Adoption and Impact of Community Media

Lecture 5, SIL 802

20 January, 2015

---

1. Introduction

Information and communication technologies for development (ICTD) refers to the use of information and communication technologies (ICTs) in the fields of socioeconomic development, international development and human rights [1]. Whenever new technology is invented with relative to ICTD, those are usually targeted to rural areas where technology literacy is very low. Due to that, they also find some difficulties in using them. So here we discuss some of the initiatives in the field of ICTD, that how users found them in ease of use along with the impact of these technologies in corresponding community.

2. Case Study 1: Gurgaon Idol: A singing competition over Community Radio and IVRS [2]

Gurgaon Ki Aawaz (GKA) is a community radio station based in Gurgaon, a city in northern India. They organized a singing competition using IVR systems to engage with young listeners. They used IVR system to record audio and also for voting.

To study the impact of the different methods people were selected randomly. But one of the question was how to evaluate? Hypothesis test [3] can be applied for evaluation, but it requires larger sample size. So we can just observe the people and see where are they going wrong and what mistakes they are doing. So in this study people were called to radio station and experiment was carried out.

The study was carried out that in what methods users did find difficulty and which methods were suitable to users during recording as well as voting for songs through IVR system. The study was carried out on 88 subjects (41 male and 47 female), out of which only 35 subjects had prior exposure to IVR system. The methods and corresponding findings were as follows:

2.1 Audio Recording Method:

For this, authors used 2 methods to record their name, age and song. First was the most commonly used "record after beep" (Beep Voice User Interface (VUI)) and second was press button and then start recording (Button VUI). If the caller does not press a button within a timeout, the instructions are repeated.

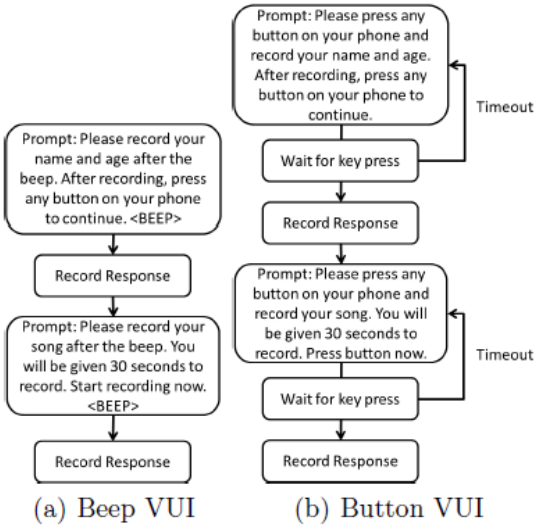

Figure 1 Schematics of Beep and Button VUI

- **Findings:**
  - Subjects found difficult when they were asked to "record" the name and age. Instead of that they found "speak into phone as more appropriate" instruction.
  - Also, in Button VUI, they got confused which button to press to start recording, so they preferred to be told to press a particular button to avoid mistakes.
  - Subjects often hesitant to press buttons as they were afraid that something wrong might happen.
  - When using the button VUI, many participants did not wait to listen to the complete instructions. They tried to press a button immediately after hearing "please press any button on your phone and record your name and age", and did not wait to hear "press the button again to stop reporting".

2.2 Song Voting Method:

Here, authors tried three different methods as follows:

