Some important Highlights

As per research paper there are some important points that need to be considered as we have highlighted in this paper:

Highlights

- Assessed the current state of 33 freely available disaster-related mobile apps in India.
- Most of the disaster-related mobile apps are found to be primarily educational apps.
- The outreach of current disaster-related apps in India is found to be highly limited.
- Specific suggestions for enhancing community outreach are discussed.

2.1. Need and significance of mobile applications

Normally, after a disaster strikes the first thing people consider is gathering real-time information to monitor their current situation, however it is mostly difficult to access with the traditional means such as television, radio and newspaper. Subsequently, mobile phones have become the first priority (higher than wallets and identification) during disasters that the victims prefer to take along while evacuating to safer locations [12,25]. It is important to note that with increasing penetration of mobile phones, around 90% of global population is presently covered by mobile signals [26]. The revolutionary advances in wireless technology have further enabled mobile devices to have advanced computing ability and data connectivity through wireless services, such as Wi-Fi and 4G [14,27]. Smartphones today are helping to revolutionize the disaster communication by enhancing the upstream and downstream coordination of information during

a variety of keywords like 'Disaster management', 'Crisis management', 'Emergency' etc., the official android app store (Google play store) presents a number of mobile apps. Fig. 1 presents few of the search results that appear using the keyword 'Disaster' through Android app store. Of the numerous apps related with disaster management, the authors find that there are only 33 android apps (as of March 2018), that are freely accessible and provide information that is specific to the context of India. The names of all the 33 mobile apps with their logo are as shown in Fig. 2. Notably, few of the apps like IOWA legal aid, Disaster Response team, Building eVac etc. are not specifically related to the Indian context, however they have been included in the study because they provide generalized educational information that is useful for everyone. Further, all the 33 mobile apps have been developed by a wide range of organizations from local, national and global level, including both the public and private sector.

For most of the 33 mobile apps selected for the study, there is information available on 'Number of downloads', 'User rating', 'User reviews' and 'Primary and secondary functions'. The authors reviewed the user interfaces for the selected mobile apps and manually collected the stated data on selected mobile apps from their mobile application store. This narrowed search method was intended to assess the outreach of freely available disaster-related apps to general public. It is important to note that this study is based on manual data collection for selected mobile apps, as the search capabilities of Google play store (as of March 2018) did not allow for online sorting for parameters like popularity or number of downloads.

Referring to Leelawat et al. [12] and Ueno [22], it is understood that the 'Number of downloads' and 'User Rating' of respective mobile apps can be interpreted as a user feedback, as it reflects their interest in using the application. Accordingly, this study analyses the effectiveness of disaster-related

primary and secondary functions of all the selected mobile apps along with their user rating and number of downloads.

From Table 1, it is observed that there are a total of 16 apps which span beyond their primary functions and are multifunctional. Further, 5 of the 33 apps are found to be case specific (Mumbai, Sikkim, Uttarakhand, West Bengal and Kannur) and their functions are primarily concerned with people within a defined boundary. Off the remaining 28 apps, majority of applications (18) are found to be primarily educational apps. It is important to note that only seven of these mobile apps use GPS sensors, of which only four apps have primary functions based on GPS. Two of these GPS based apps (Disaster Message Board MAP and Family Disaster Manager) are intended to function as information boards for disasters, while the other 2 apps namely Disaster Management Vaishali and FDAS Disaster Management System are primarily intended for crowdsourcing disaster-related information.

The study finds that the total number of downloads (globally) for 29 selected apps (data not available for 4 apps) is 1.579 million out of which the major share has been contributed by three apps namely Relief Central (Medical aid), Disaster Alert (Real-time alerts) and Disaster Will Strike (Puzzle game). Notably, these three apps are not specific to the context of India and have a global focus. Despite the flourishing app market in India, the study finds that the average number of downloads for the selected apps have reached a minimal figure of 1119, if the three said apps are excluded.

Notably, the two apps that are primarily intended for crowdsourcing have supposedly failed to achieve their desired purpose as evident from their poor outreach (Table 1). One of those apps (FDAS-Disaster Management System) is found to have a user rating of '1 out of 5' which is very crit-

6.2. Ensuring user-friendly application interface (user rating)

Based on the poor user ratings of selected GPS-based apps, the study finds that the application interface plays a key role in its success as users give higher preference to mobile apps that are convenient and instantly accessible. Accordingly, there is need to work toward making the current disaster-related apps more user friendly with simple login features and easy to understand processing. It is important to ensure that mobile app takes into consideration the varying needs of target community including the language, age and gender groups, relevant information sharing etc. There is also a need to ensure that the disaster-related apps cater to the mobile phones used by the target population in terms of interoperability, OS compatibility etc. [22] depending on country and regional preferences. Although there are technical limitations of mobile apps to function only in

According to study it is important to note that there is a need of an app which will have all the functionalities in one app including GPS, GIS, alert, crowdsourcing,

community networking and more. Also, an app should have a simple and clean UI which will be understandable and multi-language supportive. Our app **“AquaRescue”** will eliminate all these drawbacks along with more features which will definitely helpful in such situations.

Here’s a sample UI of app -