods were the first-time experience for many residing in the state for whom the beginning days of December in 2015 were nightmarish. People living in the flood vulnerable areas of the state woke up to see their surroundings and nearby localities drowning due to heavy downpours and subsequent breakage of a major water body, the *Chembarambakkam* lake, in the wee hours of December 1, 2015. The people were experiencing the ferocity of the unusual torrential rains caused by the North-East monsoon that eventually ended up in severe flooding in the major coastal districts of Tamil Nadu apart from the neighboring union territory –

Pondicherry, and state – Andhra Pradesh. The continuous heavy rains that lashed the state of Tamil Nadu resulted in the transport systems coming to a standstill, power supply being suspended, drains ceasing to function, communication lines failing to operate and overall the daily routine in the flood affected areas came to a complete deadlock. Flooding and its subsequent impact pushed the affected communities to undergo a large-scale blackout. The intensity of flooding was high enough to submerge vehicles like bikes and cars that were parked in the ground level. The flooding eventually became a declared national disaster that claimed around 470 lives and severely impacted the livestock and agricultural crops and the adjoining land masses (Press Trust of India, 2016). People who underwent the trauma caused by the intense flooding became clueless of the ongoing situation and were desperate for information and communication since the disaster devastated the communication infrastructure altogether, washed away people's hope, their hard-earned property, darkened their living and drove many homeless. The coastal stretch beginning from Chennai till Cuddalore was intensely inundated. It was amidst all these startling events that the emergency community radio *Peridar Kaala Vaanoli* made a record of sorts in the history of Indian radio by becoming the country's first ever radio station exclusively established for emergency communication (Ramakrishnan, 2015) that operated on the frequency of 107.8 MHz. The community media stationed at the Office of the District Collector, Cuddalore redefined the scope, need and sustainability of media during emergencies like disasters and was inaugurated by the district collector. The reach of the radio was approximately 20 kilometers radius from the district collector office, Cuddalore. The establishment of the emergency community media *Peridar Kaala Vaanoli* is a clear-cut evidence of the combined efforts of radio practitioners, social activists, and government bodies along with the local administration (Ramakrishnan, 2015). A capital amount of Rs. 500 000 is required to setup a community radio station in India (Community Radio Facilitation Centre, n.d.b). In the case of establishing *Peridar Kaala Vaanoli*, the Wireless Planning and Coordination (WPC) wing of the Ministry of Communications issued swift license to run the community radio, organizations such as the Broadcast Engineering Consultants India Ltd. (BECIL) rendered support by providing assistance to setup the equipment for broadcasting, the National Informatics Centre provided technical resources such as computers and internet connectivity and the government owned Bharat Sanchar Nigam Limited (BSNL) provided a dedicated contact number for helpline and other necessary resources were harnessed by volunteers and supporting organizations (Manzar, 2015). Volunteers including the then district collector came forward to be announcers of the community radio to broadcast notifications

from the district administration on the flood relief measures (Ramakrishnan, 2015) and subsequently drove the popularity of the community radio to the Cuddalore community. The emergency community radio service was the one that was an affordable and accessible medium that broadcast timely, situational, local and relevant information to the flood affected Cuddalore coastal community. The radio service chalked out issue focused programming plan and broadcast programmes on relief and rehabilitation activities carried out in the region apart from news, educational and phone-in programs that allowed the flood affected community to be a part of the disaster communication process. The intent of the community media like *Peridar Kaala Vaanoli* for instance was to reach out to the people living in the geographically remote areas who are otherwise not reached by the local administration (Manzar, 2015) and heal the nightmarish experience after the disaster incidence by guiding the community towards recovery and reconstruction.

1.5 Deep-rooted dependence on community media during disasters

During grave events like disasters, the communication infrastructure is impacted that it ceases to function. Failure of the communication infrastructure indicates a flat line in information dissemination that in turn instigates a sense of fear and anxiety among those experiencing the unpredictable disruptions. During untoward circumstances, local medium like community radio service becomes the primary source of situational information and people exhibit a heightened dependence on such communication medium due to want of crucial crisis information (Hindman and Coyle, 1999, p. 8). The emergence of the only viable source of information and communication *Peridar Kaala Vaanoli* for the coastal district Cuddalore in the post disaster phase of the 2015 floods in Tamil Nadu raised hopes for the disaster affected community. Incidences of disasters instigate the realization that the basic needs for human beings need to be redefined. Birowo (2010) states that during emergencies like disasters people need, not just food, water, clothing and shelter but also a medium for communication to get to know the ongoing situation and bounce back to normalcy. Ewart and Dekker (2013, p. 370) say community radio service has envisioned the same by being an accessible, affordable and interactive communication medium. According to Romo-Murphy, James and Adams (2011) community radio stations operate with a view to disseminate crucial communication to the information-thirsty community. Not just that, disasters are always discriminative in nature in the sense that their impact is disproportionate to the people who experience its fury. It is mostly the socially underprivileged and poverty-stricken who reside in the disaster vulnerable areas where the impact

