

# My Safetipin Mobile Phone Application: Case Study of E-participation Platform for Women Safety in India

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## ABSTRACT

Women Safety is a major public challenge in India which is the world's second most populous nation making it the most dangerous country for women in the world. While the government and non-government organizations are trying their level best to fight against this menace, there is a new mobile-based application named "My Safetipin" which attempts to create online participation platform for women in India to help each other in identifying locations which are unsafe for them so that the situation can be improved. Use of Digital Democracy platforms in the form of a mobile application for improving societal issues shows the increasing utilization of the Internet in a country where the Internet mobile is the most favored tool for using the Internet outreach is still 20.25% in Rural India while 65% in Urban India according to Internet and Mobile Association of India (IAMAI) report based on census 2011. For our research we have used mixed methods which includes Interface Accessibility Analysis, Usability Testing as well as GIS mapping of this mobile phone availability followed by secondary data analysis of user review over of this mobile application over android play store application. This research will help us in understanding whether e-participation platforms over mobile platform really help a citizen in resolving women safety issue resolve issue democratically or simply help in providing an additional platform to create more sensitization.

**Keywords:** Digital Democracy, Digital Inclusion, SafetiPin, Women safety, India.

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## Women Safety and ICT

Women and Girl safety is a burning issue worldwide and even United Nations Sustainable Goals talks about equal rights and opportunity for them so that they can live free from violence and discrimination. It is because of this reason, out of 17 Sustainable Development Goals, Goal number 5 is Woman Equality and Empowerment.

As far as women equality and empowerment is considered even United Nations report accepts the fact that mobile phones can contribute positively towards women empowerment by helping them in staying connected with their family and friends and by helping them in coordinating day to day activities. According to research reports also women feel more independent and safer with a mobile phone in a developing country. Thus, out of the total 14 indicators selected by the

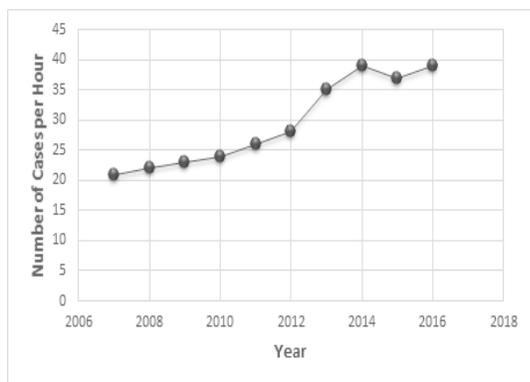
United Nation to monitor Sustainable Development Goal – 5, "female who owns a mobile phone" is one of the most important indicators.<sup>[1]</sup>

In India where almost 48.5% of its 1.3 billion populations are female as per Census 2011, as many as 39 crimes against women were reported every hour in 2016. In the recently concluded survey on the status of women worldwide by Thompson Reuters, India was named as the most dangerous country for women worldwide in three major areas specifically, i.e., risk of sexual violence and harassment, danger and threat women face from tribal traditional and cultural practices and lastly danger of human trafficking for forced labour, sex slavery and domestic servitude. As illustrated in Figure 1 according to report by National Crime Record Bureau of India between 2007 and 2016, reported cases of crime against women rose by as high as 83 per cent and at 18.9%, the conviction rate for crimes against women was the lowest since 2007 at 18.9% in 2016.<sup>[2]</sup> It is no hidden secret that the majority of cases of violence against women in rural and urban areas both go unreported.

A number of studies show women are less likely than men to use the internet especially. Though during the mid-'90s there was certain research work which showed an increase in the

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**Figure 1:** Crime Against Women in India 2007-16 (Source: National Crime Records Bureau 2016).

use of the internet by a female. But these studies were mainly focused on gender difference among new internet users and not upon the overall users at any given point of time who are female.<sup>[3]</sup>

In India use of the internet is majorly male-dominated in both rural as well as urban demography as per the latest reports. While 41% of internet users in Urban India are female, only 36% of the total internet users in Rural India are females.<sup>[4]</sup> In India where more than 2/3<sup>rd</sup> population still lives in rural areas, another important aspect of internet accessibility could be cost of devices to access internet looking at the lack of broadband connectivity in rural and urban areas in light of high-income disparity prevalent in the country.<sup>[4]</sup> Thus backed by cheap mobile data packages which have revolutionized the grass root level accessibility, the internet is mostly used through mobile/Smartphone in both rural and urban areas.

