



Experiences from Running a Participatory Media Platform for Women and Led by Women in Rural North India*

DIPANJAN CHAKRABORTY, BITS Pilani, Hyderabad Campus & Gram Vaani, India

SAYONEE CHATTERJEE, Gram Vaani, India

RAJESHWARI TRIPATHI, Gram Vaani, India

AKSHAY GUPTA, Gram Vaani, India

AADITESHWAR SETH, IIT Delhi & Gram Vaani, India

Patriarchal practices and other socio-cultural norms in rural North India often prevent women from participating in digital platforms. In this paper we present a voice-based participatory community media platform that runs over simple voice-based phone calls. The platform is meant for women users and is led by women and has been used by 12,222 women users over the course of 20 months. We conduct a qualitative study and present several innovations, such as creating a safe space for women, which have contributed to more participation of women on the platform. We present a framework which can serve as a guidance for researchers and practitioners who want to set up digital platforms for women users.

CCS Concepts: • **Human-centered computing** → **Collaborative and social computing**; **Empirical studies in collaborative and social computing**;

Additional Key Words and Phrases: Digital Divide, Participatory Media, IVR, Platform for women

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1 INTRODUCTION

Access to digital technologies, including the Internet, is improving in aggregate terms in most parts of the world [1]. However, the improvement is not uniform across socio-economic groups. Disadvantaged groups are more likely to not have access to digital technologies, resulting in consolidation and appropriation of the benefits by certain groups [51]. Among the several axes along which the gap is widening is gender¹. Most new users of digital technologies are men and the digital divide between men and women is widening [2]. There are several factors which contribute to this, including affordability and device ownership, and societal structures which act as barriers

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¹We are cognizant of the differences between gender and sex and that the two need not necessarily coincide. Our users have self-identified on the platform as male, female or neither, or that they are unwilling to disclose.

Authors' addresses: Dipanjani Chakraborty, BITS Pilani, Hyderabad Campus & Gram Vaani, Department of CSIS, BITS Pilani, Hyderabad Campus, Hyderabad, Telangana, India, dipanjani@hyderabad.bits-pilani.ac.in; Sayonee Chatterjee, Gram Vaani, New Delhi, Dehi, India, sayonee.chatterjee@gramvaani.org; Rajeshwari Tripathi, Gram Vaani, New Delhi, Dehi, India, rajeshwari.tripathi@oniondev.com; Akshay Gupta, Gram Vaani, New Delhi, Dehi, India, akshay.gupta@oniondev.com; Aaditeshwar Seth, IIT Delhi & Gram Vaani, New Delhi, Dehi, India, aseth@cse.iitd.ac.in.

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for women from accessing digital devices and services [22, 56]. As a fallout, women's voices and aspirations further go unheard and unaddressed, women's participation in the workforce decreases and consequently, women's agency in their families and society diminishes.

Several factors have been documented as barriers to women's access to digital tools, platforms and services. Prominent among them is the patriarchy rooted in society which frowns upon women using digital devices [7]. The purchasing power and workforce participation are also heavily skewed towards men, especially in developing countries, which often limits women to accessing shared phones for limited and fixed time-duration [26, 50]. Women participants have also reported facing threats and harassment on social media platforms like Facebook and Twitter, making them feel unsafe on these platforms [15, 59, 60], further preventing women from participating on these platforms. In this paper we present the experiences of running an IVR-based participatory community media platform [16, 44]: Meri Aawaaz Meri Pehchan (Hindi for *My Voice is My Identity*, abbreviated as MAMP in the rest of the paper) led by women and designed for women. Drawing from our earlier experiences of running other platforms which became organically dominated by men, we introduced several design and policy innovations in this platform to counter the barriers to women's participation on digital platforms. Through analysis of content posted by the users on the platform, semi-structured interviews with the managers of the platforms and detailed reports and interaction logs, we are able to document how these design decisions were able to empower women to participate on the platform.

Gram Vaani is a social enterprise which runs voice-based community and participatory media platforms called Mobile Vaani across different verticals. Mobile Vaani is analogous to Twitter (now known as X) but the medium is voice, on IVR-based phone calls, instead of short text and multimedia posts on Twitter. MAMP is one such Mobile Vaani platform, which is women-led and for women, and is the focus of the discussion in this paper. Since the platform runs over voice calls it enables text-illiterate users to participate on the platform as well. A detailed description of the Mobile Vaani ecosystem and specifically the MAMP platform is in Section 3.

The salient contributions of this paper are:

- (1) We extend the understanding in this space by documenting the design and implementation of the platform and provide first-hand account of the user interactions on the platform, including creating new posts and commenting on other posts. Through this platform, we are able to validate several theories about the gender-based digital divide and present design innovations to work on bridging them
- (2) We present several design decisions made at the outset to enable women to participate on the platform and also present several design tweaks made along the way during the implementation of the intervention
- (3) We find evidence that targeted community mobilisation with women, anonymity, peer-learning and celebration of success stories are able to establish MAMP as a safe-space for women users to speak up and share their experiences
- (4) We show that it is possible to bring about positive social change with the cooperation of local law enforcement, while still operating under challenging sociocultural structures and patriarchal practices
- (5) We present a framework for other researchers and practitioners who want to develop platforms for women users.

In the rest of this paper, we situate this paper among related work in Section 2. We present a brief background about Mobile Vaani and MAMP in Section 3. We describe the methodology for the research in Section 4. We present the findings in Section 5. And, we present the learning as broad discussion points in Section 6.

2 RELATED WORK

Our work straddles several aspects of HCI research and research on digital access for marginalised communities. In this section, we situate our work within existing research in these domains.

2.1 Theories in HCI

Bardzell [9] presents feminism as an action-based design agenda. Traditionally gender has been treated as a variable in user studies, which risks becoming entangled in stereotypes about gender. This approach has also failed to explain the differences in the design of interaction based on gender. A feminist approach to HCI would help the research community to go beyond treating users as gender-less to understanding how gender roles defined by socio-cultural contexts play a role in defining women's use and non-use of technology. Our work echoes the approach proposed by Bardzell as we document socio-cultural reasons for the non-use of digital platforms by women, rather than the non-use being a function of merely the 'usability' of the interface. We further use design choices in the programmatic aspects of the platform, not the usability aspects of the interface, to improve the participation of women on the platform.

Dreze and Sen [23] laid the foundation of using human capabilities to understand social development. Nussbaum [40] extends the capabilities approach establishing minimum thresholds of social justice and capabilities that all nations must strive to deliver. Several researchers have extended the capabilities approach to human development to design and HCI consolidating paradigms like Participatory Design and Human Centred Design. Wong-Villacres et al. [61] in their work on *Assets-based design* distinguish capabilities as something people may develop in the future versus assets or capacities as something people already have. The Mobile Vaani platforms, and MAMP in particular, are driven through ground mobilisation which leads to improved capabilities for the users to interact with online platforms and in self-expression. In this paper, we document the increased self-efficacy of the users and the Community Volunteers through participating in MAMP.