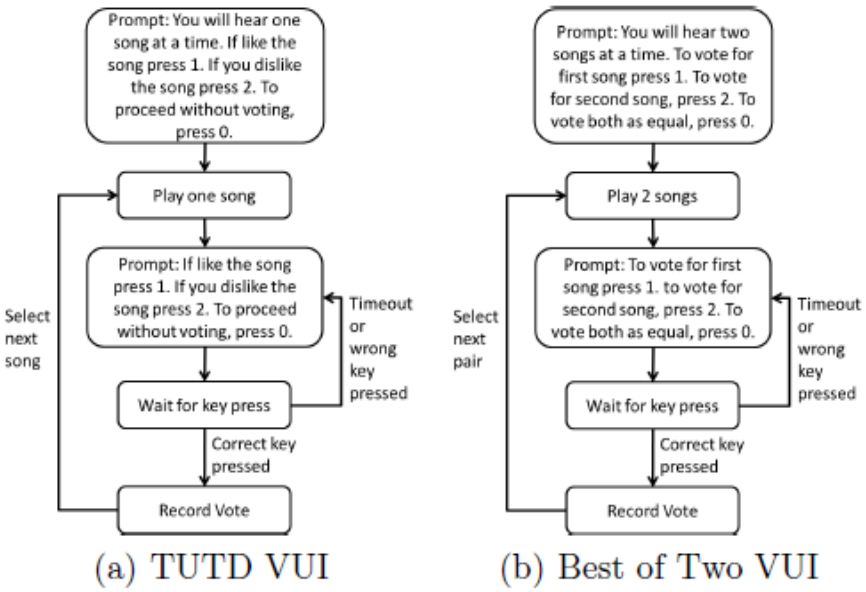

Figure 2 Schematics of VUI of Thumbs up Thumbs down (TUTD) and Best of Two voting methods.

1. **Thumbs-up/Thumbs-down (TUTD) -** one song at a time is played to the caller and she is asked to vote the song up or down.
2. **Best of two -** two songs are played to the caller and she is asked to choose the better of the two.
3. **Best of four** - caller chooses the best of four songs played to her.

- **Findings for Thumbs-up/thumbs-down vs Best of two:**
  - In terms of usability, all but one subject were able to use both the VUIs. This one subject was not able to use either of the VUIs.
  - Some subjects asked before pressing a button whether they should indeed press the button then. This again relates to the hesitation of breaking something or doing something wrong, also observed in the previous Beep and Button VUI experiments.

Apart from VUI findings, there were also other interesting findings regarding method of voting as follows:

- One subject preferred best-of-two VUI over TUTD as he felt uncomfortable in rating a song bad and considered it culturally impolite. He felt more comfortable stating that Song A is better than Song B.
- Another subject preferred best-of-two VUI over TUTD as he found it easier to compare two songs rather than rate a song up or down without knowing all the songs in the playing field.
- One participant preferred TUTD over best-of-two VUI as she did not feel comfortable choosing one song over the other. A closer look at her use of the TUTD VUI system showed that she had actually up-voted all the songs she heard. She had not chosen all songs as equal in her pairwise voting however, which may imply that pairwise rankings can provide more information when voters are not willing to rate songs as bad.
- Only two participants reported that pairwise ranking was harder to understand compared to TUTD voting.

- **Findings for Best of Two vs Best of Four:**
  - All the subjects complained about the difficulty of voting in the best-of-four VUI, mainly because they could not remember the initial songs by the time they got to the last song.
  - But it was also found that the rating of songs didn't differ when both the techniques were applied to same songs i.e. both of these techniques got similar votes for same song so ordering was preserved.
  - Also reversing the order did not have any effect on the ranking results in the best-of-four VUI.

2.3 Learning to use IVR systems:

The Authors tried following four learning methods to guide the user to make use of IVR system.

1. **Training over radio:** They designed an experiment where subjects could to listen to an audio snippet played on a laptop that would contain instructions on how to use the VUI. They could listen to this promo as many times as they liked but could call into the IVR only once (Many promo, one call experiment).
2. **Repeated Calls:** Here, they also allowed callers to call multiple times to IVR system in addition to being able to listen promo multiple times (Many promo, many calls experiment).
3. **Training over phone:** Here, subject could call one of the staff member and can chat with him. Staff provided instructions about IVR system on phone call (Phone training experiment).
4. **In person handholding:** Station staff can visit the community sometime and can give training to listeners (In person training experiment).

Notice that as we see all methods of training, as we move down from one to four, the training methods get *costly* as well as requires *more effort* than previous method.

- **Findings:**

Task	Many promo, one call	Many promo, Many calls	Phone training	In person training
task-rec	17	4	13	6
task key press	6	7	15	12

Table 1 Results of experiment on learning to use Beep VUI. Each column corresponding to a training method shows number of subjects (total 40 subjects)

As we can see from above table that two types of task were defined for the experiment, "task-rec" requires recording with or without key presses to terminate recordings and "task key press" requires executing "task-rec" as well as pressing button to terminate recordings.