Thus, in India where women are social, economically and physically isolated, low-cost smartphones and cheap mobile internet data plans should home the promise of connecting women to social contacts, markets, information, banking services and most importantly in helping each other against social issues like women safety. But in India, only 38% of women own mobile phone in comparison with 71% of men mobile phone ownership. Does the question lie that why despite cheap mobile and internet packages women do not own mobile phone or use it as much as men, in spite of the fact that they need it most for their improving their own social condition?

According to a recent research report, this is not only because of the low-income level, mobile phone cost but because Indian society is highly patriarchal, filled with strong norms governing many aspects of women's lives till date. Hence maintaining purity for marriage, patrilocality exogamy (women go to live with their husband's family upon marriage), subservience and prioritization of caregiving are the four basic social norms in both rural as well as urban India which restricts women

from accessing mobile phone which further restricts internet access to them through these mobile phones.<sup>[5]</sup>

### Digital Democracy and e-Participation

Technology as an enabler of providing a democratic platform from a gender perspective is one thing which has got very less attention and in Indian perspective, there has been extremely less focus regarding the same. David Arnold was among one of the very initial writers who has showcased Technological Utopia from a feminist perspective in his book "Everyday Technology: Machines and the Making of India's Modernity". In his book, Arnold talks about Rokeya Sakhawat Hossain's short story "Sultan's Dream" published in 1905 in which writer dreams about an imaginary place called Lady land where women control the world and home while men live behind purdah. "Having no time for idleness and quarrelling, women have turned to science and technology to control clouds, regulate rainfall and prevent flood: water for domestic purpose is heated by solar power and piped into every home. Women have constructed aerial conveyance that makes roads redundant and railroads obsolete. The author is finally taken to visit the queen in an "air-car" propelled by two "wing-like blades" and operated by electricity".<sup>[6]</sup> The striking thing about the work is its insistence on science and technology as a means of achieving female emancipation and the imagination of future where technology took a front seat in solving gender-specific social issues and technology as a platform for emancipation.

Digital Democracy or e-Democracy is the use of Information Communication Technology (ICT) for the purpose of participation of citizens in democratic communication.<sup>[7]</sup> Thus e-democracy refers to 'use of new technology to energize the democratic and political life of the nation'<sup>[8]</sup> and is concerned with the relationship between decision-making process and citizen participation into it by using the information and communication technologies. Though the difference among scholars upon citizen political participation has been going on for decades and will continue further, citizen political participation online can't be left aloof from research.<sup>[9]</sup> Further with increasing internet access nationwide and with the advent of mobile applications like "My Safetipin" where a section of society can collaborate with each other for improving their social condition, highlights the importance of studying e-participation in India. Definition for political participation by<sup>[10]</sup> i.e., "Political participation refers to all forms of involvement in which citizens express their political opinion and/or convey that opinion to political decision-makers," fits well into the online realm as well because it does not specifically mention whether these activities take place online or offline.

E-participation aims at achieving many goals such as: using available technologies to support active citizenship, enabling broader participation for reaching a wider audience and en-

abling more informed citizens' contributions through providing accessible and understandable information to target audience.<sup>[11]</sup> As per research there are two forms of e-participation: the first form is government driven participation, where e-participation is the responsibility of the government and it is also primarily enacted by the government while the second one is citizen-driven participation where technology adaption and development is not the responsibility of the government but made driven by citizens and enabled by network<sup>[12]</sup> and in this paper, we will be looking at the later form of e-Participation through My Safetipin mobile application.