is very dire. The coping capacities of those communities are poor and are often left with lack of resources that drive them to pose an increased risk to face and recover from deadly disasters. According to Banjade (2007) and Nirmala (2015) decentralised medium like community radio service empower the powerless with informational and other resources that prepare them to face the wrath of disasters. *Mandakini-ki-Awaaz, Kumaon Vani* and *Henvalvani* are decentralised community radio services established in the wake of Uttarakhand floods, 2013 in the *Rudraprayag*, *Muktheswar* and *Chamba* Valley region in India (Talwar, 2016). The community radio services aimed at playing a cardinal role in keeping the communities residing in the flood prone regions of Uttarakhand informed and alert for momentous disaster communication. An added advantage with the community radio stations is that they closely work with various disaster management agencies as well as the local government bodies to ensure that trustworthy information is passed on to the affected communities. The role of community radio stations established in the wake of disasters has been observed to be vital with respect to timely information dissemination to the disaster affected communities that satiate their thirst for information.

2. Theoretical foundation

2.1 Factors driving community radio usage during disasters

Community radio leverages the disaster affected communities by prioritizing the first level responders, the communities themselves, by providing the necessary information in the local dialect that paves way for better understanding of the situation, its intensity and impact (ICT Post Media Action Bureau, 2015). Doing so, the community radio services become pathways for accessing time-sensitive information that strengthens the fragility of the vulnerable communities to face disasters and aid in preventing such events in becoming intense humanitarian crisis. According to Wei, et al. (2010, pp. 1013–1014) timely information dissemination and the subsequent dynamic knowledge derived during

emergencies from information hubs help in achieving effective disaster risk reduction. Community radio stations stand as valuable information hubs during emergencies like disasters. These researchers also state that the content of these emergency community radio services have been designed in such a way that it sensitises the communities, satiates their informational needs and discusses crucial community-specific issues.

Hibino and Shaw (2014, pp. 386–387) manifest that a community radio service in an emergency like disaster stands as the immediate and accessible source of information that establishes situational awareness to the communities, routes emergency response, evacuation and recovery information from the local administrative bodies apart from providing backing to safeguard the physical as well as mental health of the disaster impacted. King (2002) and Wei, et al. (2010) state that when a community lags in disaster preparedness and awareness, an instance of a disaster will shock them enough and throw them out of gear.

A community radio indeed recognises the informational gap that accelerates community vulnerability and offers pertinent information and knowledge dissemination. Coyer (2011, p. 166) states that there are frequent instances of disasters in the global context and for the nations that are disaster vulnerable; radio is a major source of information for millions. Karanja (2016) highlights that there is a dire call for an escalated need for community radio stations that work tirelessly for reducing community vulnerability and eventually achieve effective disaster risk reduction. Previous studies in the area of enquiry are found to focus less on the immediacy aspect of disaster needs of the affected community which has been taken up in the current study. However, the studies throw light on the factors to be analysed for the current study (see Table 1).

Based on the factors derived from literature, the role and utility of community radio services in the post disaster phase for the coastal community is studied. The current research aspires to examine the diffusion of a community radio service *Peridar Kaala Vaanoli* established in the coastal district of Cuddalore in Tamil

Table 1: Factors considered in the current study

Factors	Quinn (2008)	Wei, et al. (2010)	Coyer (2011)	Al-hassan, Andani and Abdul-Malik (2011)	Ewart and Dekker (2013)	van Kessel, MacDougall and Gibbs (2014)	Nirmala (2015)	Fombad and Jiyane (2016)
Inclusive communication	✓		✓	✓	✓			✓
Needs gratification	✓	✓	✓	✓			✓	✓
Resilience building	✓	✓			✓	✓		
Community empowerment			✓	✓	✓	✓	✓	✓

Nadu, India during the aftermath of the 2015 floods in the state of Tamil Nadu and aims to supplement the deficiency in the area of enquiry.

