Sustainable IVR-Based Social Media for the Developing World

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Abstract

While social media has revolutionized how we communicate with each other, a *sustainable* platform that is inclusive to the technological accessibility and literacy of underserved communities still needs to be crafted. While such mediums have been developed for research purposes, the primary challenge faced by these projects is economic sustainability; once the funding ends, so does the project. We propose the development of a sustainable, free-to-use Interactive Voice Response (IVR) based social media platform for low-literate and low-income communities, focusing on user generated content and utilizing a B2B advertising-based revenue model. The aim is to provide a service that is sticky, made to scale, and coupled with a robust revenue stream. The presented idea aligns with the United Nations Sustainable Development goal no. 11 – Developing Sustainable Cities and Communities [7].

Author Keywords

B2B, Business to business; UNSDG, United Nations Sustainable Development Goals; IVR, Integrated Voice Response; Speech-based social media;

ACM Classification Keywords

H.5.2 Information Interfaces and Presentation (e.g., HCI);

Introduction

As of January 2017, Pakistan's tele-density is 73.32%; this means that there are over 136 million cellphone subscriptions in a country of 200 million people [1]. However, there remains a gap in the kinds of services accessible to people with various literacy levels as Pakistan has one of the lowest literacy rates in the world [6] and most technology based services require literacy as a prerequisite for use. For example, low-literate users will find properly using popular social media applications such as Facebook and Twitter difficult, given that such applications require a phone with Internet operating capability (WAP browser or higher), and basic literacy. Our proposed service does not require its users to be literate or have Internet-enabled phones, while providing a similar social connectivity service.

Over the years, several IVR based projects have been launched in Pakistan. Some aim to foster behavior change while disseminating maternal health knowledge, while others are information and entertainment portals [3, 4]. However well-intended and well-designed these projects may be, they share one thing in common: as soon as donor funding is exhausted, the project closes down. This is due to lack of a sustainability model built into the project design. IVR-based social networks and viral platforms have also been successfully deployed in the developing world but any attempt at sharing airtime cost with the users leads to drastic drop in usage [4, 5].

We propose an approach that involves partnering with the private sector to support project longevity. Moreover, catering to the needs of sponsors ascertains data collection on usage that helps improves the service to the end-user.

The project design aims to develop an inclusive and sustainable community while setting Standard Operating Procedures (SOPs) for expansion of services to other developing countries, using the pilot IVR service being deployed in Pakistan as a model.

Project Design

Our target users are low-literate, from urban and peri-urban low income households, and have access to a feature phone. This target market has an extremely low recreation budget; therefore, we propose that the IVR social media service be a free-to-use service for its target audience. This free-to-use feature has proven to be the driving force of all social media outlets present online.

Developing appropriate content and maintaining users' interest is a significantly costly problem for IVR services. On our proposed IVR platform, users will be content creators. Each user will have the ability to record their own audio messages and broadcast it to the entire user-base. Each user can also pre-select their loved ones, and their recorded message will be played on priority when they log in. Each user will also have the ability to listen to voice feeds of their friends, favorite celebrities, politicians or a running audio stream of current messages.

The key features on our service will be:

- User profiles and audio posts to profiles
- Topic-specific community discussion channels
- Likes, shares, and referrals
- Audio personal messages to peers with SMS notifications of direct audio messages
- User ID search through telephone number
- Friend list – group feature

Our goal is to create a simple and functional social connectivity platform that encourages users to return to the platform again to check notifications, share audio posts with other people within the community, start discussions and comment on issues that they care about – thereby constantly keeping engaged with the service.

This constant engagement will allow us to garner advertisement on the platform. We will primarily establish a business to business revenue model approach. High call volumes, a massive user base, and a particular target population segment are significant attractions for organizations to invest advertisement money on the platform. Two models of advertisement revenue will be tested:

- User engagement via keypress (analogous to clicks on webpages): each user that keypresses to select an option on an advertised post will raise small revenue for the platform.
- Targeted audio impressions: the platform will play sponsored messages to targeted users, and each impression will generate a small revenue. Sponsors will be able to select user segments based on gender, location, and user-interests.