2.2 Digital Divide

The understanding of the Digital Divide and mechanisms to address it has evolved over time. Thierer [53] thought of the digital divide as a deluge of opportunities, rather than a problem. Other researchers from the ICTD community have focused on the problem of access and several innovations were made to bridge the access divide [5, 12, 19, 25, 41, 48]. Subsequently, researchers, like Thomas and Parayil [54] and Toyama [55] documented that the digital divide is not merely a problem of access alone, but that vast sections of the world's population are deprived of the capabilities to use ICTs or to acquire information and convert the information into useful knowledge. Toyama uses the 'law of amplification' to explain that technology can only amplify pre-existing needs and capabilities, not create new needs where none exists. Thomas and Prayil recommend that the capabilities can be developed through large-scale social and economic development, not merely through providing access. These works lead to a better understanding of the Digital Divide as not being merely a function of access alone. Arora [6] talks about three kinds of digital divides: one is of course the access, but the second and the third divides are the *usage* and the *leisure* divides. The usage divide refers to the societal and cultural issues which prevent certain sections from accessing or using technology. For example, certain patriarchal societies frown upon women using mobile phones or cyber cafes, which are regarded as "male dominated" and "sleazy places". The leisure divide alludes to the assumption by the gatekeepers of technology that when the poor are given access to technology they need to use it for utilitarian purposes, like for education or livelihood, and not for leisure. Other researchers have explored the problems of access, usage and leisure through IVR-based platforms [36, 37] and have observed that when no special focus is placed on

the usage divide, the platforms become male-dominated. In this work, we go deeper into the space of adoption of technology platforms for women and uncover several factors which need to be taken into account to develop platforms for women.

2.3 Women's Digital Access

Despite the significant growth in real numbers for handheld Internet access, closer examination reveals that the growth is not equitable, and disadvantaged groups like older adults, certain social and caste groups, and, especially women, fall behind [33, 49]. With a significant push by several governments towards digital access being an important intermediary to access welfare benefits, these groups are at risk of further marginalisation. Hasty and short-sighted policies in this space also risk further amplifying the existing inequalities in society like lower participation of these groups in the labour markets and financial institutions.

Researchers, including in the SIGCHI community, have explored in detail the issues surrounding women's digital rights and access. Hilbert [26] finds through an empirical test in 25 Latin American and African countries that women's low use of ICTs is a consequence of the unfavourable conditions for their employment, education and income, and, when controlled for these factors, women are more active users of ICTs than men. Mudliar [38] finds women unable to use public WiFi access points in a rural community in India owing to lower mobility. She also finds biases and naive assumptions on the part of the service provider about women's desire and ability to use the WiFi service. Naseem et al. [39] conduct studies with women in Pakistan and find that shame and fear of defamation prevent women from seeking support around taboo topics like abortion or domestic abuse. Sambasivan et al. [46] document the online abuse, including cyberstalking, impersonation and leaking of personal content, that women in India, Pakistan and Bangladesh face. Winkelman et al. [15] and Vitak et al. [60] document harassment faced by women on online social media platforms and its effects. Vashistha et al. [59] document that deep rooted patriarchal values and gender inequities are primary reasons for women's non-participation on two IVR-based media platforms in India and Pakistan. Women regularly face threats, harassment and abusive content on these platforms. Ibtasam et al. [27] document the influence families play in women adopting digital tools in Muslim families in Pakistan. Sultana et al. [52] document the challenges of designing for women in rural Bangladesh owing to the patriarchal society and propose designing within the patriarchy. Kumar et al. [31] too highlight that outside the Western context, it is not sufficient to bring the technology into existence but it is necessary to also be cognizant of the culture and the ecology and the need to empower the women users. Other researchers have also documented the importance of designing within the patriarchy in the absence of sufficient agency within the interventions to counter or dismantle the patriarchy [18, 28]. In this work, we go beyond to document that when provided a safe space, the women users are able to share their experiences and in some cases also take action to dismantle the patriarchy. We also discuss design-learning about how to design for women when technology platforms are located within patriarchal social structures.

2.4 Measures to Improve Women's Digital Access and Designing within Patriarchy

Some research groups have previously worked on Action Research projects focusing on improving women's digital access. Chakraborty et al. [18] have worked on an action research project which used Behaviour Change Communication related to maternal and child health and nutrition. They document that persistent on-ground training helps in creating a sense of ownership over the household phone among women. In addition, they also document that content diversity on the platform counters self-selection bias among both the male and female users. Similar observations were also made by Abima et al. [4] in a study in Uganda. They found that social influence and relevant content play a role in the attitude of women towards using digital technology. Batool et al.

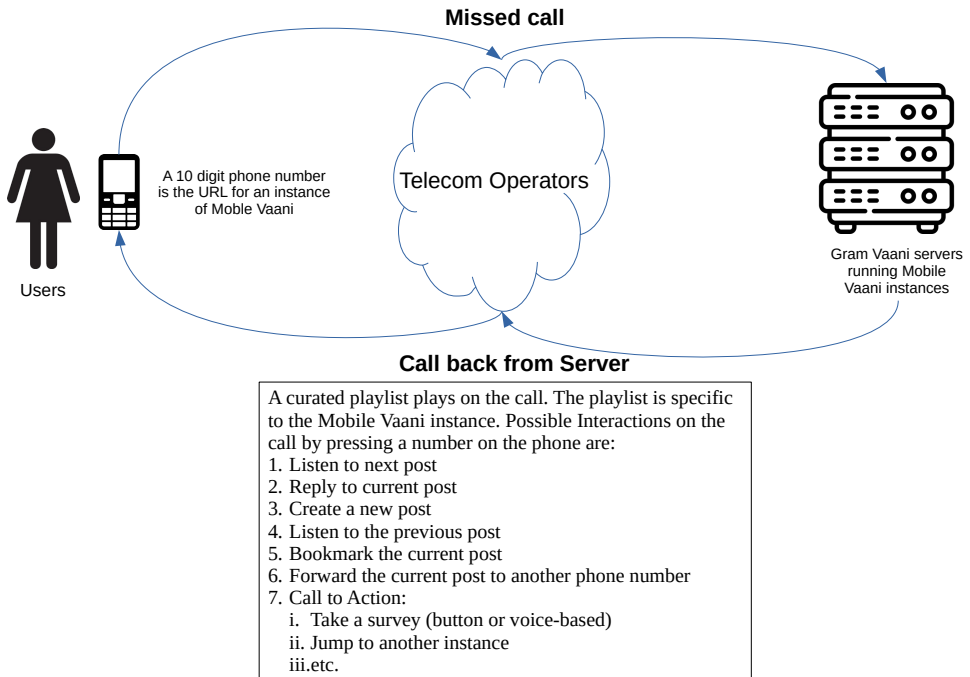


Fig. 1. Flow of interactions on Mobile Vaani

[10] ran a trial on delivering maternal health messages using different methods over mobile phones and found that complex family dynamics involving the husbands and mothers-in-law impact how the messages are perceived and used. Younas et al. [63] document women-only closed Facebook groups in Pakistan which serve as vital mechanisms for women to access information on taboo narratives like abortion or sexual harassment. The platform previously described [18] was, however, in the context of maternal and child health nutrition which is socio-culturally less contentious than the current platform. In this work we work on more contentious issues like women's access to digital platforms, women's rights and entitlements, which go against the deeply patriarchal socio-cultural context in rural Bihar.

3 BACKGROUND

In this section, we present a background about the organisation anchoring the programme, the technology platform on which the programme is run and the programme itself.

3.1 Gram Vaani and Mobile Vaani

Gram Vaani is a social enterprise focusing on providing voice-based information solutions to text-illiterate and marginalised users. Over more than a decade Gram Vaani has developed and deployed Community Radio automation solutions, IVR-based participatory media platforms, IVR-based monitoring and reporting solutions, etc. Besides the technology team working on the technology stacks, Gram Vaani has large teams working on programme management, content development, content moderation and field mobilisations. Gram Vaani provides programmatic support through an

in-house programmes team, content creation through an in-house content team, and field, training and mobilisation support through an on-ground field team. Gram Vaani banks on the power of access to information to affect knowledge, attitude and practice changes among individuals and in society.