2.2 The media dependency theory

The current research is grounded on the dependency model of mass media proposed by Sandra Ball-Rokeach and Melvin DeFleur in 1976. Ball-Rokeach and DeFleur (1976) in their dependency model of mass media, state that there is an internal link that exists among the audience, media and the social system. The nature of this tripartite relationship ascertains the effects of media on people and the social system. The model lays focus on the degree of dependence people have on media that eventually throws light on understanding the influence of the media messages on the audience. The dependency increases manifold when media gratifies the informational needs of the audiences. Ball-Rokeach and DeFleur (1976) state that there are pervasive needs like gathering information that serves to establish a sense of familiarity and connectedness with the social world. Other informational needs include the need to act meaningfully and effectively in real world situations, the fantasy need that allows people to escape from their daily issues and problems and so on. Centrality of the media information function is also a key player in the dependency model. When a medium provides greater amount of information that is socially central to the prevailing situations, that too at appropriate frequencies, the dependency on the medium by the audience and the social system is heightened. During situations of high degree conflict and change, the dependency on the medium for want of information becomes manifold since the situational information disseminated in media during such emergencies aims to establish a sense of social stability. At such grave junctures, information is manifested as knowledge and knowledge as power for the affected lot.

2.3 Research questions

The theory gains relevance for the current research as the relationship among the community disaster communication medium – *Peridar Kaala Vaanoli,* the audience and their social system are studied in the context of the 2015 floods in Tamil Nadu to understand the extent of dependency the disaster affected Cuddalore community had on the community medium. The study considers the coastal community of Cuddalore as intrinsic active participants of the community disaster communication process in the post disaster context of the 2015 floods in Tamil Nadu, India. According to the theoretical framework adopted in the current study, the community media – *Peridar Kaala Vaanoli*, audience (flood affected population in Cuddalore) and the social system (coastal community) are hypothesised to be well

connected. The dependency of the flood affected community on the emergency community radio depends on the extent to which the community radio fulfills the emergency needs of the disaster affected communities. Also, during an unpredictable grave event like disaster, affected people tend to reconsider their beliefs, practices and behavior for decision making for dire want of information, support and guidance. At that time social stability is established through timely provision of information and necessary support. By studying the extent to which the community medium *Peridar Kaala Vaanoli* gratified the informational needs of the audience the effectiveness of the communication medium can be ascertained. Economic conditions, social structure and culture also influence the choice of media and the dependence relied on it for gratifying the informational needs.

Based on the adopted theoretical framework, the research questions framed for the current research include:

Research Question 1: What is the extent of media technology diffusion in the disaster stricken coastal community of Cuddalore district in Tamil Nadu, India?

Research Question 2: What are the predictor variables that influence the effective consumption of the content disseminated in the emergency community radio *Peridar Kaala Vaanoli* during the post disaster phase of the 2015 floods in Tamil Nadu?

3. Methodology

A comprehensive survey among the 2015 flood affected coastal communities of Cuddalore district in Tamil Nadu, India was conducted for the present research. The map below clearly represents the geographical location of the district in the state of Tamil Nadu, India (see Figure 1).

The state of Tamil Nadu was chosen for the study (area sampling) since it was the area where the disaster took place. In Tamil Nadu a majorly affected district due to the 2015 floods – Cuddalore – was chosen (purposive sampling). The coastal district of Cuddalore was chosen for the study since it possesses a higher vulnerability towards natural disasters apart from a fact that the emergency community radio *Peridar Kaala Vaanoli* was established in the same district.