2.4 Practical Challenges faced during execution:

This program helped to attract listeners, but biggest challenge was the poor quality of audio recorded over a phone call.

3. Gram Vaani Community Media

According to one of the website [4], currently (year 2014) only 19.19% of population of India have access to internet. Also due to poor literacy rate text based communication media and smart phones are not feasible technology for communication. So here Radio may help for communication. But setting up radio station requires sufficient capital amount and government licence. Also, there has to be sufficient content or news for sustainability of the radio station. So one way to avoid this use of mobile phones. The system described here, *Mobile Vaani*, is very much like social media communication system.

3.1 How it works?

Here user will make call to the server of the Mobile Vaani. The server will call back to the user, so that this service will be free for the user. Next, user will be provided certain options through IVR system like press 1 to go to next message, press 2 to record comment, press 3 to record new thread, etc. Also, topics are distributed among different channels like health, agriculture, culture, etc. User can browse through all these channels and can select the one in which he is interested. User also can like and forward messages.

In community radio services, communication is generally one way i.e. user can text message may be for yes or no or some number. This provides very little participation. Also, texting becomes tough work for community with low literacy rate. But in Mobile Vaani, let's say one starts thread about early marriages or child marriage then one can keep his/her point of view by recording as comment over thread. Such system helps to bring behavioural change among people.

There are editors at the centre office to edit the messages if required so that any message does not become biased towards any particular thing. Also, reordering of messages is done, new ones are brought up in the list and old one goes down. They may also ask people to re-record the message if the voice quality of the message is not good. This process of detecting voice messages with bad quality can be made automatic by signal processing. Also, another option can be, smartphones can be given to volunteers and they can do filtering of messages or can call people for guidance instead centre team doing it. This will also help in improve scalability. Ninety percentage of the content like local news, opinion on topical issues, discussions, grievances and feedback on government schemes, folk songs, poems, etc. are sourced by community itself.

Information about grievances may be put online, so that it may help in building pressure on government or private authority. Many campaigns were carried out by using this technology like Mobile Vaani campaign on the women reservations bill, Mobile Vaani campaign on violence against women, Health oriented discussions on JMV leading to Awareness in Nawadih, etc. The detailed description and their effect can be found from the website [5].

3.2 Three pillars of technology:

1. **Technology:** We need servers, cloud telephone communication [6] to respond to user and record their message.
2. **Content:** In Mobile Vaani, we may ask people, what they want to discuss and we can create a thread accordingly.
3. **Community Activity:** We need to tell people that such system exist. Currently team of 6 people is engaged with local NGOs to make people aware about Mobile Vaani. Also, many people have come forward as volunteers, they hold meetings and tell people about Mobile Vaani.

During the design of the technology we face various design issues. As the technology should be easy to use for community for which it is designed. After implementation also, people require guidance regarding how to use them. For this purpose one can find intermediator who is among from community and also has little technological knowledge. Such a person is also called as Human Access Point (HAP).

To make people aware about Mobile Vaani, activities like wall painting along with number to call, advertisements in local newspapers, publishing articles on the impact of the work done by Mobile Vaani, etc. were carried out.

Figure 3 Making people aware about Mobile Vaani

3.3 Principles of Mobile Vaani:

1. **Build a sense of community and ownership:** People started looking system as for their help. So it created positive effect. People started telling their friends and relatives what all things can be done with this technology, so it also helped in active participation of community.
2. **Design for self-learning and exploration:** Design of the technology should be easy enough. Like during taking input from user for channel, they may end up in speaking full sentence, when asked what channel they would like to hear. So, one can give list of channels and can take input from button instead of making people speak.
3. **Capturing context can bring instantaneous relevance**: Discussions over various topics like gender equity and early marriage help to understand community view.
4. **Manage expectations of people from the platform**: People can speak about complains they have like regarding health issues, etc. Mobile Vaani helps them to reach their voice to proper authority so that they take proper actions. For e.g. Prabhat Khabar published some of the health issues faced people and facilities were improved afterwards.