Gram Vaani runs several voice-based participatory media platforms across India. The platforms are built on Gram Vaani's flagship platform Mobile Vaani. Mobile Vaani runs on Interactive Voice Response (IVR) technology. The flow of interactions on a Mobile Vaani platform is shown in Figure 1. Any user can place a call on a 10-digit phone number dedicated to a Mobile Vaani instance. The user's call is first disconnected and a return call is placed from the system. The user therefore does not incur any call costs. Over the phone call, using different number combinations on the keypad, a user can listen to different voice posts, record a new post, reply to a post, like, share and bookmark posts, skip to the next or the previous post, jump to other channels dedicated to different thematic content, or take phone-based automated surveys. Outbound calls are also made to users based on specific platform policies and user preferences. There are several Mobile Vaani instances running at any time, catering to different verticals such as health, labour rights, climate justice, etc. Content posted by users (UGC: User Generated Content) goes through a moderation process, by Gram Vaani's content moderation team, to check for quality and maintain editorial standards and policies. In addition, Gram Vaani's in-house content team produces and seeds programmatic content aligned with the themes of the platforms (SGC: Studio Generated Content). Gram Vaani recruits community volunteers (CVs) to conduct mobilisation exercises in the community through training sessions and community meetings. The CVs are trained in content production and ground reporting. The content posted by the CVs (RGC: Reporter Generated Content) is directly published on the platform without going through the moderation phase. Using this system Gram Vaani runs several hyper-local journalism clubs [36, 37], programmes and campaigns with specific mandates like improving awareness about maternal and child health and nutrition [18], building solidarity networks among unorganised labourers [45] and promoting sexual and reproductive rights and health [29]. In a programme or campaign being run on a Mobile Vaani platform, a focus is placed on a theme for a specific time and theme-specific content is developed. During this time, user mobilisation is also focused on the theme.

3.2 The MAMP platform

MAMP, the platform in focus in this paper, is one such Mobile Vaani platform with a mandate to build a women-led participatory media platform, for women. The platform is based in two blocks, Harnaut and Chandi, in the Nalanda district in the Eastern state of Bihar in India. The state of Bihar lags behind in several gender parameters in India [8] and is therefore a fitting geography for this intervention. The project was funded by USAID from October 2018 till August 2020 [3], and other organisations have run short-term campaigns on the platform subsequently. Currently, the platform is live, however active mobilisation is no longer being done owing to funding constraints.

3.3 Technology for Development Models and Innovations in Mobile Vaani and MAMP

Column I in Fig. 2 presents a framework for Technology for Development interventions. This framework was developed over several years in different Mobile Vaani instances and is documented in our previous work [36, 37, 47]. The three essential components for a successful platform in these contexts are the use of an appropriate technology for the platform, carrying content on the platform that is relevant to the context, and, having an offline mobilisation plan which will onboard users on the platform and provide the requisite training for first-time users and marginalised groups to participate on the platform. Column II in Fig. 2 shows the innovations in Mobile Vaani which conform to the framework in column I. Mobile Vaani uses plain voice-based phone calls over an

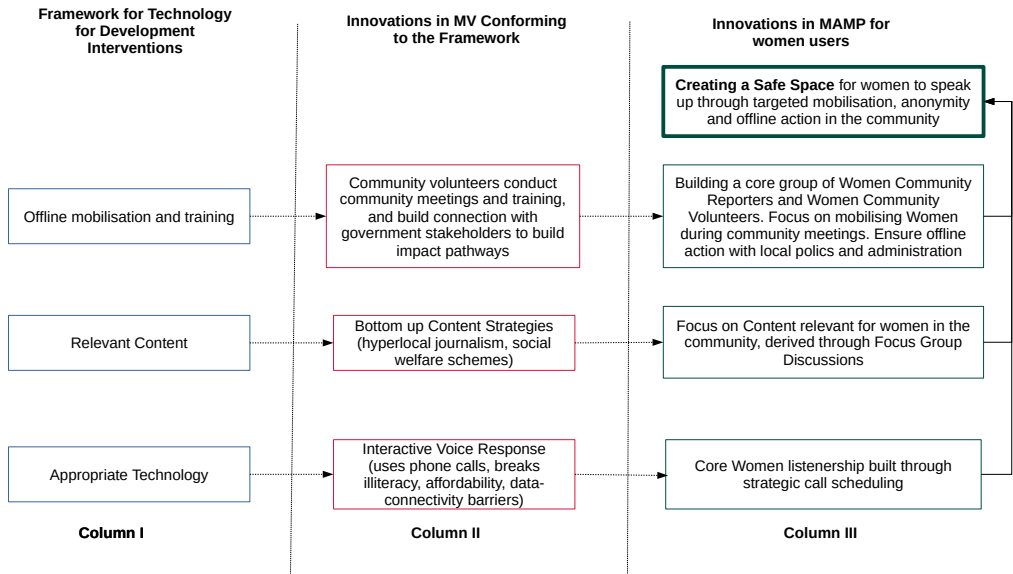


Fig. 2. Framework for technology for development interventions and innovations in Mobile Vaani which conform to the framework

automated Interactive Response System (IVR). Voice-based phone communication makes the technology appropriate for most rural and marginalised communities by lowering the barriers to access and the need for text-literacy. Mobile Vaani also uses a bottom-up content strategy along the lines of community radio stations, which ensures the content on the platform is relevant to the audience. In addition, Mobile Vaani instances have volunteer teams which conduct community mobilisation, and training and also establish impact pathways through connections in the government and other sectors. However, owing to the socio-cultural contexts, Mobile Vaani platforms have traditionally gravitated towards being male-dominated with both the volunteers and users being largely male. The challenge in the case of MAMP was to build a women-led platform for women in a deeply patriarchal socio-cultural context. Therefore, several design decisions were made at the outset to tweak the traditional Mobile Vaani model. We describe some of the decisions below:

- Mobile Vaani platforms are run by community volunteers (CVs) at the last mile, with Gram Vaani Field Officers (staff) operating one level higher in the hierarchy. The CVs run mobilisation campaigns, conduct training workshops, help users record content on the platform, and are often also involved in the redressal of social grievances of the users through different channels [17]. Owing to the socio-cultural structures in the geographies that the Mobile Vaani instances are set up in, most CVs tend to be male. Owing to the same socio-cultural contexts and the nature of content running on the platforms, the audience on these platforms is also largely male. By design, the mandate in the case of MAMP is that the platform is to be for women. In our previous experience, we documented that it is difficult for male CVs to reach out to female users in the socio-cultural context of Bihar [18]. Therefore, a design decision was made that the CVs to be recruited for MAMP would all be female. A total of 18 volunteers were recruited for the platform, out of which one left and moved on during the course of the intervention.

- A design decision was also made to consciously conduct mobilisation for the platform with women groups, in the case of MAMP. In the context of MAMP, women are also likely to only have shared access to a household phone. Therefore, outbound call policies for MAMP needed to be aligned with the times when the women are more likely to have access to household phones.
- On Mobile Vaani platforms users share their experiences over automated voice calls. The experiences are recorded and passed through a moderation phase by a team of trained content moderators. MAMP was mandated to be a platform for women in a deeply patriarchal socio-cultural context which discourages online participation of women (see Section 2). In order to overcome this hurdle, a design decision was made to anonymise all user posts on MAMP in order to protect the users' identities.
- One key component of Technology for Development interventions is carrying relevant content on the platform. Different Mobile Vaani platforms have had degrees of churn before the relevant content is identified. In the case of MAMP content around social entitlements for women and children was identified to be a core theme that resonates with the users.