## Methodology

First of all we will be studying the interface accessibility analysis to find out how much its features are functional and user-friendly. In the second stage, we will be conducting usability testing of the mobile application inside Jawaharlal Nehru University, New Delhi campus with 15 participants. In the third stage, we will do secondary data analysis of online reviews of the app over android and apple operating system.

## My Safetipin

My Safetipin is a mobile application was released on 9<sup>th</sup> March 2016, in India available on Android and Apple's Internetwork Operating System (iOS) operating system it is basically meant to be a personal location guide of public places using Global Positioning System for the safety of females. Over android play store it has an overall rating of 4.3/5 with 186 reviews and more than 10,000 downloads, while over Apple iOS there is not much user rating available and only two reviews are there. Currently, the mobile application is available in four languages namely English, Hindi, Spanish and Vietnamese.

It helps it a user in taking a safer decision based on the safety score of an area thus notifying user how safe or unsafe any location is to roam around. Thus, based upon the safety indicator user can notify their family and friends in case they are in an unsafe location and helps others to keep track of user. The application user can also rate an area based upon the nine parameters based upon their own understanding of these parameters thus scores are cumulative and could vary from user to user. These nine parameters are

1. Lighting of Streets
2. Visibility, i.e., how many passersby are looking at you at any given moment
3. Diversity, i.e., how many people from different age group and gender are present at any given point of time
4. The crowd, i.e., how densely crowded is the area

5. Public Transport, i.e., what is the condition of availability of various forms of public transport in the vicinity at any given point of time
6. Walk Path, i.e., what is the condition of the walking area where the app user is present
7. Security, i.e., how much police and other private security is available around the vicinity
8. Openness, i.e., can the user have a proper view of the area properly or not
9. Feeling, i.e., how safe the app user feels being at the location at any given point of time.

In fact post inception of the organization in 2013, this application is currently operational in only 30 cities in India and abroad in collaboration with various government and non-government organization including UN Women and UK Aid etc. In India, this mobile application is operational in 9 cities namely New Delhi, Gurgaon, Noida, Mumbai, Bengaluru, Chennai, Chandigarh, Guwahati, Karnal in English and Hindi languages.

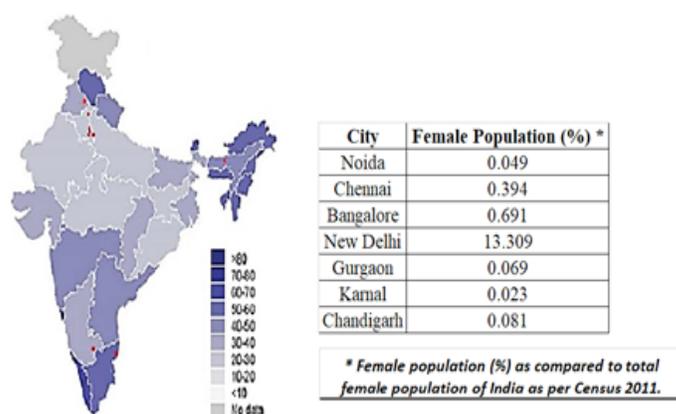
**(Source: Map taken from Harvard Kennedy Report on Women Mobile Accessibility in India; for representation purpose only)**

As illustrated in Figure 2, heat map denotes female mobile phone ownership shown in different shades of blue, with red dots signifying the presence of My Safetipin mobile application in 8 cities of India. Thus "My Safetipin" currently is available to only 2.64% female population of India including those of rural and urban areas both.

## Interface Accessibility Analysis

The user can download the app from play store at Android platform or apple store at the iOS platform. For making an account to access the mobile application there are basically three options

1. Through email id and mobile number details



**Figure 2:** State Heat Map of Mobile Ownership with My Safetipin Mobile Application Availability.

2. By linking users Facebook account with mobile app
3. By linking users Gmail account with mobile app

From security aspect this application collects name, email id, user IP address, access time, browser type, language, referring website address, type of operating system, user account activity, files and pages accessed by the user. Hence at user data security level, the application is not very safe or recommended especially for female users.