The coastal district of Cuddalore in Tamil Nadu predominantly has plain terrains sans any high relief zone except in a very few places and witnesses surplus rainfall during the North East Monsoon season and is a Cyclone prone zone in the east coast of India. The aver-
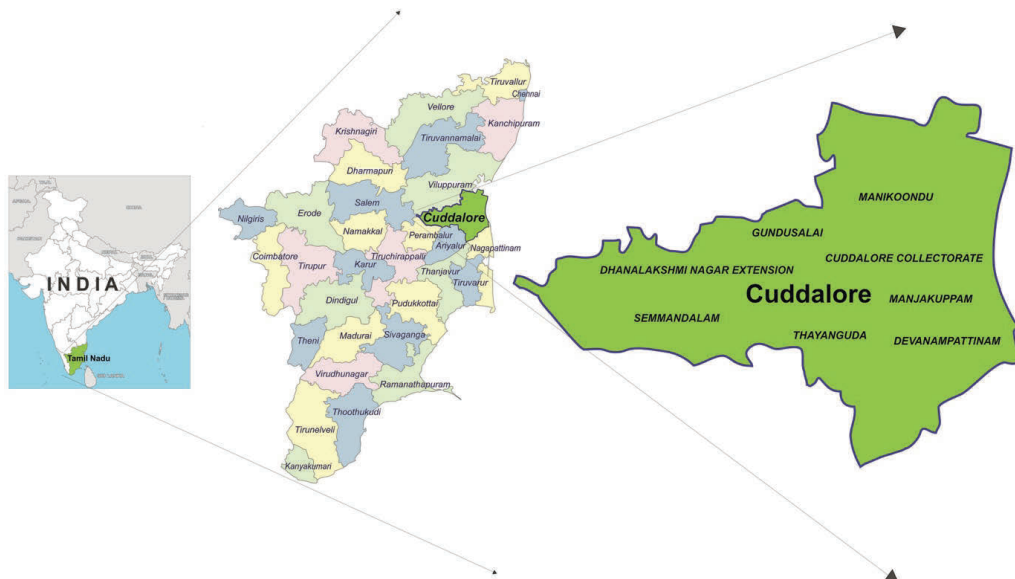
Figure 1: Study regions in Cuddalore District, Tamil Nadu, India (adapted from d-maps.com, 2018)

age rainfall recorded in the year 2015 at Cuddalore was at a colossal 1 748.14 millimeter – a highest record in the past decade (Government of Tamil Nadu, 2017, p. 25).

In the chosen coastal district, people who were listeners of the emergency radio *Peridar Kaala Vaanoli* during the post disaster phase of the 2015 floods in Tamil Nadu were included in the sample (purposive sampling), in multiple stages. Hence a multistage purposive sampling technique was adopted for the current research. According to Lavrakas (2008, p. 645) the adoption of the purposive sampling technique logically allows for a sample inclusion that is representative of the population considered for the study. Through the sampling technique adopted in the current study, the responses from the listeners of the emergency community radio residing in the areas of station's coverage had been recorded for the study. Respondents were sampled in the areas surrounding the Office of the District Collector, Cuddalore. The areas include *Dhanalakshmi Nagar, Devanampattinam, Thayanguda, Gundu Salai, Manikoondu, Semmandalam* and *Manjakuppam*.

3.1 Research instrument

The literacy rate of the respondents in the current study is 71.85 % – as stated in the Cuddalore District Disaster Management Plan, 2017 (Government of Tamil Nadu, 2017, p. 6). The prevailing literacy rate is lesser than the state's average, and hence an interview schedule method was found appropriate to record the survey responses of the flood affected Cuddalore community. Enumerators were employed for data collection. A questionnaire was designed to record the survey responses. The questionnaire design aims to assess the prevailing status with respect to access to

media of the Cuddalore coastal community based on their socio-economic profile apart from identifying the factors that drive the Cuddalore coastal community in getting hooked to the radio station during the 2015 floods in Tamil Nadu. These factors help in assessing the effectiveness of the content as well as the importance of the community radio during coastal emergencies. The questionnaire design for the proposed survey methodology aims to collect the information from people identified as sample for the research. A data driven approach that begins with observations of the sample and progress further with explanatory variables is found appropriate for the study, as cited in de Leeuw, Hox and Dillman (2008, p. 6). The responses for the questionnaire designed for the study were recorded from a total of 250 respondents residing in the geographical area of study. The questionnaires having incomplete responses were excluded from analysis. The responses from the remaining 203 questionnaires were taken up for the study. The sample consisted of a greater number of males and the minimum level of their education.

4. Results

4.1 Respondents' socio-economic profile

The respondents of the current study were found to be residing in areas that are highly vulnerable to disasters. The coastal district has witnessed the onslaught of the tsunami in 2004, cyclones almost every year apart from the recent floods in December 2015. From the analysis it is inferred that the share of the male respondents is 15.28 % more than the female respondents that is indicative of a male dominated population (see Table 2). The

penetration of education among the respondents has attained grass roots level with an equal chunk of the respondents having pursued primary and high school education, respectively. Progression towards education and enhanced literacy is evident through the presence of graduate respondents who are 1.97 % more than primary and high school respondents, respectively (see Table 2). The age of the respondents is varied in which the age group of 36–45 is dense, followed by the 26–35 age group. The former group is 5.91 % more than the latter (see Table 2). The respondents are majorly self-employed (35.96 %), followed by homemakers (30.05 %). The respondents are not found to be financially sound and the same is evident through their status of income that falls majorly under the categories of low income and middle income. Also, the respondents are found to be residing in dense settlements that are dominantly four members and more (34.98 %) residing in: huts (8.87 %), thatched roofs (16.26 %), semi pucca (34.48 %) and pucca houses (40.39 %).