One of the outcomes of the design decisions is that 74% of the users on MAMP are women, whereas, on other Mobile Vaani platforms, only 20% of the users are women on average. A one-time registration survey on the platform for incoming callers asks the users to identify their gender. Out of 3,044 callers who answered this question, 74% identified themselves as female. For other Mobile Vaani platforms, the number of female callers is less than 20%. The higher number of female callers is a function of several input parameters like targeted mobilisation, relevant content and the genesis of the platform as a safe space for women. These innovations have been augmented in the framework and shown in Column III in Fig. 2 as additional design changes made to the traditional Mobile Vaani framework. This is discussed in Section 6. In Section 5 we document how these design decisions unfolded on the ground and what further design tweaks were made during the course of the project in order to ensure the participation of female users on the platform.

4 METHODOLOGY

We collect data from multiple sources for this study and analyse them using qualitative data analysis techniques. In this section, we describe the data collection and analysis methods used in this study:

- (1) Several users of the platform recorded voice posts on the platform. The posts recorded by the users undergo editorial filtering by community moderators in Gram Vaani who are trained in content moderation. Filtering is on broad guidelines of audio quality and for content that violates guidelines against hate or putting someone in danger. As discussed in Section 3, in this instance the content contributed by the users was also anonymised before being published on the platform. In the period under consideration in this study, 6,188 posts created by the users were published on the platform. In the posts, users mostly shared their personal experiences in great detail and were recorded by the women users themselves. We apply content analysis techniques to these posts.
- (2) We use written case studies and reports prepared for documentation and reporting during the project as additional research inputs. The reports are a compilation of 11 focus-group discussions (FGDs) done as part of the needs assessment study, structured survey with 40 questions with 400 respondents as part of the baseline study, structured phone interviews² with 20 questions with 100 respondents as part of the end-line study, and periodic reports

²The interview modality was shifted to phone interviews on account of the restrictions because of the COVID-19 pandemic.

sent to the funding agency documenting the engagement of the users on the platform and shifts in knowledge, attitude and practice.

- (3) We use the system logs from the platforms for evidence building on the findings from the analysis of the data in the above two steps. The logs contain call detail records (CDR) from the platform, including call recordings, time and duration of the calls, posts that the users listen to during the calls, and posts that the users interact with (reply, bookmark, repeat, forward). These logs enable quantification of the interactions that the users had on the platform.
- (4) To triangulate the findings from the above steps, we use semi-structured interviews with two managers of the platform and one field officer. The platform managers are female and the field officer is male. The platform managers were interviewed together and the field officer was interviewed separately. The interviews were conducted online or over the phone, owing to the limited mobility because of the ongoing COVID wave in India, in early-mid 2021. The interviews were conducted by a researcher having expertise at the intersections of technology and society and were conducted in English for the platform managers and Hindi for the field officer. The interviewer was part of the initial design of the platform but was not a part of the operations. The interviews were transcribed and translated into English.
- (5) We use reflexive thematic analysis [13, 14] over multiple iterations on the interview transcripts and the case studies and reports. The coding was done by two of the authors with disagreements resolved through discussions. The code book for the User Generated Posts is in Appendix A.

We do not use user interviews for this study for several linked reasons. When the research was being conducted, COVID restrictions were in place so interviews would have had to be done over phone calls. Conducting user interviews over phone calls for a platform which has promised anonymity to the users might result in a loss of trust. By the time the COVID-19 restrictions were lifted, substantial time had passed and it would be difficult to distil the effect of the platforms from other external factors after the gap.

4.1 Ethics

Our universities do not have a structured IRB formation for human-centred research. We practice self-regulation in our research on the lines of the guidelines prepared by Dearden et al. [21]. The platform itself was funded by USAID and is governed by the ethical standards of USAID [57, 58]. All experiences recorded by the users went through a process of anonymisation and moderation by trained moderators, before being published. For the interviews with the staff, the purpose of the interviews was explained to the interviewees and prior consent was sought for recording the interviews. The interview records have been anonymised and secured. All data used in the analysis have been anonymised before being published.

4.2 Positionality

Two of the authors are computer science professionals who conduct research at the intersection of technology and society. One author is a development communication professional. One author is a programme manager specialising in managing development interventions on the ground. And, another author is a quantitative researcher specialising in monitoring and evaluation of development interventions. All the authors are associated with Gram Vaani either as employees or researchers and have been instrumental in various stages of designing, managing and evaluating the MAMP project. Gram Vaani's approach to feminism is of *“addressing and reducing gender-based discriminating attitudes and practices through fostering women collectives, strengthening solidarity, enabling access to critical information of women; thereby leading to increased agency toward addressing*

discriminatory practices, better self-efficacy in accessing entitlements and services, creating safe space to voice and discuss challenges. Besides also bridging the gender digital divide.”

5 FINDINGS

In this section, we describe the findings from the study. We have grouped the findings into subsections corresponding to the themes developed in the analysis as described in Section 4.

5.1 Strategising Content and Field Connect to Improve Women’s Participation

Apprehension and suspicion of a new platform is common among new users, more so among women in communities where digital tools platforms are generally viewed as a space not suitable for women. Similar findings have also been reported by other researchers like Ibtasam et al. [27]. In our experience of running several Mobile Vaani platforms in similar contexts, we have also documented initial slow uptake of the platform [18]. We have documented that diversifying the content on the platforms helps build a dedicated user base. In addition, staggering the content when dealing with topics which are culturally and socially taboo, while simultaneously building trust and listenership on the platform helps the platform gain acceptance in the community [18]. On similar lines, the platform managers for MAMP report that initially the women users were apprehensive about the platform and the content. The users were not sure what to expect and whether they should speak on the platform. However, the participation on the platform rapidly increased when the platform started covering topics of social welfare schemes run by the government. This was a conscious design decision, as mentioned in Section 3, as there was special interest among the users in schemes related to women and children. In addition to running content on the platform on the benefits, eligibility and procedure to access the schemes, the MAMP community representatives and volunteers provided active offline support to the users to help them avail the schemes and services. This improved the confidence that the women placed on the platform and more ready participation was observed by the managers. One user recorded on the platform³:

“I observed that there was a meeting in the local Anganwadi centre. When I went there I was given a pamphlet and asked to call the number and listen (10-digit MAMP number). When I called the number I came to know about the Kanya Samridhhi Yojana (savings scheme for girl children). However, I was not able to understand the scheme completely. So I approached the didi (community volunteer), and she took me to the bank and got accounts opened for me and my two daughters. She explained to me that the accounts are to save small amounts of money whenever possible. This money can be used when the girl becomes an adult.”

Figure 3 shows the percentage of calls per month with duration less than 60s, between 60s and 180s and greater than 180s. We observe that a majority of the calls are of duration greater than 180 seconds. The maximum allowed duration of a user-generated post on the platform is 120 seconds. The duration of the calls indicate that the listeners find the content of the platform to be relevant.

This is a further validation of our earlier research documenting the complementary characteristics of appropriate content and field mobilisation necessary for the uptake of new information systems [36, 47]. The finding fits into the work of Arora on the Digital Divides [7] where she highlights the usage divide and the leisure divide, and other researchers who document that mere access to technology is not sufficient to ensure uptake of the technologies [54]. Arora advocates for providing the users with more agency on how to use the digital platforms. By including the needs of the users in the content planning on the platform, MAMP is able to address the usage and leisure divides.