There are two ways in which a user can share her feelings about any location. Through the first platform, one can simply click upon one of the similes to share how the person feels at the given space and put a comment for other readers to go through it. Another method is by doing proper “Safety Audit” of the place by clicking on the option and then share details based upon nine parameters As illustrated in Figure 3 with a picture of the place if the users want to.

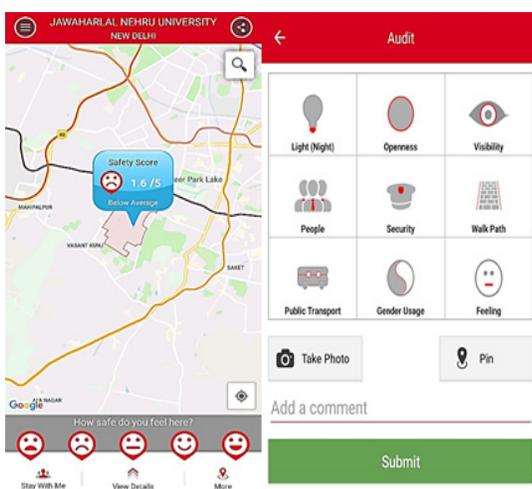


Figure 3: Information Sharing Portal.



Figure 4: Red, Yellow & Red Pins depicting Safety Level of Routes.

Apart from mapping the location, there are three main functions, i.e., Pins, Track and and Safety Route as illustrated in Figure 4. Under “Pins” one can see others audit status. Here red, yellow and green colour defines the status of the safety of the location based upon cumulative audits done by other users. Red colour refers to unsafe status, Yellow colour refers little uncomfortable and Green colour refers to a safe location. Under Track option, one can send a request to her or his friends to track the person if one feels she is at an unsafe location and her close one should know about her location through her mobile phone tracking. Lastly, under “Safest Route” option, a person can search for a safe route to reach any location among various pathways available and the idea is to suggest the safest route available on the basis of cumulative safety audit reports. There is an option too in case someone has marked an area safe and unsafe while others feel otherwise, they can share their auditing status and thus agree or disagree with the option. While all these options sound really good superficially, we went through Usability Test to analyze how well everything response at functionality level.

### Usability Testing

Similar to web usability testing for desktop, mobile phones and tablets, mobile application usability testing allows application producing companies as well as researchers to test and evaluate how well the mobile application is delivering features as claimed. We have used Jawaharlal Nehru University (JNU), New Delhi campus to study the responsiveness and different functionality of this mobile application. Till now total nine users have done a safety audit of the JNU campus out of which 5 reported it to be safe while 4 reported it to be unsafe still overall safety ranking of the campus is 1.6/5 which was worth introspection. On closer analysis, we realized that there are two major concerns with the “Pins” feature of the mobile application as illustrated in Figure 5.

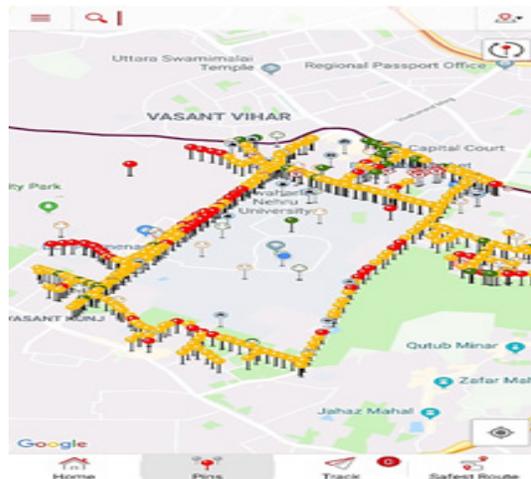


Figure 5: Safety Map of Jawaharlal Nehru Campus and its Surroundings.