Table 2: Percentage analysis of the socio-economic profile of the respondents

Socio-economic profile		
Gender	Male	57.64 %
	Female	42.36 %
Level of education	Primary	19.21 %
	Secondary	22.17 %
	High school	19.21 %
	Higher secondary	7.88 %
	Lacking proper schooling	10.34%
	Graduation and above	21.18%
Age	15–25	18.72 %
	26–35	21.18 %
	46–55	27.09 %
	56 and above	17.73 %
Occupation	Employed	10.34 %
	Self-employed	35.96 %
	Daily wage worker	10.34 %
	Homemaker	30.05 %
	Others	13.00 %
Income group	Below poverty line	16.26 %
	Low income group	41.87 %
	Middle income group	41.87 %
	High income group	–
Family size	1 member	2.46 %
	2 members	9.36 %
	3 members	13.30 %
	4 members	34.98 %
	5 members	21.67 %
	6 members	18.23 %
Type of house	Hut	2.46 %
	Thatched roof	9.36 %
	Semi pucca	13.30 %
	Pucca	34.98 %

The overall socio-economic profile of the respondents clearly demonstrates the evidence of posing an increased risk and vulnerability towards disasters.

4.2 Respondents' extent of media technology diffusion

A major crux of the survey respondents is found to be starved of communication technology sophistication that is evident through the possession of mobile phones with primitive communication features sans internet and associated breakthrough communication facilities and a diminutive group does not have access to mobile phones owing to their diminished financial status. The share of respondents possessing a mobile phone with primitive communication options is 52.71 % and those having zero access to such communication devices is 19.70 %. The empirical evidence reveals a fact that there exists an inequality with respect to gaining access to information and communication technology such as mobile phone among the respondents under study. The consumption of media content disseminated through various mass communication outlets are displayed in the bar chart (see Figure 2). The usage of media platforms was recorded as a multiple response question owing to the extensive media consumption of the respondents. The multiple responses have been clubbed into three categories: electronic media, traditional media and all media. Traditional media category refers to platforms such as newspaper, television and radio (Chan and Fang, 2007); electronic media category refers to television and radio.

Among the various mass communication media outlets, television medium holds supremacy (28.57 %) pertaining to consumption as a stand-alone medium indicative of a deep-rooted penetration into the households of the respondents. The respondents in the coastal district are found to prefer a visually appealing medium of information, communication and entertainment. Collective mass media consumption profile of the respondents signifies a fact that the respondents prefer traditional mass media outlets (29.56 %) over other media owing to accessibility and availability in the study area. The share of respondents having access to all media such as newspaper, radio, television and mobile phone is at a mere 17.24 %. Even with the advent of a range of advance media technologies their penetration in the study area is still at a very nascent stage. The respondents' exposure to such advance media technologies is very small and hence bases their dependence on the traditional mass media outlets for delivering information and communication.

The frequency of media usage was measured using a five-point scale (see Appendix); it was high in the case of television with a mean of 3.47 followed by radio with
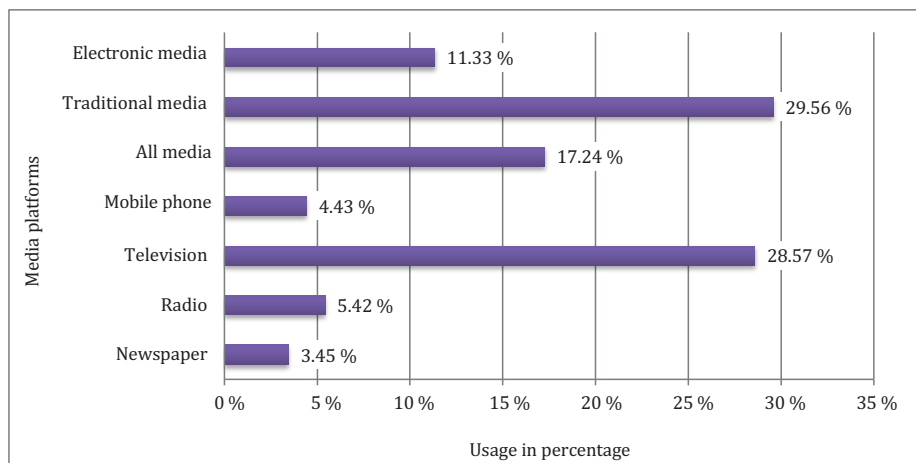
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Figure 2: Respondents' media platforms usage