³All posts of the participants on the platform have been translated from Hindi to English by the Gram Vaani staff.

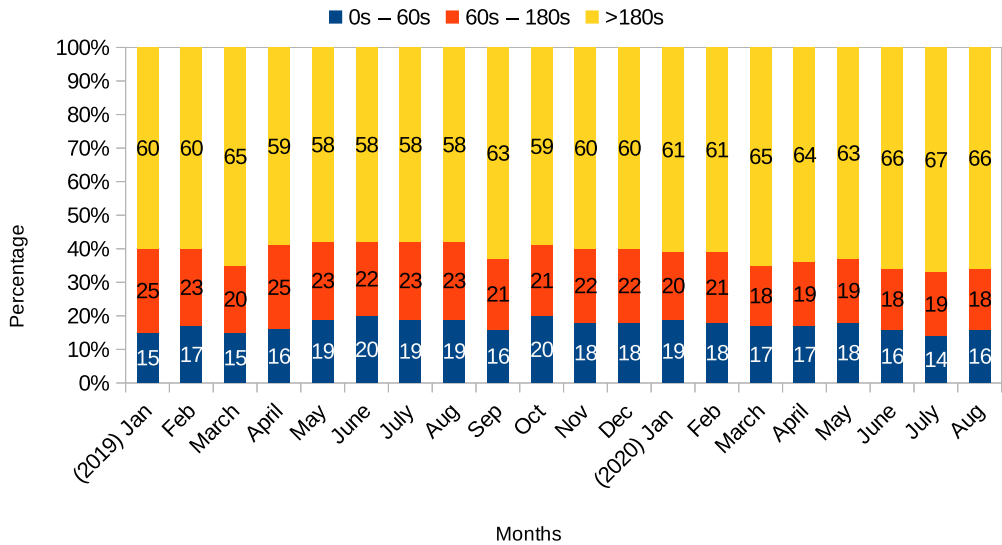


Fig. 3. Percentage of calls per month with duration less than 60s, between 60s and 180s and greater than 180s

5.2 Design with Users' Attitude Towards Patriarchy

In this section, we document the attitude of the women and men users towards the prevailing patriarchy and the programmatic design decisions in reaction to them. The mandate of the MAMP programme included women's empowerment through awareness generation and attitude change. Among several topics like women's health and nutrition, content on MAMP also covered topics like dowry, early marriage, property rights of women, and domestic violence. Speaking against these topics goes against the prevalent socio-cultural norms in Bihar. Surprisingly, not only men but also several women were against discussing these topics. One participant said during an FGD session that since she is not claiming any part of her paternal property, and the entire property will go to her brother, therefore she has a right to claim dowry from her family when she marries. The practice of dowry has been at the root of several domestic violence incidents and has been outlawed in India since 1961. Such instances, despite the legal framework, point to how deeply entrenched the disempowerment of women is in Indian society, that some of the victims are also accepting of it. We do not delve deeply into the reasons for it in this paper, several other scholars have dealt with this topic [11, 34]. Rather, we focus on the strategies we adopted while running the platform to deal with this complex reality. A design tweak was made during the course of the intervention to address this. The platform managers had to be very tactful in approaching these topics, and they had to approach them in a staggered manner, as, otherwise the platform risked being discredited and mistrusted at the outset. When conducting community meetings, the CVs always started with the topics of social welfare schemes which were popular with the community. Topics like dowry and property rights were discussed only after gaining the trust of the community about the platform. This design improvisation helped to ease the platform in the community and helped it gain more acceptance and trust.

While the community representatives and volunteers actively mobilised women groups to participate on the platform, men were never discouraged or prevented from participating either. It is common in patriarchal settings like in rural India for men to hang around women's meetings

to keep track of what is going on. However, the reaction of men towards the discussions was not uniform, rather the reaction to the idea that women would gather together to discuss topics like dowry, property rights and domestic violence differed according to the social context of different places. In some pockets, the men were cooperative and even encouraged the women in their households to participate in the community meetings. However, in other pockets, there was resentment from the men. In one case, a community reporter had to explain to an elderly man why it is important for women to be aware of these issues and why they were being discussed. As a sign of positive change, the elderly man participated in the next community meeting to understand the context and was very keen to know more about how to use the MAMP platform. However, because of the social dynamics, sometimes the situation became difficult when trying to explain the agenda of the meetings to men. As a design improvisation, the platform managers instruct the CVs to be very tactful when conducting community meetings. The community meetings were often disguised as meetings of women's self-help groups, which are a common occurrence in Bihar. Initially, a few men hang around the meetings to keep a tab on what is being discussed. This is when the CVs discuss social entitlements and welfare schemes. When the men lose interest and move away, they bring up the topics of dowry, inheritance, early marriage, etc. This improvisation was not a part of the initial design, rather this is an example of bottom-up strategising during the course of the project.

With the onset of the COVID pandemic, active ground mobilisation was suspended. With many of the families having lost their livelihoods overnight, the focus of the content running on the platform shifted to schemes like the cash transfer programmes, launched by the government to assist families which had lost their livelihoods. The platform gained a lot of traction during this period even among men. The platform managers explained that the men who had lost their livelihoods were very keen to know about the benefits the government was offering, in addition, they also had free time to participate on the platform because of the ongoing lockdown. It remains to be seen if this factor led to more acceptance and trust for the platform among men. One male listener recorded:

"I had posted on MAMP that I am out of work because of the lockdown. An MAMP volunteer got in touch with me and found out that I do not have a ration card (Food Security ID). The volunteer got my ration card form filled and now my name has been enrolled in the ration card list."

5.3 Creating a safe-space for women

Gram Vaani runs several Mobile Vaani platforms in different districts of Bihar, and also in other Indian states. Organically the other platforms have largely been male-dominated in terms of users who post content. The platform managers observed that the content posted by the users on other Mobile Vaani platforms is around *information sharing* and content that is *news-worthy*. While the content posted by the users of MAMP is more around sharing *personal experiences*. Several users spoke about their personal experiences in a programme run on the platform called "Ae naree tu bol" (Women, speak up). The platform managers observed that such content encouraged other users to also open up about their experiences. After one user recorded a post on how her parents were pressurising her to marry but she cancelled the wedding with the help of MAMP and the police, there were 16 replies or comments to the post within a few days. In the comments, the listeners narrated their personal experiences with early marriage. One user narrated:

"My brother used to torture me, it is for my brother that I got married early. My brother got the chance to study but my parents wanted me to just get married."

Other users narrated how they were not able to challenge society and got married early. Another user narrated that although she herself got married early, she is bringing up her daughter so that

she can challenge societal norms and she does not need to get married early. Yet another user recorded:

“I wanted to study further but we were poor and my elder brother is a disabled person. The society soon started putting pressure on my family to get me married. No one in either my family or in my in-laws’ family is educated. I aspired to be an engineer, but my marriage stopped my dream. I soon got pregnant after marriage and it seemed my dreams were never going to be fulfilled. But I never let my dreams slide away and die. After the pregnancy, I enrolled myself into an undergraduate nursing course, which is a four years course. I am sure I am going to put this opportunity to use and become a successful woman in life. So I urge all my fellow listeners to not suppress your dreams, come what may, go for them and keep trying.”

One popular programme on the platform was *Munni ki Kahani* (Munni’s Story) in which a girl character underwent different adverse situations in her life like demand for dowry, domestic violence, etc. In a Call to Action in an episode of *Munni ki Kahani* the listeners were asked their opinion on the self-reliance of women. One listener said:

“Women should definitely become self-reliant. Until women become self-reliant the domestic violence and atrocities on women won’t stop. How will women make progress if they are not educated? When women become educated then atrocities on women will stop.”