1. Though the mobile application is using google map and looking at the fact the JNU campus is almost 405 hectares big still one cannot zoom inside the roads, lanes and other specific location of campus and audit it specifically since detail information about everything inside the campus is not available on the map of the mobile application.
2. One a close observation one realizes that almost all the auditing has been done for highways surrounding JNU campus and based upon that score which travellers provided for the highway JNU campus ends up getting a cumulative low score.

Thus though there are only 9 total audits done by users inside the campus out of which 5 are happy with the safety condition of the campus-based upon 9 parameters of the mobile application still it's safety ranking goes very low and on a superficial view, it appears that the campus is extremely unsafe for female travellers. This problem is uniform for the mobile application at every location, thus where ever there is big area for housing complex, university, college etc one cannot find correct safety ranking inside that location and thus it can only be changed by increased user based organic audits and better use of google map features by the mobile application designers.

As illustrated in Figure 6, on using using tracking feature of the mobile application one finds that this feature is completely out of synch with what it claims. Truth is when one sends a request to anyone in her contact list and wants the person to track her rather than the other person getting notification in his mobile app interface to accept the tracking request, one receives a text message which says that the other person would like you to download "My Safetipin" mobile application and the same happens even if the person has already downloaded this app and is logged into it. Hence the tracking request

sender gets a message on app screen as shown above in left-hand side while the one who is asked to accept the request gets a text message as shown above on the right-hand side.

"Safest Route" option has interface level problem as illustrated in Figure 7. So, if one enters source location and wants to enter the destination location, the first location gets deleted thus even after various tries one is not able to even insert source and destination at one time, to be true there is no simultaneous input option available on the screen itself.

### Secondary Data Analysis

Based upon the 183 user ratings worldwide available over Android's Google Play platform for "My Safetipin" application, these are the major issues which users are facing across the country.

Major findings from review analysis (See Appendix 1)

1. Out of 183 ratings-only 57 users worldwide have written reviews which includes both male, female as well as reviews without any user account information.
2. Only 25 females worldwide did application review on play store which shows its extremely less outreach among females. Out which 10 female users have given negative reviews, 15 have given positive reviews worldwide thus not all were Indian female users.
3. Major issues raised by female reviewers were as follows:
  - Lack of tutorial about how to use the app.
  - Wrong user location detection.
  - Interface problem while sharing location experience sharing.

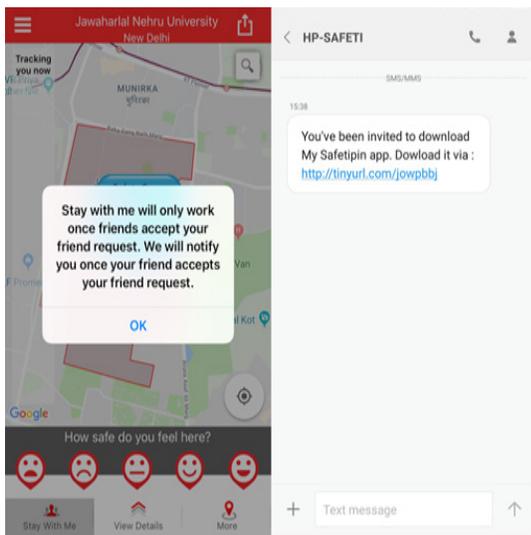


Figure 6: Technical Glitch in Tracking Feature.

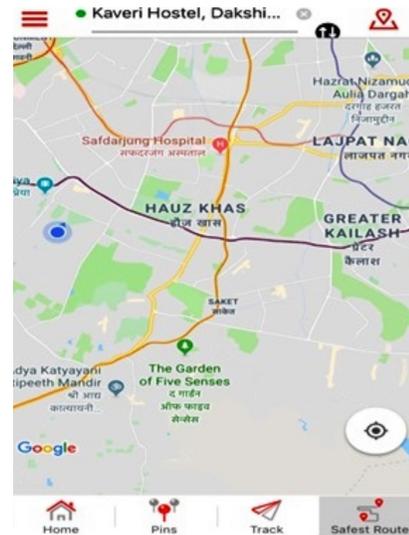


Figure 7: Technical Glitch in "Safest Route" Feature.