a mean value of 3.19 indicating that television takes the lead with respect to preference and duration of usage when compared with other media during normal times. But with the incidence of floods in the study area, the respondents' preferences for media for information and communication are found to have been altered from the usual. The preference for television medium has witnessed a dip of 0.98 % (preference altered from 28.57 % to 27.59 %) and the preference for radio witnessed a large increase of 18.72 % (preference altered from 5.42 % to a massive 23.15 %). Apart from a change in preference for communication medium, the frequency of using radio has apparently surged after the instance of the 2015 floods particularly in the study region. Radio medium has sustained the onslaught of intense flooding in the study area to serve the information and communication function to the disaster affected communities. Doing so the radio medium *Peridar Kaala Vaanoli* has captivated as well as driven the flood affected Cuddalore community to look up to it through sheer sustenance during unpredictable disastrous events.

4.3 Predictors of the effectiveness of *Peridar Kaala Vaanoli*

The variables viz. inclusive communication design, needs gratification, community resilience and community empowerment were identified to be vital predictors that influence the effective consumption of the content disseminated in the emergency community radio *Peridar Kaala Vaanoli* in the post disaster phase of the 2015 floods in Tamil Nadu based on the review of literature on the subject of the research and the number of statements used to measure them were eight, six, four and six, respectively. The predictors were measured through statements that used the five-point Likert scale response measure. Reliability coefficients were computed using Cronbach's Alpha which eval-

uates the internal consistency among the statements that are used to measure the predictors. The results of the reliability analysis are stated in Table 3.

Table 3: Reliability coefficients – predictors of the effectiveness of Peridar Kaala Vaanoli

Factors	α Value
Inclusive communication design	0.707
Needs gratification	0.871
Community resilience	0.906
Community empowerment	0.912

The reliability coefficients of the factors considered in the study range from 0.707 to 0.912 all falling under the acceptable range as cited in Clark and Watson (1995). It implies that the statements used to measure each of the predictors have a good internal consistency. Regression analysis was employed for predicting the effectiveness of the emergency community radio in the context of the 2015 floods in Tamil Nadu. The predictors considered in the study were individually analysed to know the extent to which those factors determined the effectiveness of the emergency community radio *Peridar Kaala Vaanoli* in the post disaster phase of the 2015 floods in Tamil Nadu among the coastal community of Cuddalore. The values of the regression analysis conducted for each of the factors are displayed in Table 4. All the factors considered for analysis in the current research are found to be indicating a good level of prediction with respect to determining the effectiveness of the emergency community radio *Peridar Kaala Vaanoli* (regression is significant at 0.000 level).

Community empowerment (R^2 = 0.429 and adjusted R^2 = 0.411) associated with skills building of the coastal community through radio programming explains 41.1 % of variance in the effective consumption of the content disseminated in *Peridar Kaala Vaanoli* during

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Table 4: Regression values of the predictors of the effectiveness of Peridar Kaala Vaanoli

Predictors of the Effectiveness of *Peridar Kaala Vaanoli*	R^2 (adjusted R^2)	*F*-ratio	Significance
Inclusive communication design	0.246 (0.215)	7.921	0.000
Needs gratification	0.224 (0.200)	9.436	0.000
Community resilience	0.410 (0.398)	34.344	0.000
Community empowerment	0.429 (0.411)	24.504	0.000

the post disaster phase of the 2015 floods in Tamil Nadu. Also, community empowerment indicates that the regression model offers a good fit for the data analysed by explaining a significant amount of variance (F = 24.504) in influencing the effective consumption of the content disseminated in the emergency community radio *Peridar Kaala Vaanoli* in the post disaster phase of the 2015 floods in Tamil Nadu. The regression statistics confirm that the strongest predictor is community empowerment followed by community resilience, needs gratification and inclusive communication design with respect to significant determination of content effectiveness of the emergency community radio *Peridar Kaala Vaanoli* in the post disaster phase of the 2015 floods in the study area (see Table 4).