Researchers like Megarry [35] have analysed male surveillance practices in online social media platforms and their effect on feminist activism on such platforms. Döring and Mohseni [24] find that there were only 25% women video producers on YouTube among the top 100 most subscribed channels. They also find that women video producers are more likely to be the target of sexist and negative comments if they ‘display their sexuality’ or ‘address feminist topics’. Similar findings were documented by Phipps [43]. Mobile Vaani instances, including MAMP, have an active content moderation policy which filters out any content which is sexist, misogynistic, or in any way targeting an individual or a group. Despite that, the other Mobile Vaani platforms have gravitated towards being male-dominated. At the same time, the content posted by the users on these platforms are *informative* in nature. The users are not very forthcoming in posting their thoughts or personal experiences and there needs to be a considerable push by the community volunteers for the users to post on those platforms. On MAMP however, 74% of the users are women. The platform managers point out that the difference between the other Mobile Vaani platforms and MAMP is likely because of the safe-space that MAMP has been able to create for women by providing *anonymity*, through *trust building* and through *peer-motivation*. Anonymity was ensured by explicitly prompting the users to not leave any identifiable information in their posts. The posts were also scrubbed by the moderators to ensure that if the users had accidentally recorded identifiable information, they were removed. One factor which built trust on the platform is the offline action pushed by the CVs based on the content posted by the users on the platform. In one instance a volunteer got a drunk neighbour arrested as he was a habitual offender of domestic violence. The volunteer was fearful that the neighbour might harm her. The MAMP team assured her that there was no way the neighbour could access her identity. In another instance, a volunteer stopped a child marriage and got the parents arrested. This resulted in a difficult situation as the girl’s family started a head hunt for the informant. Again the MAMP team assured the volunteer that her identity was safe. This resulted in more users being able to trust the safety of the MAMP system and opening up about their personal problems and experiences. The Field Officer we interviewed said:

“Initially users were not speaking up on the platform. However, once a girl recorded that she was underage and her parents were getting her married against her will and MAMP

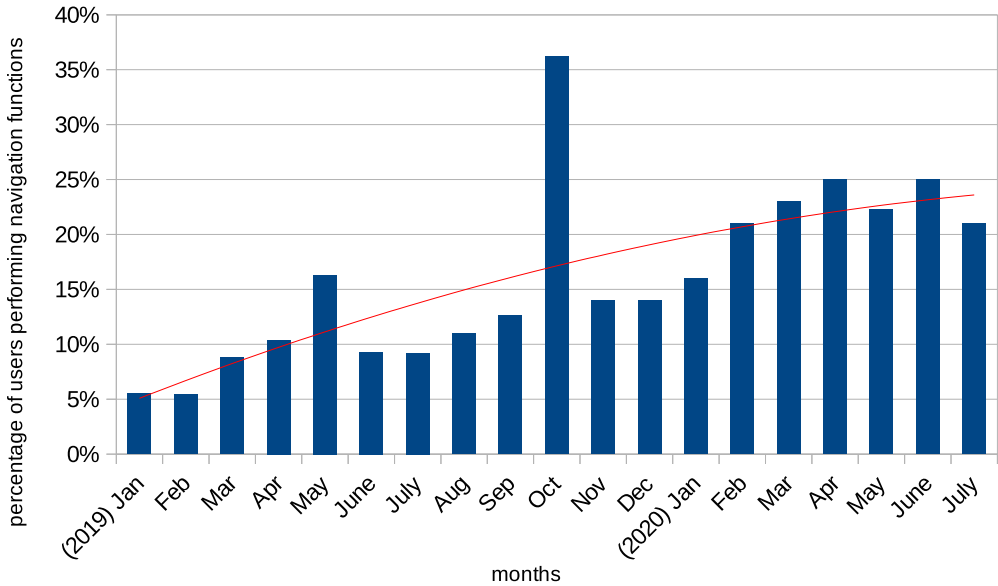


Fig. 4. Monthly average trend of users performing interactive functions on the platform. With training and time, more users learn to use the navigation functions.

was able to stop the marriage with the help of the police, then more people started opening up about their experiences on the platform."

Interestingly, in several cases, certain users chose not to be anonymous when posting on the platform. Gram Vaani's back-end content moderation team anonymised such posts before publishing them on the platform. Listening to community peers speak out on their experiences and the reports of offline action by the CVs encouraged other women to speak as well, further consolidating MAMP as a safe space for women.

5.4 Learning Curve of the platform

Although the Mobile Vaani platform offers a variety of navigation functions, the navigation is driven by the number pad on the phone and the menu is a spoken menu. The non-visual navigation can become difficult for new users, as observed on different platforms [30, 42]. The platform managers observed that navigation was initially even lower on MAMP compared to other male-dominated Mobile Vaani platforms. One platform manager explained that the women users of the platform hardly own mobile phones on their own. Whenever they are able to access a phone, which they probably share with their family, they start by using the basic features of answering a call or dialling a phone number. The process of pressing buttons while on the call in order to navigate is a completely new concept for many of the users, and it requires time for them to get used to. In order to counter this, mobilisation strategies for the platform were designed to be done with women groups in a targeted manner, and outbound calls were scheduled in the evenings when the women were likely to have access to the shared family phone. With continued usage and training during mobilisation exercises, more users have started to use the navigation functions on the platform.

Like other social media platforms, most users on Mobile Vaani platforms are passive consumers of content. One way to understand the learning and adaptation of the users on the platform is to track the number of users performing advanced navigation functions (e.g. skip forward and

backwards) on the platform. Fig. 4 shows that over time the monthly average percentage of users using the functions to like, forward, or skip a piece of content, post audio messages, or navigate to a different platform improved from 5% to over 20%. We also observed a spike in October 2019, which was a result of increased training and demonstration sessions in the community. This goes further to validate our previous work in which we documented that persistent in-person training improves the usage of the functions on the platform [18].

5.5 Costs of running a women-led platform

18 Community Volunteers (CVs) were recruited to run the last mile operations of MAMP and a design decision was made to recruit only female volunteers for the platform. The platform managers have had the opportunity to closely observe several Mobile Vaani platforms and are therefore able to compare the costs of running the MAMP platform led by women, and other platforms which are mostly led by men. One of the biggest hurdles faced by women in the socio-economic context of Bihar is mobility. The men in the community usually have access to two-wheeler vehicles which affords them high mobility and flexible working hours. The women depend on shared auto rickshaws to move from place to place which not only incurs a higher cost compared to a two-wheeler but also restricts the flexibility of movement as they have to wait for an auto rickshaw plying on the route. In addition, the women also need to stop work and return home before 4 pm as it is difficult to find transport after dark and it becomes unsafe for women travelling alone.

Volunteers in other Mobile Vaani platforms work part-time for the platform while their main source of livelihood is elsewhere. For women volunteers, however, restricted mobility and agencies mean that the volunteers did not have any other source of livelihood and were recruited as full-time volunteers with fixed and variable pay components. Therefore, having women volunteers also means the salary bill for the MAMP platform is higher for Gram Vaani. Indeed, the higher costs prevent organisations from running women-led platforms or targeting the gender-based digital divide. However, the costs are higher owing to the socio-cultural barriers, rather than the costs of the platform itself. It is possible that with the correct social incentives, these costs can be brought down. Moreover, the benefits of establishing MAMP as a dedicated platform for women led by women outweigh the costs.