Generated revenue would be proportional to the number of engagements and impressions garnered. The province of Punjab is estimated to be home to almost 50% of the country's population, with a higher urban density compared to other provinces. Our initial target is therefore Punjab. The initial languages will be Punjabi and Urdu, the national language. To make the service's presence known to the public, the product will be advertised in places that our target users frequent: public hospitals, barber shops, tea shops, local and intercity bus terminals and train stations, weekly bazaars, facto-

ries, village tuck shops, etc. Moreover, we intend to advertise on selected radio and television shows to further increase penetration within the audience.

Preliminary Findings

Based on a previous IVR deployment we launched in Pakistan (being reported separately), we have identified an unexpected niche market which responds significantly well to the IVR services. This niche market consists of visually impaired telephone users. We are currently running tests and surveys on this particular market segment, and our preliminary findings reveal that the segment does not have a medium to express their thoughts and opinions or socialize and connect with other people. They appreciate IVR services as this medium does not require visual engagement to interact with the platform. A large majority of the respondents have appreciated the service to the point that they are willing to pay for it.

Separately, we conducted a focus group of five participants from our target market to analyze telephone usage patterns and social engagements.

Partic-ipant #	Occupa-tion	Age	Marital Status	Monthly Income (PKR)	Education Level
1	Police constable & farmer	35-45	Married	100,000	Matric
2	Bakery salesman	25-34	Married	25,000 - 30,000	Intermedi-ate
3	Household driver	25-34	Unmarried	10,000	Matric
4	Tailor	15-24	Unmarried	20,000 - 30,000	None
5	House helper	15-24	Unmarried	10,000	Primary

Table 1: Focus group participant demographics

All five participants responded that they are too busy with work during the day to socialize. After work they find little time for leisure, to socialize in their neighborhood, call loved ones, or listen to music on the radio. If they find time, they watch television shows or follow the news.

Interestingly, three out of five people could read and write, two used smartphones, one even played candy crush and used Facebook over Wi-Fi. Their music preferences revolved around Punjabi pop and classical genres. One unanimous response was to the question about the most frequently called number: all five participants called home (in the village), usually when they got free from work every day. One participant reported usually calling his friends after speaking with family.

Four out of the five participants had subscribed to telco call/SMS bundle packages, spending an average of 30 minutes a day over the phone. The participant who did not load bundle packages would only make short important calls, and did not make any calls beyond emergencies. One of these participants uses approximately 100 minutes of talk time a day, and another uses up to 250 minutes a day. None reported to have any data bundle subscriptions. Four out of five participants use the "easy load" feature to reload their prepaid credit. The easy load feature allows users to top up small incremental volumes of credit at a cellular operator kiosk. Only one participant used scratch cards. Three out of five usually spend less than PKR 250 ($2.50) per month on mobile credit. One participant spent almost PKR 700 ($7) per month on average and only one participant spent up to PKR 2,000 ($20) every month on mobile credit. Only one out of the five reported listening attentively to advertisements over the phone and one said he did not pay attention. Two participants had never experienced any ads through robo-calls, while the last participant disconnects the call if ads come up in a robo-call.

Potential to Scale and Expansion Across Borders

To develop a sustainable community service, this project will seek partnerships with the private sector organizations such as telcos. The aim is to utilize their vast resources and reach to scale the project nationally while making it financially feasible at the same time. For our pilot project, we are purchasing airtime through an ISP, and call back users after they "flash" the IVR number. If we are able to get telecom operators on board, we can potentially gain access to millions of users who would be able to call in for free or very cheap on-network rates. The differential can be sought through advertisers on the platform.

Telcos have a vested interest in increasing user retention, and increasing their knowledge base about their users. The proposed service allows them to do both. We foresee that this project may end up being acquired by a telecom provider or an arrangement could be established to revenue share based on data provided regarding their subscribers. A similar partnership and expansion model is run by the Human Network International (HNI), a critical knowledge and job ad posting service in Africa [2].

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