5. Discussion

The study attempted to evaluate the role and the impact of an emergency community radio *Peridar Kaala Vaanoli* in the post disaster phase of 2015 floods in Tamil Nadu as a community disaster communication medium by studying the prevailing diffusion of media technologies among the coastal community of Cuddalore. The research instrument adopted for the current study allowed the researchers to obtain comprehensive information in the context of the study with which the effectiveness of *Peridar Kaala Vaanoli* for the 2015 flood affected Cuddalore community was ascertained. The respondents were reflective of the population intended for the study in terms of their characteristics, experience with respect to disasters, as well as usage of the medium under study (*Peridar Kaala Vaanoli*). The context of the study is in line with the theoretical framework adopted.

The diffusion of media technology is deep-rooted with respect to the traditional media platforms such as newspaper, radio and television indicating a fact that the access, availability and usage of these media platforms are high. The respondents are found to have increased exposure to traditional media platforms for provision of information and communication. In the case of media platforms like mobile phones and smart mobile phones the access, availability and usage are low owing to their impoverished socio-economic background. Prior to the incidence of the disaster under current study –

the 2015 floods in Tamil Nadu, the assimilations of the audience particularly towards television is evident. The assimilations eventually altered with the incidence of the 2015 floods in Tamil Nadu which implies a fact that more than accessibility and preference for a communication medium, the sustainability and availability of a medium for provision of information and communication particularly during emergency situations like natural disasters is very crucial. This indicates that the community radio *Peridar Kaala Vaanoli* has pervasively served the emergency informational needs of the flood affected Cuddalore community. The dip in usage of television and surge in usage of radio indicate that sustainability of a communication medium has proved to be very influential in driving the viewers to become listeners apart from catering tailor-made content for the flood affected coastal community in the post disaster phase of the 2015 floods.

The community radio *Peridar Kaala Vaanoli* has stood as the primary signalling system during dire emergencies like disasters apart from delivering socially-central communication to the flood affected Cuddalore community. *Peridar Kaala Vaanoli*'s socially central information dissemination through an inclusive lens that fixates the vulnerable population in the disaster communication model has proven to be very effective.

The emergency community radio *Peridar Kaala Vaanoli* has leveraged for community empowerment and resilience building apart from gratifying their emergency needs. The coastal community of Cuddalore and the emergency community radio *Peridar Kaala Vaanoli* are found to be well-connected during times of distress which is in accordance with the media dependency theory. Disastrous events like the 2015 floods in Tamil Nadu cause social instability and the community radio has played an effective role in restoring the stability and in turn has driven the flood affected community to have heightened dependence on the community radio and yet again seconds the media dependency theory.

The prevailing economic conditions and social system along with the predictors of the effectiveness of *Peridar Kaala Vaanoli* have influenced the choice, preference and dependence on the emergency community radio and thereby reinstate that the study conforms with the media dependency theory.

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6. Conclusion

The emergency message dissemination in the community radio *Peridar Kaala Vaanoli* has been appropriate and consecutively has left no scope for ambiguity in the information disseminated. The community radio has established its focus towards ambiguity resolution during the 2015 floods in Tamil Nadu through a clear and tailored communication design that limited the range of interpretations people can arrive at and therefore restrict any possible confusion over the information communicated. Ambiguity resolution clubbed with sustainability of media during instable conditions has made the community radio *Peridar Kaala Vaanoli* to become the stand-alone communication resource for the flood affected Cuddalore community to look up for crisis information. The communication design of *Peridar Kaala Vaanoli* has been found to be inclusive and appropriate in the context of the study and subsequently paved way for the medium to gain effectiveness. Social crisis events like the 2015 floods in Tamil Nadu posed serious threats to established institutions, beliefs and practices. The intensity of the event was so severe that it can alter the adequacy of the established practices with which people cope with the life situations. At such instances, media like *Peridar Kaala Vaanoli* rose to the occasion by disseminating appropriate information resources to the flood affected Cuddalore community and thus intensified the dependency on the medium. The ability of the community disaster communication medium *Peridar Kaala Vaanoli* has been proven by way of being able to acquire and disseminate crucial information that was capable enough in the reconstruction the normal life of the 2015 flood affected Cuddalore community. The community radio *Peridar Kaala Vaanoli* has facilitated the enhancement of coping capacities of the people through its effective programming that intended to build community resilience reinforcing a fact that community resilience is a predictor of the effectiveness *Peridar Kaala Vaanoli*.