5.6 Aspirations of the Community Representatives and Volunteers

The platform managers report that the aspirations of the applicants for Community Reporters and Volunteers are similar between men and women. Both men and women want to use the earnings from working with the platforms to contribute towards their household income and upward economic mobility. They also want to use the opportunity as a stepping stone to move to a better paying job of a permanent nature, for example, in the fields of journalism, social work, or with government arms responsible for the implementation of different welfare, health, nutrition and livelihood schemes. At the same time, the community managers note that there are also non-monetary incentives for the women to work for the platform. Since men enjoy greater freedom of movement in society compared to women, the women see this opportunity as a chance to step outside their homes and household chores, into the outer world. In addition, several volunteers were themselves subject to early marriage and early pregnancy who now want to help other women challenge these societal norms. One common thread for the women candidates who had applied to be reporters and volunteers was that their families were supportive of them going out to work. In the case of one applicant, the husband sat outside the interview room during the recruitment process, taking care of their toddler, while the wife appeared for the interview inside.

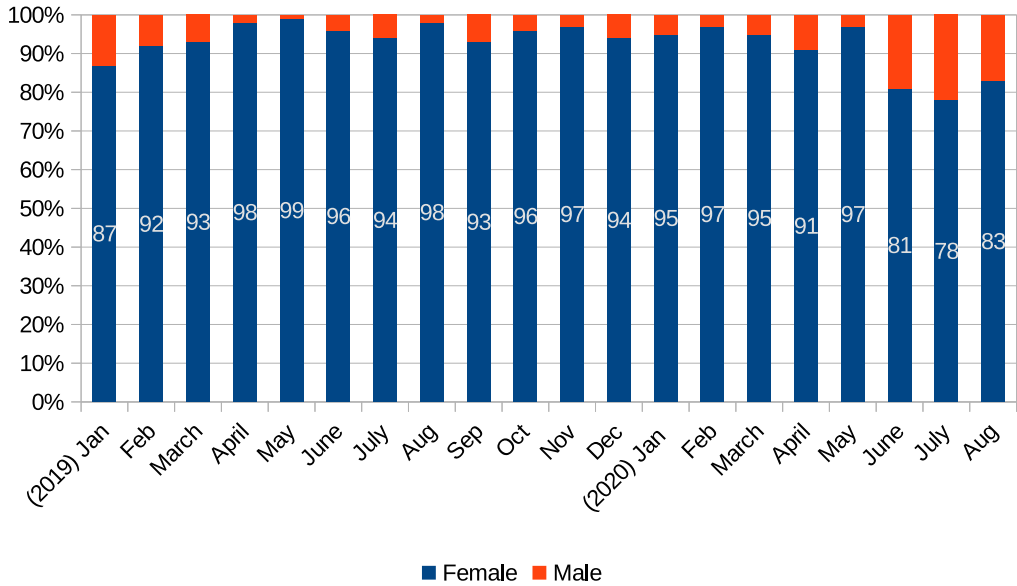


Fig. 5. Posts made by men and women on MAMP from January 2019 to August 2020 for users who called in that month.

5.7 Improvement in Self-Efficacy

The *Theory of Change* on Mobile Vaani platforms has been to develop content which leads to awareness changes, positive changes in behaviour and attitude towards the themes of the content, followed by steps taken by the users to affect changes among their peers [47]. The different stages of change are evaluated and documented through an analysis of the posts made on the platform by the users, discussions during community meetings and surveys conducted on the platform.

In total 12,222 unique female callers called the platform (total callers were 16,516) and the average call duration was 9.6 minutes. Of this 26% of the users posted content on the platform and 84% used navigation functions at some point. A total of 6,188 relevant posts were made by the users on the platform. Throughout the operations, MAMP has been able to maintain a high number of posts by female users. Figure 5 shows the number of contributions by female and male users per month among all users for that month. Consistently the percentage of posts by female users has been above 75%, reaching as high as 98-99% in certain months. This, largely a result of the targeted mobilisation and creation of safe spaces as discussed in Sections 5.1 and 5.2, is a marked departure from other male-dominated Mobile Vaani platforms and is evidence for improved self-efficacy among the users. The number of male contributors slightly increased in the months of June – August mostly because of the ongoing COVID-19 lock-downs during which many of the men were out of work.

Change in awareness is captured on Mobile Vaani platforms through a comparison of responses during pre and post-surveys of users who have listened to the relevant content and those who have not. Surveys conducted on the MAMP platform largely showed improved awareness among the users who had listened to the content. For example, on a question about the laws on child marriage, the answer showed an improvement in awareness from 36% before listening to the relevant content, to 84% after listening to the content.

Several stories of improved self-efficacy were documented on the platform, especially related to cases of early marriage. The mother of a girl posted a story on MAMP that she was about to

get her daughter married soon. However, she had a relative who had taken part in an MAMP community meeting. When the relative asked the mother to not get the daughter married off, there was an altercation in the family. She persuaded the mother to attend a MAMP community meeting where there was a peer discussion on why should a daughter not be married off early and what alternatives a girl can pursue instead of getting married. As a sign of a positive change in behaviour and attitude towards child marriage, the mother agreed to put off the marriage. In another instance, the husband of a CV was insistent on getting their daughter married. The CV was however able to convince the husband to put off the wedding by a couple of years.

A victim of domestic violence narrated how MAMP was able to bring about a change in the attitude of her in-laws:

“My life has changed because of Mobile Vaani. Since the time of my wedding, I have been emotionally abused by my in-laws. I never felt like raising my voice against that and kept quiet. The programmes on MAMP showed me a new way. I shared my pain with one of the Mobile Vaani didis (sisters, CVs) and she requested me to voice my concerns to my husband. Not only I but that didi (sister) also spoke to my in-laws and explained to them why their behaviour was improper. A lot has changed since then. My in-laws started behaving nicely with me. MAMP helped me to resolve this crisis in my life.”

One user recited a poem against child marriage and dowry (loosely translated from Hindi):

*“We will light the lamp of education in every house.
We will stop child marriage.
Let’s take a step together to
Eliminate child marriage.
If we want people to be happy
Then, the system of dowry needs to be removed.
All of us dream the same:
That society becomes dowry-free.
If all of us have the will
Child marriage will definitely end.”*

Yet another user posted:

“Having financial independence can transform a woman’s life. Women who are not working despite being educated can start a small business. They can bring up their children if they earn. If women earn they will experience a new kind of satisfaction and responsibility. When women step out of their homes they can chart a new path for their families and society.”

The platform helped in awareness generation among women about menstrual hygiene:

“On MAMP, I listened to posts about the importance of maintaining cleanliness and hygiene during menstruation. Earlier I used to use rags during menstruation but after listening to MAMP I have started to use sanitary pads.”

The platform also led to an improvement in self-efficacy among the CVs. The CVs were trained through 6 training sessions of 2 days each. The training sessions covered best practices in conducting community meetings and reporting stories, social welfare schemes, their eligibility and application processes, and dealing with cases of social evils like domestic violence, dowry, child marriage, etc. One CV said:

“Many times when I go to the community, I come across cases where it becomes difficult to suggest anything to a woman who is complaining about domestic violence but at the same time is reluctant to go for lodging a legal case against her husband and in-laws.

However, in this training, I came to know about an alternative route to solve these kinds of cases. I came to know about the help-line number and protection cell where the woman or someone she has confided in can call and request joint counselling. In this way, the matter will also remain between the family members and the counsellor. One 9-month pregnant didi (sister) told me on a recent visit that her husband and mother-in-law are abusive towards her, but she doesn't want to complain to the police. Now, I can at least persuade women like her to go for counselling."