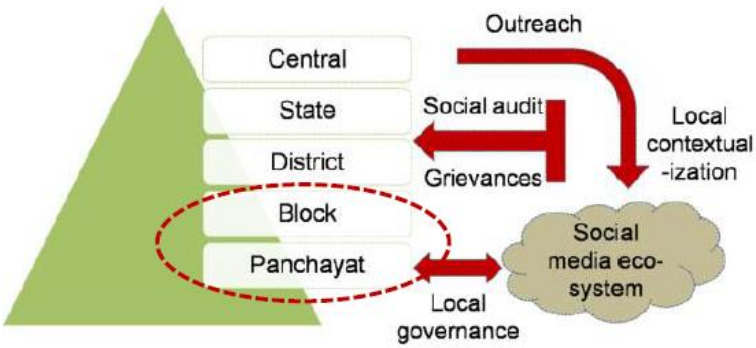

Figure 4 Effect of Mobile Vaani at various level

Fear of escalation can makes things work at the local level. For e.g. People reported on a few officials who were demanding bribes for UID enrolment in Jharkhand. The site was visited by the block development officer and the officials were fined. Also some of the government schemes are at the district or state level. So information about such schemes can be reached to people via Mobile Vaani.

5. **Bring multiple stakeholders together**:

Figure 5 Various Stack Holders

All the stockholders form the cycle as shown in figure 5. If all the stockholder come together and do their work, then using this technology, life of the people can be improved.

3.4 Impact of Technology:

Impact can be of 2 types, qualitative and quantitative. Are women able to use the system or not? , How did it help women? , such questions comes under qualitative analysis. How many men and women used this system? , status of health before and after Mobile Vaani, such questions comes under quantitative measures. To understand the proper impact of technology, both should be applied.

First some surveys can be conducted like Do doctors talk to them nicely or not, Do doctors regularly come to clinic or not, etc. Then after survey we can talk to patients, doctors and relative stake holders to carry out qualitative analysis. FGDs (Focussed Group Discussions) can be carried out to answer questions like what changes have been happened due to this system. People may tell their stories to put

their point. RCT (Randomised Control Trials) [7] can be carried out. Villages that use Mobile Vaani and those who do not, these samples can be formed and differences between them is evaluated.

- **How Impact Works?**

There were three types of impacts with respect to Mobile Vaani:

1. **Awareness:** New Information. (People made aware about new schemes)
2. **Empowerment:** Content Creation, Inspiration (People who used to fear to speak in front of public can now present their ideas)
3. **Grievance Redressal:** Formal Grievance Registration, Volunteer Involvement, Media Interest, Community Collective action

The levels of social organization at which Impact can take place are:

1. **Individual:** A single person
2. **Community:** Group of people
3. **Institutional:** Administration, infrastructure or policy

The detailed description of each type and level of impact is given in the document "How our Impact Works". Note that while studying impact of any technology, along with its positive impact, we must also consider it negative impact as well and one should try to improve on them.

References

[1] "Information and communication technologies for development," [Online]. Available: http://en.wikipedia.org/wiki/Information_and_communication_technologies_for_development.

[2] Z. Koradia, P. Aggarwal, A. Seth and G. Luthra, "Gurgaon idol: a singing competition over community radio and IVRS," *ACM Digital Library*, p. 10, 2013.

[3] "Statistical hypothesis testing," Wikipedia, [Online]. Available: http://en.wikipedia.org/wiki/Statistical_hypothesis_testing.

[4] "Internet Users," [Online]. Available: http://www.internetlivestats.com/internet-users/.

[5] "Impact & Case Studies," [Online]. Available: http://www.gramvaani.org/?cat=12.

[6] "Cloud communications," Wikipedia, [Online]. Available: http://en.wikipedia.org/wiki/Cloud_communications.

[7] "Randomised Control Trial," Wikipedia, [Online]. Available: http://en.wikipedia.org/wiki/Randomized_controlled_trial.