Nirmala (2015) clearly pointed out that community radio stations are popularly known for giving voice to the voiceless and in the case of the current study it has empowered the powerless with necessary skills and informed citizenry. The mainstream media adopts a broader perspective in its emergency communication agenda whereas a community disaster communication medium is more focused and in turn gains effectivity during dire situations like disasters. It implies that communication becomes effective only when there is deep-rooted recognition of the process of communication at the community level. The emergency community radio *Peridar Kaala Vaanoli* has gratified the emergency needs of the Cuddalore community and has driven the community to solely depend on the medium for provision of information, support, and guidance during the aftermath of the 2015 floods in Tamil Nadu and subsequently alleviated the pain caused by the disaster. Needs gratification is also found to be a predictor of the effectiveness of *Peridar Kaala Vaanoli*. The community media *Peridar Kaala Vaanoli* has empowered the coastal Cuddalore community with the necessary knowledge on managing disasters, facilitated to build resilience and advocated the use of radio for emergency communication. Community empowerment is a factor to be considered for predicting the effectiveness of community radio in the context of a disaster. The emergency community radio has set the path for building sustainable societies that can withstand the wrath of the imminent hazards in the future.

The findings of the current study suggest that radio is a resilient medium that is unaffected by dire events like disasters and can effectively be used as a critical communication resource especially for the remotest places in a disaster vulnerable country like India. The study gains prominence by having increased relevance as well as a dire need for community disaster communication medium in a rapidly developing nation like India. The rural communities are deprived of access to digital technologies and the information superhighway and they are the ones who face the wrath of nature's fury during every other instance of disasters.

Overall, the current research has proved a positive fact that community media like *Peridar Kaala Vaanoli* can be utilised as an effective disaster communication medium. The study suggests that the research can be extended to a larger level to explore the possibilities of utilizing community media like *Peridar Kaala Vaanoli* to instil a sense of awareness pertaining to various phases of disasters such as mitigation, preparedness, response and recovery through effective communication and pave way for building resilient and responsible societies that will work hard to reduce the imminent disaster risk and conserve both natural and human resources for a better future and a better world.

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Appendix

Socio-Economic Profile		
Variable	**Response**	**Code**
Age	15–25	1
	26–35	2
	36–45	3
	46–55	4
	56 and above	5
Gender	Male	1
	Female	2
	Others	3
Level of Education	Primary	1
	Secondary	2
	High School	3
	Higher Secondary	4
	Lack Proper Schooling	5
	Graduation and above	6
Occupation	Employed	1
	Self Employed	2
	Daily Wage Worker	3
	Home Maker	4
	Others	5
Annual Income	Below Poverty Line	1
	Low Income Group	2
	Middle Income Group	3
	High Income Group	4
Family Size	1 member	1
	2 members	2
	3 members	3
	4 members	4
	5 members	5
	6 members and more	6
Type of Residence	Hut	1
	Thatched Roof	2
	Semi Pucca	3
	Pucca	4
	Others	5
Media Usage	Newspaper	1
	Radio	2
	Television	3
	Mobile Phone	4
Frequency of Media Usage	Newspaper	1–5
	Radio	1–5
	Television	1–5
	Mobile Phone	1–5
Media Preference post floods	Newspaper	1
	Radio	2
	Television	3
	Mobile Phone	4
Frequency of Media Usage post floods	Newspaper	1–5
	Radio	1–5
	Television	1–5
	Mobile Phone	1–5

Inclusive Communication Design*		
Communication Language	Scale	1–5
Communication Style	Scale	1–5
Community Centred Strategy	Scale	1–5
Dialogic Communication	Scale	1–5
Tailored Communication Design	Scale	1–5
Needs Gratification*		
Information Source	Scale	1–5
Accessibility	Scale	1–5
Disaster Recovery Guidance	Scale	1–5
Sustainability	Scale	1–5
Distress Helpline	Scale	1–5
Situational Awareness	Scale	1–5
Community Resilience*		
Disaster Education	Scale	1–5
Aiding for Resilience	Scale	1–5
Expedite Disaster Recovery	Scale	1–5
Risk Association Awareness	Scale	1–5
Community Empowerment*		
Knowledge Enhancement	Scale	1–5
Volunteered Participation – Programming	Scale	1–5
Health Awareness	Scale	1–5
Comprehensive Information Dissemination	Scale	1–5
Community Activism	Scale	1–5
Rehabilitation Assistance	Scale	1–5
Expert Advice	Scale	1–5
Skill Development	Scale	1–5
Effectiveness of *Peridar Kaala Vaanoli* (Overall Rating on a Five Point Scale): 1–5		

*Multiple dimensions of predictors were measured on a five-point scale.