- No proper mechanism to delete the user account if they do not want to use the app any further.
- Non-functioning of the app in all the rural and urban locations in India.
- With 26 official and more than non-official languages in India, this app is only operational in Hindi and English which limits its usability.
- Majority of 5-star reviews are without comment and about user information, which gives hint towards paid ratings which is nothing new these days.

### User Data Safety

United Nations (UN) Report on Status of Sustainable Development Goal – 5 (SDG-5) recommends confidentiality, quality and integrity of user data to be maintained. This is important from the perspective that mobile applications which gather user data information through personal information disclosure, though it presents less benefit and more risks for users, it tends to provide only benefit to the mobile application company and other intermediaries. Today mobile phone users are attracted towards various free to download a mobile application like Safetipin App which is themed around Women Safety. As illustrated in Figure 8, here also the mobile application asks for user data and extracts additional data from parallel running browser along with location photos etc in order to provide best services, though their basic features like map and safety features for female users are filled with glitches. This disclosure of the high amount of personal information increases the risk of misuse of personal information of the user and when the user is a female it has high chances of leading to stalking and other forms of harassment.<sup>[13]</sup> According to research reports, women in the developing country who own a mobile phone are facing rising concern of harassment from strangers via mobile phone. As per reports from data gathered

in European Union female starting from the age of 15 are prone to cyber harassment and young women between 18–29 at most risk of facing unwanted, offensive, sexually explicit emails, Short Messaging Service (SMS) or unwanted friend requests over social media platforms like Facebook.

It is true that female mobile internet users are very low in India as discussed in detail earlier, yet even in cities where this app seems to be functioning well, the reality is something different. Even in the capital city of India and university campus like JNU where the majority of students own smartphone the issue that is cropping up is less about users on the platform and more about mobile applications own interface based technological issues which need to be eradicated at earliest. In fact to be honest apart from safety audit option no other option is user-friendly or for that matter functioning properly.

Even safety audit option on this mobile app, if observed from the perspective of amount and nature of user data this mobile application is collecting makes the whole user experience more unsafe for females, which is evident from the fact that many users have requested to include an option to delete user account since currently there is no such option available.

### CONCLUSION

While there exists consensus among scholars worldwide that the Internet offers unprecedented opportunities to enhance democracy by facilitating citizen participation, no healthy citizen participation can take place on serious issues like women safety if users data security is at stake or if the interface is not dynamic enough to enable participation in the first place for establishing mutual dialogue between the participants. Hence according to our research mobile applications like Safetipin are a welcome to start, currently with all existing technical glitches and existing user data collection norms it is not even in the state of providing an alternative medium for raising awareness on women safety issues and hence cannot be termed as an e-participation platform. There are enough improvement areas where the application providers can work to make it more accessible and user-friendly measures only then can it create a healthy digital democracy infrastructure for everyone and females specifically.

### CONFLICT OF INTEREST

The author declares no conflict of interest.

### ABBREVIATIONS

**UN:** United Nations; **NCRB:** National Crime Record Bureau of India; **IAMAI:** Internet and Mobile Association of India; **ICT:** Information Communication Technology; **iOS:** Internetwork Operating System; **IP:** Internet Protocol; **UK:**



Figure 8: Excerpts from Privacy Policy of My Safetipin App

United Kingdom; **SMS**: Short Messaging Service; **JNU**: Jawaharlal Nehru University; **SDG**: Sustainable Development Goal.

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## Editor's Note

The paper was accepted after two double-blind review process. Referees accepted the revision made by the authors. The editors appreciate the efforts and intellectual insights of the referees that have helped to enrich this paper. However, the editors feel that the inferences that are drawn from the survey can lead to fallacy of generalization as the sample size is questionable and not representative.