Another CV recorded the following on the platform:

"I have started working for MAMP after listening to the programme Munni Ki Kahani. Previously I never stepped out of my house, I would only be doing household chores. Now I am helping people access social security pensions. I never went to the bank or the block (sub-district) office previously, but I now go to these places and get work done."

6 DISCUSSION

Having run the MAMP platform for over two years, the platform managers have accumulated several pointers on setting up and operating a digital platform for women and led by women. In this section, we list some of the key pointers and best practices. These can serve as inputs for other researchers and organisations who want to set up digital platforms for women.

6.1 Summary of the Design and Findings

In this paper, we extend the understanding of designing participatory media platforms for women. As discussed in Section 2, other researchers have documented women's socio-cultural practices and use and non-use of social media platforms [7, 27, 39, 46, 52]. Researchers have documented how patriarchal practices and socio-cultural contexts restrict women's participation on online platforms. We have had the unique opportunity, given our positions within Gram Vaani, to design and run an IVR-based participatory media platform for women and led by women volunteers. Arora highlights two additional issues other than access for the digital divide: one of agency to use the devices (usage divide) and the other of the devices and platform carrying relevant content for the users (leisure divide) [7]. The Mobile Vaani model addresses these issues by using appropriate technology, carrying relevant content on the platform, and conducting training and mobilisation in the field to nurture a user base. However, organically, the volunteers in the field and the user base of the Mobile Vaani platforms gravitate towards becoming male-dominated. Through the MAMP platform described in the paper, we are able to document several strategic innovations over the regular Mobile Vaani platforms which led to 74% of the users on the platform being women, as opposed to around 20% being women for other Mobile Vaani platforms. The programme managers carefully strategised the mobilisation to target women, carried content which is relevant to the users and the volunteers provided offline guidance and support to the users. This improved the trust in the platform among the women and led to MAMP being perceived as a safe-space for women to participate, contribute and discuss issues relevant to them. This is a direct take-away for other organisations, or policy-makers, who might want to design inclusive platforms where women participate in large numbers.

6.1.1 Framework for tech-based interventions for women users. We present a framework which might be useful for setting up such platforms. Columns I and II in Figure 2 have been discussed in Section 3. Column III shows the additional innovations in MAMP to ensure participation by women users. Features were added to the technology platform to schedule outbound calls when the women in the household are likely to have access to the shared family phone. The content strategy was designed to be relevant for the women users. And, women-led community networks

were built to ensure community outreach among the women audience and for offline action-based impact. These innovations in the MAMP platform evolved in the formation of a safe-space for the women users where they could express themselves and share their experiences without the fear of being identified and being subjected to social stigma. Anonymity, peer learning and action-driven impact further strengthened the notion of MAMP being a safe-space and led to further trust for the platform in the community. The innovations can serve as guidelines for other researchers and practitioners who wish to adapt technology platforms for female users.

Much research has been undertaken on the idea of safe-spaces in online platforms. Our work sits well within the existing work and validates several of them [20, 32, 62]. Lewis et al. [32] document that when a space is *safe from* harassment do the users feel *safe to* be cognitively, emotionally and intellectually expressive? When do users feel *safe from* harassment? In the case of Mobile Vaani platforms, content moderation ensures that there is no content which directly targets and bullies any group. Yet, as mentioned before, the Mobile Vaani platforms become male-dominated organically with very little participation by women. This, in many ways, is a reflection of the offline practices in the user community where women are discouraged from public participation. Overlaying Lewis et al.'s analysis, in the case of MAMP, strategic field mobilisation, anonymity of users, careful curation of content, and offline support for online engagement together made the platform *safe from* harassment and *safe to* be expressive. Workman and Coleman [62] find that a certain women-only Reddit group provides information and camaraderie which the community members are not able to experience in their offline lives. We have also documented solidarity and support among the MAMP users, as documented in Section 5, which would have probably been difficult offline given the problems of geographical distance and caste and community realities in rural Bihar.

6.2 Importance of working within the prevailing social dynamics

Technology platforms can not function decoupled from the socio-cultural settings that they operate in. Researchers have developed ideas like designing within patriarchy [52] to negotiate patriarchy while enabling women to participate. Participatory media platforms may succeed or fail because of the traction they are able to develop with the communities they operate in. At the same time, platforms like MAMP have a mandate to empower women, which challenges several of the patriarchal norms and practices in the community. Taking an activism approach to the problem might lead to several fallout in rural settings which endangers the staff, volunteers and the project itself, as they confront entrenched practices and vested interests. In the example mentioned in Section 5.3, a head hunt was launched for the informant who stopped a child marriage from happening in the community. In the case of MAMP, the content and discussions were staggered and began with social welfare schemes for women and children and over time moved to contentious topics like dowry, inheritance and child marriage. At the same time, volunteers with an activist outlook were not discouraged from charting their own pathways but were provided with anonymity and backing by the managers. In addition, the other factor which contributed towards the positive outcome was the close ties and trust with the local administration. The local police and administrators were prompt in their actions to combat social evils when reported on the MAMP platform. Therefore, it is possible to still bring about a positive impact in the community and demonstrate positive change in knowledge, attitude and practice even when operating under adverse socio-cultural practices.

6.3 Importance of sustained on-ground mobilisation

As documented by several researchers, the digital divide is not a product of access alone. The divide comprises several layers, including socio-cultural factors. In addition to setting up platforms for women, and running women-oriented content on the platform, it is important that sustained

on-ground mobilisation is carried out to understand the needs of the community and build the trust of the users towards the platform. In the case of MAMP, the women community reporters and volunteers were entrusted with the task of mobilisation, which led to improved trust and usage among women users.

6.4 MAMP serves as a mirror for society

Posts by users on MAMP can be an accurate mirror of society. Several social evils like dowry, child marriage and domestic violence have been outlawed in India for several decades. Yet, through the posts on MAMP, one finds evidence of not only their widespread prevalence but also silent, and overt, acceptance of these evils by women. It points to the fact that along with legal reform, there needs to be conscious socio-cultural reforms in society in order for tangible changes to be seen on the ground. We also observe that often the silence on the evils in the community is a result of socio-cultural pressure. When afforded anonymity, voices from the community on the fallout of these practices bubble up. Policymakers might want to use such platforms to understand the deep-rooted problems that marginalised groups face in different countries.

7 CONCLUSION

Increasing access to digital tools and platforms has not translated to bridging the gender gap in digital access, in fact in many cases the divide has widened. Researchers have documented several reasons for this, including sociocultural structures which prevent women from accessing digital tools, low purchasing power among women, which translates to lower agency in household and societal decisions, and the nature of several digital platforms which prevent women from participating or expressing themselves because of online harassment and stalking. In this paper, we present a participatory community media platform for women, MAMP, which runs over voice and is led by women. We discuss several design and policy innovations which has led to establishing the platform as a safe space for women and has led to a greater participation of women. We also discuss the cost-benefit analysis of setting up such a platform. We also discuss that with the right combination of ingredients, it is possible to bring about positive change even when working under adverse socio-cultural practices. The findings can act as guiding principles for researchers and practitioners who wish to set up women-centred digital platforms.

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Appendix A CODE-BOOK FOR USER GENERATED POSTS

- Advantages and benefits
- Banking
- Digital Online payment methods
- Domestic violence
- Early marriage
- Financial Components
- Gender discrimination
- Government services like schemes bonds insurance
- Loan and borrowing

- Protection components
- Savings and budgeting like Earning Expenditure
- Sexual harassment against women
- SHGs and MFIs
- Women and girl education
- Women entrepreneurship

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